2 attachments
2 binders

Department of Energy
National Nuclear Security Administration
Sandia Site Office
P.O. Box 5400
Albuquerque, New Mexico 87185-5400

APR 14 2003

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Hazardous Bureau

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James Bearzi, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Dr. East, Bldg 1
Santa Fe, NM 87505

Dear Mr. Bearzi:

Enclosed is one of two NMED copies of the responses to 151 comments included in Notice of Deficiency HWB-SNL-02-002 for Sandia National Laboratories, EPA ID NM5890110518. Per our verbal agreement, the second NMED copy is being sent directly to the NMED Albuquerque Group Manager.

On October 15, 2002, the US Department of Energy/National Nuclear Security Administration (DOE) and Sandia Corporation (Sandia) received the Notice of Deficiency (NOD). It includes a set of 524 comments that list the issues DOE/Sandia should address and the additional information that DOE/Sandia should provide to NMED before NMED can make a determination on the administrative and technical completeness of the Comprehensive Part B Permit Request (Part B) for RCRA-regulated waste storage and treatment operations at Sandia National Laboratories/New Mexico (SNL/NM).

On December 13, 2002, NMED granted DOE/Sandia's request for an extension to the deadline for responding to the comments, and accepted DOE/Sandia's proposed schedule for responses. The schedule specified that the final responses would be due on March 31, 2003. DOE/Sandia requested a further extension to April 16 because Sandia staff members who were preparing the responses were also assisting NMED Hazardous Waste Bureau Compliance and Technical Assistance staff members during an inspection that began on February 18, 2003.

On March 13, NMED granted DOE/Sandia's request, and extended the deadline to April 16 for submittal of responses to the remaining comments. In accordance with the revised schedule, DOE/Sandia hereby submits responses to the remaining 151 comments.

DOE/Sandia and NMED have met several times since October 2002 to discuss the comments and issues involved in some areas of Parts 1 through 5 of the Part B. The responses included in this submittal reflect the DOE/Sandia positions stated in the meetings.

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This submittal includes several attachments. Each is discussed below:

Attachment A: Responses to NMED Comments
The 151 individual NMED comments are included as Attachment A to this letter, together with DOE/Sandia's responses. The NMED comments pertain to Parts 2 and 4, and also affect Part 1 of the Part B.

Attachment B: Revised Text and Figures, Selected Sections
Sections of Parts 1, 2, and 4 of the Part B that have been revised in response to the NMED comments are included as Attachment B. The revised text and revised figures from Parts 1 and 2 (except for two topographic maps) are included in redline-strikeout format to highlight the revisions. New Sections 1 and 3 of Part 4 are also included. Section 2 of Part 4 consists of site summary sheets for Solid Waste Management Units and Areas of Concern at SNL/NM that are qualified to be on the permit. These have been updated in response to an NMED comment but are not presented in redline/strikeout format.

Attachment C: Revised Comprehensive Part B Permit Request, Parts 1 through 4
A complete copy of revised Volumes I and II (Parts 1 through 4) is included as Attachment C.

DOE/Sandia are not requesting revisions to Part 5 (Volume III) at this time. Part 5 of the Part B (submitted February 6, 2002) contained 3 sections:

- Section 1 - Corrective Action Management (CAMU) permit application.
- Section 2 - Temporary Authorization Request for Low-Temperature Thermal Desorption (LTTD) Treatment Operations at the Corrective Action Management Unit, Technical Area III. June 1998
- Section 3 - Class II Permit Modification Request for the Temporary Unit (TU) Treatment Operations at the Corrective Action Management Unit, Technical Area III. January 2002

DOE/Sandia are performing closure of the LTTD unit, TU, and CAMU. When closure of the LTTD unit and TU is complete, DOE/Sandia will request that they be withdrawn from the Part B.

As explained in DOE/Sandia's February 18 submittal to NMED, the CAMU is currently undergoing closure under an updated Closure Plan (approved by NMED on November 22, 2002.) The NMED approval contained one condition, requiring revision and resubmittal of a Post-Closure Care Plan. The Post-Closure Care Plan is under development and will address all NMED Part B comments related to post-closure care, as noted in the February 18 responses to individual comments. DOE and Sandia propose to submit the CAMU Post-Closure Care Plan in 2003 and will request

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that it be included as Section 1 of Part 5 (in place of the application that is currently there.)

If you have any questions, please contact John Gould at (505) 845-6089.

Sincerely,

Karen L Boardman

Karen L. Boardman
Manager

Enclosures

cc w/enclosures:
M. Gardipe, ERD
W. Moats, NMED-HWB (via Certified Mail)
J. Parker, NMED-OB
R. Kennett, NMED-OB
L. King, EPA Region 6 (2 copies via Certified Mail)

cc w/o enclosure:
J. Estrada, SSO-AIP
K. Thomas, EPA, Region 6
F. Nimick, SNL, MS 1087, 6132
J. Thompson, SNL, MS 1151, 3125
A. Reiser, SNL, MS 1151, 3125
SSO Legal File

Response to Comments in Notice of Deficiency HWB-SNL-02-002 for Sandia National Laboratories, EPA ID #NM5890110518

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure 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 or imprisonment for knowing violations.

Donald H. Blanton
Vice President, Human Resources and Protection Services
Sandia Corporation
Albuquerque, New Mexico
Co-Operator

4/14/03
Date signed

Karen L. Boardman
Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Owner and Co-Operator

4·15·03
Date signed

Attachment A

DOE/Sandia Response to NMED Comments on Parts 2 and 4

Task # HWB-SNL-02-002

**Comments 11-52, 58,
91-94, 325,
345-347,
356-357, 359-370, 377-383, 386-417,
425, 431, 433-444,
450-451, 457-463, 465,
470-471, 477-485, 487,
492-493, 498-504, and 506**

SNL 1020

Number	NMED Comment	DOE/Sandia Response
	INTRODUCTION – The following comments from the New Mexico Environment Department (**NMED**) relate to Part B of the Department of Energy/Sandia National Laboratories (**DOE/SNL**) Resource Conservation and Recovery Act (**RCRA**) permit renewal application dated February 2002. The quotations in bold are taken directly from the Permit Renewal Application.	
	GLOBAL COMMENT – provide a consolidated description of all the facility-specific information contained in Attachment A through H by incorporating all the Attachments of Modules I through VI into Appendices A through H. For example Appendix B [Waste Analysis Plan (**WAP**)] should contain both the general and site-specific WAPs, in more detail in their respective sections, all under one umbrella. This will help third party readers to get all the information in one chapter instead of being referred to specific Modules, only to be kicked back to the appendix (in circles). Please do the same for inspection, security, contingency plan, closure plan, etc. The specific modules should only contain information on the design and operation of the various units, which SNL calls facilities	The modules have been modified to eliminate redundant text and incorporate relevant parts of the attachments into the main text of each module, particularly with respect to: site description and information (formerly Attachment A), inspections (formerly Attachment C), training (formerly Attachment D), contingency (formerly Attachment E), closure (formerly Attachment F), and treatment (Attachment G in Modules II, III, and V). Attachment B in Module II has been incorporated into Appendix B of the General (site-wide) Part B. The redundant parts of the attachments have been deleted. DOE/Sandia also added text to the General (site-wide) Part B sections to match the format of the revised modules.
	VOLUME II, PART 4, SOLID WASTE MANAGEMENT UNITS	
11	**Section 1.0, Page 1, INTRODUCTION**: SNL should provide a brief description of the methodologies used to determine whether or not a site or facility is a SWMU (e.g., the RCRA Facility Assessment and the RCRA Facility Investigation processes).	A brief description of the methodology used to determine whether a site or facility qualifies as a SWMU has been added to Part 4, Section 1.0 in Volume II of the comprehensive Part B permit request.
12	**Section 2.0, Pages 1-450, SITE SUMMARY SHEETS**: Additional information is needed for some SWMUs and spills/releases. Comments 12.a and 12.b may or may not apply to each SWMU Site Summary Sheet. a. Site information for each SWMU should be updated with the most recent information current with the Comprehensive Part B Permit renewal application and the date noted for all site summaries. b. Under the section Waste Volume Estimated/Generated, SNL should describe the source(s) for each waste stream generated at each SWMU (e.g., from the septic tank, from surface cleanup, prior operations, etc.). c. SNL should include the following information requirements found in 20 NMAC 4.1.900/40 CFR 270.14(d)(2 and 3) for SWMUs 94 and 5 and for the Tijeras Arroyo Groundwater Investigation (NMED recognizes that the source for the nitrate and TCE in ground water near Tijeras Arroyo may or may not be from a SNL SWMU). • A description of each release. • A description of the monitoring wells that SNL has installed (including well-construction diagrams) and a summary and discussion of the results obtained from analyses of ground-water samples from those wells.	DOE/Sandia have revised Part 4 of the comprehensive Part B permit request. a. The site summary sheets have been updated to include current information. The updated sheets are included in Volume II, Part 4, Section 2.0 b. The ER Site summary sheets were originally developed to provide summary level information to organizations outside of the Environmental Restoration Project and were included with the permit renewal because they fulfilled the information requirements in 20 NMAC 4.1.900/ 40 CFR 270.14(d). The Waste Volume Estimated/Generated section is intended to provide planning information for the Sandia Waste Management organization and the DOE. Information on the source of waste streams is included in the Site History and Current Status sections of the summary sheets. c. A new section (Section 3.0) has been added to Part 4 that provides supplemental information for Canyons Groundwater, Technical Area III/V Groundwater, and Tijeras Arroyo Groundwater.

Number	NMED Comment	DOE/Sandia Response
	APPENDIX B: GENERAL WASTE ANALYSIS PLAN (WAP)	
13	The SNL WAP sections, found in Appendix B and module specific Attachment(s) B, have been reviewed within the context of regulatory requirements of: 40 CFR 264.13 and NMAC 20.4, as well as guidance provided in "*The Permit Applicants Guidance Manual for the General Facility Standards of 40 CFR 264" (USEPA 1983) and "Waste Analysis at Facilities that Generate, Treat, Store and Dispose of Hazardous Waste*" (USEPA 1994). Overall, the information contained in the General WAP (Appendix B) is insufficient to ensure compliance with promulgated New Mexico hazardous waste management regulations. Furthermore, the module specific WAPs (Attachment(s) B) also lack needed detailed information with the HWMF, RMWMF, HBWSF, AHCF and MSB WAPs simply referring the reader back to the General WAP. The presentation of material should be tiered, with sufficient detail, procedures and methodology in the general WAP, including organizational structures and lines of authority integrating generation and waste management groups, followed by further unit or specific information in the unit sections.	DOE/Sandia have substantially revised Appendix B (the site-wide waste analysis plan [WAP]) in response to NMED comments. DOE/Sandia have also incorporated information from the unit-specific WAP for the Thermal Treatment Facility (TTF). The revised WAP includes additional information to more fully describe the process that DOE/Sandia use to comply with regulatory requirements to characterize RCRA-regulated wastes managed by DOE/Sandia at the Units included in the Part B permit request. However, the revised WAP does not include internal organizational structures and lines of authority, as these are subject to change and do not provide additional assurance of compliance.
14	In light of the overall inadequacy of the submittal, SNL should revise the WAP for the next draft. The revision should include reformatting the WAP with the combination of the general and unit specific WAPs as sections of a single Waste Analysis Plan, Appendix B. SNL should maintain the current WAP sections format, i.e., Site Description, Waste Analysis Parameters, Characterization Procedures, Off-Site Acceptance Procedures, and Special Procedural Requirements. However, the final WAP should be re-written fully and completely presenting the above information for the general site as well as each unit specific site (HWMF, TTF, RMWMF, HBWSF, AHCF and MSB) required by the permit.	As noted above, DOE/Sandia have substantially revised the WAP in Appendix B. The revised WAP includes a new Section B.1.1 that presents the RCRA-regulated waste management Units and their associated waste management activities, and new sections have been added to present information on treated and treatment-derived wastes.

Number	NMED Comment	DOE/Sandia Response
	GENERAL VERSUS SPECIFIC WAP LANGUAGE	
15	Please address the following issues: Revise the Site-Wide WAP to include all waste characterization methodologies for the Facility as a whole. In addition, include the specific waste characterization procedures for unit specific modules such as the Thermal Treatment Facility (**TTF**). It is appropriate to include in the site-specific modules an overview of the acceptable waste categories and waste acceptance criteria (WAC), the chemical and physical properties of the wastes accepted at the unit, a description of the operations that generate the wastes, a listing of any newly generated wastes at the specific unit, unit specific waste screening and verification procedures, unit specific Waste Disposal Request forms, and unit specific boundary conditions and process tolerance limits. However, the Site-Wide WAP must discuss the following waste characterization issues: a. address container requirements b. "waste generator written documentation", c. waste generation processes and control, d. waste characterization using knowledge of process (KOP) and justifying the use of KOP, e. addresses waste variability, and f. "derived from" wastes.	The revised WAP includes waste characterization methodologies for the wastes stored and treated at all of the SNL/NM Units included in Part 2 of the comprehensive Part B permit request. An overview of the operations that generate waste, acceptable waste categories, and the chemical and physical properties of the wastes accepted at the Units are provided in new Sections B.1.2 and B.1.4, and in revised Section B.1.3 (formerly B.1.2) of the WAP. Waste characterization and acceptance criteria applicable to all Units are described in revised Section B.3.1. Information on wastes that may be generated at the Units is presented in revised Section B.1.3.11 (formerly B.1.2.11), and in new Sections B.1.3.12 and B.3.3. Unit-specific waste screening and verification procedures for treated wastes and treatment residues are discussed in new Sections B.1.4, B.3.2, and B.3.3. Section B.3.1 of the revised WAP contains an overview of information recorded through various forms such as Waste Disposal Request forms. Many of the items in the list are addressed in other parts of Part 2 of the comprehensive Part B permit request (e.g., the General Part B, one or more appendices, or one or more Unit-specific Modules). They are not repeated in the Waste Analysis Plan. a. Container storage (including compatibility) requirements are addressed in Section 1.2 of the General Part B and in Section 1.3 of the Unit-specific module for each Unit where container storage occurs. b. Revised Sections B.3.1 and B.3.2 of the WAP include additional information on documentation provided by initial waste generators. c. Waste generation processes are already described in Sections B.1.1 and B.1.3 (formerly B.1.2) of the WAP. d. Knowledge of process and justification for its use are already discussed in Section B.3.1.1.1 of the WAP. e. Waste variability is already included in Table B-1 of the WAP, as indicated by the term "Potential" in the last two columns of that table. A discussion of waste variability and a reference to Table B-1 are included in new Section B.1.2 to further address waste variability. f. Wastes "derived from" containment systems and from treated wastes are discussed in new Sections B.1.3.12 and B.3.3.

Number	NMED Comment	DOE/Sandia Response
	g. Other issues referenced in the WAP-TTF required to be addressed more thoroughly in the Site-Wide WAP include; management of wash down and precipitation runoff wastes; the definition of "boundary conditions" and "process tolerance limits"; general waste screening and verification procedures; and general quality assurance/quality control processes. h. WAP-TTF Section B.2.2, third paragraph, states **"Ash residue from treatment of characteristic RCRA-regulated waste will be sent to a Subtitle D facility if it no longer exhibits hazardous waste characteristics"** is only correct if there are no underlying hazardous constituents at concentrations in excess of the universal treatment standards as specified at 20.4.1.800 NMAC (incorporating 40 CFR Section 268.9). Adjust the site-specific WAP accordingly and address the issue thoroughly in the Site-Wide WAP.	g. The TTF WAP (formerly Attachment B to Module II) has been incorporated into the site-wide WAP. Management of wash down and precipitation runoff wastes at the TTF is discussed in Section B.3.3.1 of the revised WAP. DOE/Sandia have decided to use the TTF for treatment of wastes from a single testing operation instead of multiple wastes. Therefore, boundary conditions and process tolerance limits that were designed to address multiple explosive wastes are no longer relevant and have been deleted from the revised WAP. General waste screening and verification procedures originally included in the TTF WAP have been incorporated into Section B.3.2.1 in the revised WAP. General quality assurance/quality control processes for the TTF are addressed in Section B.3.2.1 in the revised WAP. h. Section B.3.3.1 of the revised WAP has been modified to clarify the discussion regarding ash residue.

Number	NMED Comment	DOE/Sandia Response
16	The Application Section titled ***Overview*, 1.0 (*Background*)**, Page ii, refers to waste acceptance criteria (**WAC**) for the Radioactive and Mixed Waste Management Facility and the High Bay Waste Storage Facility. WACs are integral to a Waste Analysis Plan and therefore must be incorporated into the Site-Wide WAP. If DOE/SNL chooses not to incorporate the WACs into the Site-Wide WAP, the WAC for all permitted hazardous waste management units must be provided so that NMED may determine regulatory applicability.	The sentence in question is "The AHCF will be used to manage wastes that do not meet the waste acceptance criteria for the RMWMF or the HBWSF and cannot be fully characterized, treated, or prepared for shipment to permitted off-site facilities for treatment, storage, or disposal." The waste acceptance criteria mentioned in this sentence pertain ONLY to the radionuclides present in the RCRA-regulated waste. The radionuclides are not subject to RCRA or the New Mexico Hazardous Waste Act (NMHWA). The criteria mentioned in this sentence do not pertain to the RCRA-regulated constituents. The complete waste acceptance criteria for RCRA-regulated wastes at all SNL/NM Units are included in the WAP in Appendix B.
17	The Site-Wide WAP must include the waste characterization procedures for determining the type of samples collected (i.e., composite or grab), sampling device, method for selecting the location of a sample within a waste stream, and frequency, in sufficient detail to demonstrate compliance with 20.4.1.500 NMAC (incorporating 40 CFR Section 264.13), 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 and 268.9), and 20.4.1.900 NMAC (incorporating 40 CFR Section 270.14).	DOE/Sandia rely primarily on acceptable knowledge, and knowledge of process as a subset of acceptable knowledge. However, if sufficient process information is not available to adequately characterize a waste, sampling and analysis is performed. A discussion of waste sampling and waste analysis has been added as Sections B.3.1.2.1 and B.3.1.2.2, respectively, in the revised WAP.
18	Revise the Site-Wide WAP to replace discretionary terms such as "may" with mandatory terms such as "will," "must," or "shall". NMED intends to attach the Site-Wide WAP to the Permit and it must be enforceable and consistent with associated permit conditions.	In the revised WAP, discretionary terms (such as "may") have been replaced with mandatory terms (such as "will"), but only where appropriate (e.g., "RCRA waste characterization will occur ..."). An asterisk is shown wherever the term "may" ought to remain (e.g., "Debris may* be contaminated with or contain ...")

Number	NMED Comment	DOE/Sandia Response
19	The Site-Wide WAP must identify all "physical" hazardous waste characteristics and associated requirements relevant to managing hazardous wastes at SNL in conformance with the NMHWA. Section B.3.1, *Waste Characterization*, lists physical properties of wastes used to characterize "unknown wastes". SNL's 2001 Biennial Report lists "RCRA Waste – Tons Generated On-Site by Waste Form". DOE/SNL must include in the WAP a list of the "forms". Physical characteristics with associated regulations include, but are not limited to, the following: a. sludge (20.4.1.200 NMAC (incorporating 40 CFR Section 261.1)) b. liquids with sorbents added c. scrape metal (20.4.1.200 NMAC (incorporating 40 CFR Section 261.1)) d. waste mixtures (20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a))) e. pure product residues (20.4.1.200 NMAC (incorporating 40 CFR Section 261.7, and 261.33) f. PCB contaminated wastes g. wastewater versus nonwastewater (20.4.1.800 NMAC (incorporating 40 CFR Section 268.2)) h. soils (20.4.1.800 NMAC (incorporating 40 CFR Section 268.49)) i. lab packs (20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (9))) j. debris categories (20.4.1.900 NMAC (incorporating 40 CFR Section 270.13 (n))) k. gas, vapor or liquid (20.4.1.900 NMAC (incorporating 40 CFR Section 270.25 (5))) l. light liquid, heavy liquid and vapor/gas (20.4.1.500 NMAC (incorporating 40 CFR Section 264.1061)) m. regulatory subcategory footnote #1 of 20.4.1.800 NMAC (incorporating 40 CFR Section 268.40) Treatment Standards Table n. heterogeneous and homogenous waste (Site-Wide WAP, Section B.1.2) o. phase separations p. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.200 (C)(1)) Subpart X units must prevent releases by considering the physical and chemical characteristics of the wastes, including its potential for emission and dispersal of gases, aerosols and particulates q. liquids and solids (Site-Wide WAP, Section B.5.2).	The descriptions of the wastes provided in Section B.1.3 (formerly Section B.1.2) of the revised WAP have been modified slightly, where appropriate, to further address the RCRA-regulated "physical" characteristics (or waste forms) listed in a-q of this comment. In addition, a new Section B.1.4 has been added to the revised WAP to describe the wastes to be treated at SNL. The content and format of information included in the 2001 Biennial Report for Sandia National Laboratories is specified by the instructions for the Report. For example, the following information is required for RCRA-regulated wastes in Form GM in the Report: • Quantity of wastes that were generated and shipped in 2001, generated in 2001 but not shipped, shipped in 2001 but generated earlier. • Waste "form," EPA Hazardous Waste Numbers, waste name, general source code, units of measure, and on-site and off-site management methods used. This information is required in the Report and is accurate for DOE/Sandia operations during 2001. However, it is not useful as a general or specific description of the sorts of RCRA-regulated wastes that are, or are expected to be, generated and managed at SNL/NM Units during the life of the permit. Nor does it provide sufficient information for characterizing wastes for on-site storage and treatment at SNL/NM Units included in the comprehensive Part B permit request.

Number	NMED Comment	DOE/Sandia Response
20	**Site-Wide WAP Section B.2.1, Proposed Analytical Parameters and Methods**, lists three categories of hazardous constituents (metals, VOCs, and SVOCs) as the analytes that will be measures when sampling and analysis occurs. SNL should identify specific parameters and methods, and not simply state broad categories of hazardous constituents. Why would this information be addressed in the site wide WAP? It should be contained in the module specific section.	Section B.2.1 of the revised WAP has been modified to add "Hazardous characteristics (i.e., ignitability, reactivity, corrosivity)" and to add "(i.e., toxicity characteristic)" to each specification for "RCRA-regulated metals". Table B-2 summarizes the parameters and characterization methods, and Table B-3 specifies the various test methods to be used in analyses for each parameter. Both of these tables were revised to include the additional parameters discussed above. DOE/Sandia note that the site-wide WAP (Appendix B) includes information applicable to all Units. Further, DOE/Sandia have deleted all Unit-specific waste analysis information and incorporated it all into the revised site-wide WAP in response to NMED's global comment and Comment 15 (both NMED comments are included in this response).
21	For quality assurance purposes, a waste analysis/characterization documentation checklist must be produced and attached to Appendix B. The checklist must contain all required or committed documentation and be organized to reflect the various stages of waste management such as; the documentation required of the generator, documentation necessary to treat or store wastes, and documentation after waste has moved off-facility for ultimate treatment or disposal.	A checklist of waste analysis/characterization documentation is not a regulatory requirement in 20 NMAC 4.1.900/40 CFR 270.14(b)(2) or 20 NMAC 4.1.500/40 CFR 264.13 for WAPs included in Part B permit applications. In addition, such a checklist is not addressed in "*The Permit Applicants Guidance Manual for the General Facility Standards of 40 CFR 264" (USEPA 1983) and "Waste Analysis at Facilities that Generate, Treat, Store and Dispose of Hazardous Waste*" (USEPA 1994) (referenced by NMED in Comment 13). DOE/Sandia believe that the quality assurance measures included in the revised WAP are more than sufficient to provide compliance with applicable regulatory requirements for waste characterization, and that the requested list would not provide quality assurance. For these reasons, DOE/Sandia have not included the requested documentation checklist in the revised WAP.
22	DOE/SNL must explain in both Appendixes B and H the relationship between the written operating record and the Waste Tracking Database referenced in Section B.3.1 and B.3.1.3, and measures used to ensure consistency.	The waste tracking database is part of the operating record. A paper copy of the information in this electronic database can be printed at any time for any given waste. Revised Section B.3.1 indicates that the information entered into the waste tracking database is again reviewed by Unit personnel to check consistency. Text regarding the waste tracking database was deleted from Section B.3.1.3, as recommended by the NMED in Comment 34(b). Waste characterization documentation, including disposal request forms, becomes part of the Unit operating record, as indicated in Section B.3.1 of the revised WAP.
23	DOE/SNL must provide the reason that the thermal treatment process code is identified as a X03 instead of a X01 in the Part A portion of the Application. The code appears wrong and is relevant to the State/U.S.EPA shared RCRA Information database.	The treatment process code has been changed to X01.

Number	NMED Comment	DOE/Sandia Response
24	DOE/SNL shall provide a definition of "waste stream". The term is used in the Site-Wide WAP Section B.1.2, *Stored Waste*, with respect to waste analysis requirements and the consistency of waste make-up (i.e., hazardous constituents and percentages).	DOE/Sandia's definition of "waste stream" has been added to Section B.1.2 (formerly Section B.1.1) in the revised WAP.
25	U.S.EPA WAP guidance "Waste Analysis at Facilities the Generate, Treat, Store and Dispose of Hazardous Waste, A Guidance Manual" (EPA 1994), Section 2.1, *Facility Description*, Subsection 2.1.2, *Identification/Classification and Quantities of Hazardous Wastes Generated or Managed at Your Facility*, suggests that a WAP list any wastes or waste properties that are known not to be manageable by the facility. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.13) requires that DOE/SNL's WAP address how it will ensure that storage and treatment units will only receive allowable wastes (i.e., those wastes on the Part A). The Site-Wide WAP must specify how DOE/SNL will insure that only wastes listed on the Part A will be treated or stored at the permittable waste management unit. The WAP must also reference all other non-allowable waste types referenced in the New Mexico Solid Waste Regulations, 20.9.1 NMAC (11-30-95), including asbestos containing material, non-hazardous construction and demolition debris, non-hazardous ash, house or municipal solid waste, industrial solid waste, infectious waste, petroleum waste, other non-hazardous solid waste, and PCB or Dioxin containing material, and biodegradable sorbents.	All RCRA-regulated wastes generated by Sandia Corporation are listed in the Part A. Section 1.2 of each Unit-specific module indicates which wastes are accepted at that Unit. Section B.1.1 in the revised WAP includes a reference to the Part A; all of the wastes listed in the Part A are acceptable for management at every Unit except the TTF. The TTF is used for management of a RCRA-regulated waste from nearby operations, as described in Module II. RCRA-regulated activities at SNL/NM Units are addressed in the comprehensive Part B permit request. DOE/Sandia may choose to use the Units for activities that are not subject to NMHWA. DOE/Sandia note that 20 NMAC 4.1.500/40 CFR 264.13 does not prohibit a facility from managing non-RCRA-regulated waste. Such activities are outside the scope of a permit issued under NMHWA and are not addressed in the permit request.
26	EPA 1994 WAP guidance Section 2.1, *Facility Description*, Subsection 2.1.3, Description of Hazardous Waste Management Units, suggests that if hazardous and non-hazardous wastes will be mixed or blended, the method for how these activities will be conducted should be described. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.13) requires that DOE/SNL's Site-Wide WAP must address if and how different wastes streams will be blended or mixed, and how the resultant blended waste will be characterized.	DOE/Sandia activities include mixing and blending RCRA-regulated wastes on a limited basis, as discussed in revised Section B.3.1 of the WAP. The resulting waste is characterized according to the process described in revised Section B.3 of the WAP.
27	The Thermal Treatment Unit unit-specific WAP (**WAP-TTF**) mentions a quality assurance/quality control (QA/QC) program at Section B.6. The Section refers to a process of assuring the documentation traceability to particular waste containers and mandated documentation for generator knowledge of process (**KOP**). As is recommended in EPA 1994, DOE/SNL must provide this and all other QA/QC procedure associated with hazardous waste analysis including a table of appropriate sample preservation techniques and holding times.	DOE/Sandia have decided to use the TTF for treatment of wastes from a single testing operation instead of multiple wastes. Therefore, quality assurance/quality control (QA/QC) requirements that were designed to address multiple explosive wastes are no longer relevant and have been deleted from the revised WAP. General QA/QC processes for the TTF are addressed in Section B.3.2.1 in the revised WAP. Other QA/QC procedures associated with analysis of RCRA-regulated waste have been incorporated throughout Section B.3.1 and in Sections B.3.2 and B.3.3, as appropriate, in the revised WAP, and a new Table B-4 has been added to present information on recommended sample containers, preservatives, and holding times.

Number	NMED Comment	DOE/Sandia Response
28	The Site-Wide WAP Section B.3.1.2.1, *Sample Handling, Preservation, and Storage*, refers to quality objectives for data. DOE/SNL must elaborate on the waste analysis or waste characterization data quality objectives, particularly the identification of underlying hazardous constituents and attainment of LDR treatment standards.	Revised Section B.3.1 includes a discussion of waste characterization data quality objectives. Section B.3.1.2.3 (formerly Section B.3.1.2.1) has been revised to refer the reader to new Table B-4. Text regarding the attainment of LDR treatment standards has been added to Section B.5.2 (formerly Section B.5.3).
29	DOE/SNL must state whether the Site-Wide WAP is meant to satisfy the WAP requirements for hazardous waste treatment occurring at generator sites in accordance with 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(5)).	Activities conducted pursuant to 20 NMAC 4.1.300/40 CFR 262.34 that require a WAP in compliance with 20 NMAC 4.1.800/40 CFR Section 268.7 (a)(5) are outside the scope of this permit. In addition, 20 NMAC 4.1.500/40 CFR 264.13 does not include prohibitions on other uses of this WAP. For these two reasons, DOE/Sandia believe it is unnecessary and inappropriate to incorporate such restrictions through the site-wide WAP that included as Appendix B of the comprehensive Part B permit request.

Number	NMED Comment	DOE/Sandia Response
30	Waste analysis procedures are addressed in the EPA guidance, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste," April 1994 (EPA 1994). This guidance is referenced in the Introduction of the Site-Wide WAP. EPA 1994 Section 2.1, Facility Description, Subsection 2.1.3, Description of Hazardous Waste Management Units, suggests that a WAP address all process considerations necessary to meet applicable permit-established performance standards. DOE/SNL's Site-Wide WAP fails to mention, at a minimum, the following anticipated permit-established performance standards: a. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.13 (c)(3)) method of assurance that sorbents added to wastes in containers are not biodegradable (this is not a regulation applicable to waste treatment or storage, but is information required to be kept in DOE/SNL's records), b. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.16) training required to carry out all requirements of 264, and maintenance of training records, c. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.73 (b)(1)) Treatment and Storage Facilities (**TSFs**) must keep a description and the quantity of each waste treated or stored, d. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.73 (b)(3)) records and results of waste analyses and waste determinations, e. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.73 (b)(12) and (16)) notice/record keeping requirements regarding waste's LDR status, wastewater/non-wastewater category, etc., f. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.73 (b)(16)) waste certification requirements, g. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.172) compatibility of waste with container, h. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.193 (c)(1)) compatibility of wastes with tanks, i. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.193 (a)) waste characterization for the presence of free liquids, j. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.200 (C)(1)) Subpart X units must prevent releases by considering the physical and chemical characteristics of the wastes, including its potential for emission and dispersal of gases, aerosols and particulates, k. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1082) wastes subject to Subpart CC must be reviewed and updated at least every 12 months, l. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1083 (c)) determination of maximum organic vapor pressure of wastes in tanks,	Many of the items in the list are addressed in other parts of the comprehensive Part B permit request. They are not repeated in Appendix B. Responses to Comments 30 (a-y) are presented below. a. 20 NMAC 4.1.500/40 CFR 264.13(c)(3) is for procedures that will be used at an off-site landfill receiving containerized wastes to determine if a generator or treater has added biodegradable sorbent to the waste in the container and is not applicable to storage or treatment on site. Records are discussed in Section 9.0 (formerly Appendix H) of the General Part B. b. Training is discussed in Appendix D and in Section 4.0 (formerly Attachment D) of each Module c. Descriptions and quantities of each RCRA-regulated waste treated or stored are part of the operating record, as indicated in Section 9.0 of the General Part B (formerly Appendix H). d. Records and results of waste analyses and waste determinations are part of the operating record, as indicated in Section 9.0 (formerly Appendix H). e. Notices and certifications, including those required by 20 NMAC 4.1.500/40 CFR 264.73(b)(12) and (16), are part of the operating record, as addressed in Section 9.0 (formerly Appendix H). f. Please see response to Comment 30(e). g. Please see response to Comment 15(a). h. There is no treatment or storage of RCRA-regulated waste in tanks at SNL/NM Units. i. Please see response to Comment 30(h). j. The TTF is a miscellaneous unit, and is subject to environmental performance standards in 20 NMAC 4.1.500/40 CFR 264.601. These are addressed in Sections 2.6 and 9.0 of Module II. Waste characterization for wastes to be treated at the TTF is addressed in revised Section B.3.2.1of the WAP, and characterization of TTF treatment residues (ash) is addressed in Section B.3.3.1 (some of the text in both of these sections of Appendix B was formerly in Attachment B of Module II). k. Text addressing this issue has been incorporated into revised Section B.5.3 (formerly Section B.5.4) of Appendix B. l. Please see response to Comment 30(h).

Number	NMED Comment	DOE/Sandia Response
	m. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(2)(i)) LDR – if treatment standard attainment is not known, generator requirement to provide treatment or storage facility certification statement regarding listed wastes in contaminated soils, n. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(2)(i)) LDR - generator requirement to provide treatment or storage facility the contaminated soils certification, o. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(3)(iii)) notice of waste process changes, p. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(7)) waste analysis information must be kept for three years, q. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (b)(4)) treatment facilities record of notice to disposal facility of proper treatment and no dilution, r. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (b)(4)(iv) and (v)) treatment facilities record of notice to disposal facility of underlying hazardous constituent status, s. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.9 (b)) if waste is both listed and characteristic, special treatment standards, t. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.9 (d)) de-characterized waste's underlying hazardous constituents, u. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.40 (c)) treatment for land disposal must attain the lowest applicable standard, v. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.49) alternative treatment standards for soils to be land disposed, w. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.50) prohibitions on storage of wastes unless LDR treatment standards have been met, x. 20.4.1.900 NMAC (incorporating 40 CFR Section 270.15 (b)(1)) Part B testing information for free liquids in containers, y. 20.4.1.900 NMAC (incorporating 40 CFR Section 270.23 (d)) analytical report on effectiveness of treatment in Subpart X unit.	m. DOE/Sandia will make the applicable notifications and certifications specified in 20 NMAC 4.1.800/40 CFR 268.7(a) for RCRA-regulated wastes treated at the TTF, RMWMF, or AHCF. Text addressing this issue has been incorporated into Section B.5.2.3 (formerly Section B.5.3) of the revised WAP. n. Please see response to Comment 30(m). o. Please see response to Comment 30(m). p. It is not clear whether NMED is referring to 20 NMAC 4.1.800/40 CFR 268.7(a)(7) or (a)(8). DOE/Sandia interpret it as (a)(8). Please see response to Comment 30(m). q. Text addressing this issue has been incorporated into Section B.5.2.3 (formerly Section B.5.3) of the revised WAP. r. Text addressing this issue has been incorporated into Section B.5.2.3 (formerly Section B.5.3) of the revised WAP. s. DOE/Sandia will make the applicable notifications and certifications specified in 20 NMAC 4.1.800/40 CFR 268.9(b) for RCRA-regulated wastes treated at the TTF, RMWMF, or AHCF. Text addressing this issue has been incorporated into Section B.5.2.3 (formerly Section B.5.3) of the revised WAP. t. Text addressing this issue has been incorporated into Section B.5.2.2 (formerly Section B.5.3) of the revised WAP. u. Text addressing this issue has been incorporated into Section B.5.2.2 (formerly Section B.5.3) of the revised WAP. v. A reference to 20.4.1.800 NMAC/40 CFR 268.49 has been incorporated into Section B.5.2.2 (formerly Section B.5.3) of the revised WAP. w. Text addressing this issue has been incorporated into Section B.5.2.1 (formerly Section B.5.3) of the revised WAP. x. Text addressing this issue has been incorporated into Section B.3.1 of the revised WAP. y. Treatment effectiveness is discussed in Section 8.2 (formerly Attachment G) of Module II.

Number	NMED Comment	DOE/Sandia Response
	GENERATOR CHARACTERIZATION	
31	Information submitted in the WAP should include, but not be limited to: a. An expanded and more detailed discussion of waste types and waste generation activities at SNL. Describe waste production processes including raw materials, end products and intermittent sources of waste. b. Identify historical or published information on the waste particularly relevant to the utilization of AK. c. Describe site-specific representative sampling methods, including identification of grab or composite samples, the number of samples taken, use of random sampling or sampling of all discrete waste units. d. A specific presentation of information submitted by waste generators and schedule of generator audits or inspections. e. Indicate selected waste analysis parameters and rationale in the general site requirements and unit specific parameters and requirements as necessary. f. dentify waste analysis procedures and methods for determining waste compatibility, including: • methods to show compatibility with other wastes • methods to show compatibility with equipment surfaces • methods to show compatibility with liners and leachate collection systems • methods to show waste treatability if the treated waste is considered non-hazardous after treatment	Many of the items in the list are addressed in other parts of the comprehensive Part B permit request. They are not repeated in the Appendix B. Responses to Comments 31(a-g) are presented below. a. The production processes, raw materials, end products, and intermittent sources of waste are already addressed in general terms. It is not feasible to provide more detailed descriptions of individual wastes because of the variations associated with R&D operations and other waste-generating operations at SNL/NM. Detailed information is included in characterization data as needed for individual RCRA-regulated wastes. b. Please see response to Comment 31(a). c. Please see response to Comment 17. d. A general discussion of information submitted by initial waste generators and the process for evaluating and supplementing/completing that information is included in Section B.3.1 of the revised WAP, together with a discussion of the data quality objectives for information used in waste characterization. However, specific information regarding a schedule of generator audits or inspections is not required or appropriate in a WAP and is not included in the revised WAP. e. A discussion of general DOE/Sandia requirements for waste analysis parameters and the rationale for their selection is (and was) included in Sections B.2.1 and B.2.2. Tables B-2 and B-3 provide additional information regarding the parameters and the rationale for their selection. Each Unit except the TTF can accept all wastes listed in the Part A; thus, there are no Unit-specific parameters and requirements to be included in the WAP. f. Individual items are addressed as follows: • Revised Section 1.1.2.2 (formerly Section 1.1.3) of the General Part B and revised Section 1.2.2 (formerly Section 1.2.3) of each Unit-specific module provide information on determining compatibility and precautions to prevent uncontrolled reactions. A brief discussion of the processes that Unit personnel use to manage potentially incompatible wastes has been added to Section B.5.1 of the revised WAP. In addition, Table B-2 has been revised to add "compatibility" to the right-hand column. • Unit personnel follow the process discussed in revised Section 1.2.2.3 of the General Part B to evaluate the compatibility of wastes with containers in compliance with 20 NMAC 4.1.500/40 CFR 264.172. These same practices apply to compatibility with equipment. • There are no liners or leachate collection systems associated with the Units to be permitted. Therefore, this requirement is not applicable. • Characterization of treated waste is discussed in revised Sections B.3.3.1 and B.3.3.2. The treatment processes are discussed in Modules II, III, and V.

Number	NMED Comment	DOE/Sandia Response
	• procedures for specifying allowable ranges on waste constituent concentrations. • procedures for rejecting waste with component concentrations outside the established tolerance levels or for rejecting otherwise restricted waste. • procedures and methods to obtain waste analysis data and develop necessary information to treat, store or dispose of the waste. g. Specific requirements for waste management activities relative to the use of containers, tanks, surface impoundments, waste piles, land treatment and landfills, as necessary, including but not limited to: • procedures to assure and document compatibility of waste with container • procedures to characterize and manage accumulations in containment systems • procedures to detect free liquids • procedures to identify and manage ignitable, reactive and incompatible wastes • procedures to determine if containers which previously held wastes are contaminated with materials not compatible with present wastes • procedures to demonstrate decontamination at closure	• All RCRA-regulated wastes generated by Sandia Corporation are listed in the Part A. Section 1.1 of each Unit-specific module indicates which wastes are accepted at that Unit. The TTF is the only operating waste management Unit in this permit request with restrictions on the wastes accepted. All other SNL/NM Units in this permit request accept all the wastes listed in the Part A, without restrictions on constituents or their concentrations. The TTF wastes and operations are described in Module II. • Please see response above. The TTF is the only operating waste management Unit in this comprehensive Part B permit request with restrictions on the wastes accepted. All other SNL/NM Units in this permit request accept all the wastes listed in the Part A, without restrictions. • Waste characterization procedures and methods for treatment and storage of RCRA-regulated waste are presented throughout Section B.3 of the WAP. g. Tanks, surface impoundments, waste piles, land treatment, and landfills are not among the Units being permitted at SNL/NM. Therefore, they are not addressed in the revised WAP. • Unit personnel follow the process discussed in revised Section 1.2.2.3 of the General Part B to evaluate the compatibility of wastes with containers in compliance with 20 NMAC 4.1.500/40 CFR 264.172. • New Section B.1.3.12 in the revised WAP discusses characterization of accumulated liquids in containment systems. Unit personnel follow the process discussed in Section 1.1.1 of the General Part B to manage accumulated liquids in compliance with 20 NMAC 4.1.500/40 CFR 264.175. • Please see response to Comment 30(x). • Revised Section 1.2.2.3 of the General Part B discusses management of ignitable, reactive, and incompatible wastes. Additional text regarding management of ignitable, reactive, and incompatible wastes has been added to Section B.5.1 of the revised WAP. Minor revisions to Tables B-2 and B-3 have also been made to address this issue. • Unit personnel follow the process discussed in revised Section 1.2.2.3 of the General Part B to evaluate the compatibility of wastes with residues of wastes previously held in containers in compliance with 20 NMAC 4.1.500/40 CFR 264.172. • Decontamination at closure is addressed in the site-wide closure plan in Appendix F and in the Unit-specific closure plans in Section 7.0 of each Module.

Number	NMED Comment	DOE/Sandia Response
32	Site-Wide WAP Introduction, second paragraph, states; **"The waste analysis information contained in this WAP is specific to storage and treatment in containers and treatment in miscellaneous units."** Because SNL relies heavily on generators to characterize wastes, as is described at Site-Wide WAP Section B.3.1, *Waste Characterization*, and because only the generators are in a position of know particular characteristics of the waste, the WAP must elaborate on generator characterization procedures, including but not limited to the following: a. 20.4.1.300 NMAC (incorporating 40 CFR Section 262.11) and 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(2) and 268.9 (a)) determining whether a waste is hazardous, and if so, what its appropriate waste codes are, b. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(2)) and 20.4.1.800 NMAC (incorporating 40 CFR Section 268.9 (a)) determining all underlying hazardous constituents, c. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(3)(iii)) notice of waste process changes, d. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(1)) determining what constitutes acceptable knowledge (AK) and when AK is sufficient to fully characterize wastes, e. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1083 (a)(1)) determining average VO concentration at the point of waste origination, and f. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1083 (a)(1)(ii)) perform new waste determination whenever changes to the source are likely to cause a change to the average VO concentration.	The process for characterizing wastes and determining whether they are RCRA-regulated wastes involves collaboration between the initial generator and Unit personnel, as described in revised Section B.3.1. a. DOE/Sandia will make the applicable notifications and certifications specified in 20 NMAC 4.1.800/40 CFR 268.7(a) and 268.9(a) for treatment residues that are newly generated as a result of treatment of RCRA-regulated wastes at the TTF, the RMWMF, or the AHCF. Text addressing this issue has been incorporated into revised Section B.5.2.3 (formerly Section B.5.3). b. Please see response to Comment 32(a). c. Please see response to Comment 32(a). d. Please see response to Comment 32(a). e. Revised Section B.5.3 (formerly Section B.5.4) addresses air emission control requirements in 20 NMAC4.1.500/40 CFR 264 Subpart CC. DOE/Sandia assume all RCRA-regulated wastes that contain volatile organics are subject to the Subpart CC standards unless determined otherwise in accordance with 20 NMAC 4.1.500/40 CFR 264.1083(a). f. Please see response to Comment 32(e).
	RE-EVALUATION	
33	Further, information submitted in the WAP should include: a. A plan for, with frequency of reviewing and repeating, initial waste analysis, both on a routine basis and on a contingent basis as required by changes in waste form or generating processes. b. Parameters analyzed for each waste.	a. Revised Section B.3.1.3 or the WAP includes a discussion of the criteria and process for reviewing and repeating initial waste analyses. b. Parameters and characterization methods for wastes are (and have been) listed in Table B-2.

Number	NMED Comment	DOE/Sandia Response
34	Since 20.4.1.500 NMAC, incorporating 40 CFR Section 264.13(a) requires that DOE/SNL repeat waste analysis when necessary to ensure its accuracy, the following information should be included: a. Site-Wide WAP Section B.3.1.3 must be revised for quality assurance purposes to include a commitment to perform comprehensive real-time laboratory analysis on all wastes streams originally characterized without comprehensive laboratory analysis (i.e., using process knowledge) at a rate of ten percent of all such waste streams received in a year selected on a rotational basis. Furthermore, the WAP must be revised for quality assurance purposes to include a commitment to perform annual, comprehensive, real-time laboratory analysis on all routinely generated waste streams (definition required). Revise all other Section language accordingly. Re-evaluation must also occur when there is a non-conformance report associated with a particular waste stream; b. Site-Wide WAP Section B.3.1.3 primarily contains procedures TSFs use to ensure the accuracy of generator waste characterization information. These procedures are already addressed in another sections. The second and third paragraphs are simply reiterations of the initial characterization procedures described in Section B.3.1, third paragraph, and can be simply deleted. The fifth paragraph describes waste characterization associated with waste treatment. As Section B.1.2.11 implies, treatment residuals are newly generated wastes that must be characterized as such. Remove the fifth paragraph. c. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1082) requires that wastes subject to Subpart CC requirements be reviewed and updated at least every 12 months. Site-Wide WAP Section B.3.1.3 must recognize and commit to a process to comply with the Regulation. d. To demonstrate compliance with 20.4.1.500 NMAC (incorporating 40 CFR Section 264.13 (a)(3)(i)) and 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (a)(3)(iii) and 268.7 (b)(3)(i)), the DOE/SNL must provide a description of established Facility Procedures used to identify when processes or operations change for routinely generating hazardous wastes. If procedures do not exist, one must be created and maintained to identify (and flag) when there are changes to the waste generating process or to the raw materials used in the process."	a. "Waste stream" is defined in revised Section B.1.1. Routine generation is one of the criteria included in the definition, and is one of the criteria used in differentiating wastes from waste streams. DOE/Sandia generate wastes and waste streams for which characterization through sampling and analysis is not appropriate for one or more of the reasons described in Section B.3.1.1. Therefore, DOE/Sandia believe it is not useful (or even feasible) to perform "comprehensive real-time laboratory analysis" of wastes or waste streams for which sampling and analysis is/was not appropriate. Revised Section B.3.1.3 discusses the verification/reevaluation criteria that DOE/Sandia use for wastes (verification of 1% of incoming wastes through various methods) and for waste streams (re-evaluation of 10% annually). If acceptable knowledge, or knowledge of process as a subset of acceptable knowledge, was used for the initial waste characterization, then DOE/Sandia will continue to use acceptable knowledge or knowledge of process for verification and/or reevaluation of the waste. b. Paragraphs 2, 3, and 5 have been deleted from Section B.3.1.3 of the revised WAP. c. Recharacterization is discussed in revised Sections B.3.1.3 and B.5.3 (formerly Section B.5.4). d. As discussed in revised Section B.3.1.3, DOE/Sandia will re-characterize waste streams no later than the first time they are generated following a change in processes that generate them. Characterization of treatment residues that are newly generated as a result of treatment of RCRA-regulated wastes at the TTF, RMWMF, or AHCF is discussed in Section B.3.3.

Number	NMED Comment	DOE/Sandia Response
	ACCEPTABLE KNOWLEDGE	
35	Site-Wide WAP Section B.3.1.1.1 presents information on acceptable knowledge (AK), but does not clearly indicate mandatory information and processes that will be followed, how AK will be assessed for usability, and when sampling and analysis will occur if AK is not of sufficient quality. Section B.3.1.2 states that sampling and analysis is "generally performed when a waste lacks sufficient process information to adequately characterize the waste based on acceptable knowledge." However, AK criteria to make such a determination are not presented in the Site-Wide WAP. Identify historical or published information on the waste particularly relevant to the utilization of AK.	Revised Section B.3.1.1.1 includes additional discussion on the use of acceptable knowledge.
36	NMED requires that the Site-Wide WAP must include specific and mandatory criteria for determining when AK is acceptable for waste stream characterization. Criteria used to select AK instead of sampling and analysis must be well defined, mandatory, consistently applied, and of sufficient detail to ensure that the AK used is technically satisfactory. The discussion of AK must include waste stream identification, determination of hazardous constituents including underlying hazardous constituents, associated hazardous waste codes, data assembly and documentation requirements, data evaluation, quality assurance, adequacy decision criteria, and discrepancy resolution. Specify what actions are taken if verification analysis shows AK to be inaccurate. The Site-Wide WAP must discuss the feasibility of process knowledge being of sufficient detail to enable its use in determining attainment of LDR treatment standards. Site-Wide WAP Section B.3.1.1, Acceptable Knowledge, defines AK as process knowledge and supplemental wastes analysis data. If supplemental data or any other past analytical data is used to characterize wastes it shall be evaluated for conformance with the sampling and analysis quality assurance/quality control (**QA/QC**) requirements of the Site-Wide WAP. In fact, NMED will consider that any past laboratory analytical data that meets the WAP QA/QC criteria to satisfy its above referenced policy of requiring characterization of hazardous wastes by sampling and analysis where feasible.	Acceptable knowledge is discussed in revised Section B.3.1.1, and the criteria for determining whether acceptable knowledge is sufficient for waste characterization are included in the data quality objective process discussed in revised Section B.3.1.
37	Site-Wide WAP Section B.5.3 fourth paragraph states that sampling or AK will determine attainment of treatment standards. Revise the Site-Wide WAP to include very specific criteria for determining acceptability when AK is used to determine attainment of the very low concentration LDR treatment standards.	Revised Section B.5.2.2 (formerly Section B.5.3) includes a reference to Section B.3.1.1 regarding acceptable knowledge. Section B.3.3 has also been revised to note when treated wastes will be characterized using acceptable knowledge or other non-analytical methods (e.g. when certain treatment technologies are specified and used to treat a waste).

Number	NMED Comment	DOE/Sandia Response
38	Information submitted in the WAP should also include the following: a. Rationale for site-specific selection of waste analysis parameters, including rationale and justification for utilizing acceptable knowledge (AK) in lieu of laboratory analysis. b. Analytical test methods used. c. Representative sampling methods including number of samples; grabs, composites; timing of sample collection, and related conditions. d. Waste analysis results and information provided by generators. e. Waste analysis procedures and methods for testing ignitability, reactivity, and compatibility. f. Methods and QA/QC requirements including (as necessary): QA organization and responsibilities, representative sampling procedures, chain of custody procedures and documentation, calibration procedures, analytical procedures, data validation, reporting and storage procedures, audit requirements, corrective action procedures. g. Waste analysis procedures for each waste movement, including: examples waste generator (DR) forms, screening of all wastes for consistency with manifest and associated sampling methods, procedures for verifying that received is the expected waste, and procedures for screening restricted waste.	Many of these issues are addressed in responses to other comments, as noted. a. Parameters and rationale are summarized in Table B-2. b. Analytical methods are summarized in Table B-3. c. Please see response to Comment 17. d. Information provided by the initial generators is discussed in Section B.3. e. Please see response to Comment 38(e). f. Revised Section B.3.1.2 includes additional discussion of quality assurance/quality control during sampling and analysis. g. These requirements are applicable to wastes received from off-site sources, and are discussed in Section B.4. The requirements are not applicable to wastes generated at SNL/NM, where Sandia Corporation is the generator, as described in the beginning of Appendix B.
	TREATMENT	
39	The permit Applicants must also provide information that addresses the following specific requirements for waste management activities relative to the use of containers, tanks, surface impoundments, west piles, land treatment and landfills, as necessary, including but not limited to: a. Procedures to assure and document compatibility of waste with container b. Procedures to characterize and manage accumulations in containment systems c. Procedures to detect free liquids d. Procedures to identify and manage ignitable, reactive and incompatible wastes e. Procedures to determine if containers which previously held wastes are contaminated with materials not compatible with present wastes f. Procedures to demonstrate decontamination at closure.	Please see response to Comment 31(g).

Number	NMED Comment	DOE/Sandia Response
40	The Site-Wide WAP and unit-specific Modules fail to describe DOE/SNL's hazardous waste treatment goals; a factor that significantly influences which waste analysis regulatory requirements is applicable. The Site-Wide WAP must include a waste treatment section similar to that for stored waste (Section B.1.2). The treatment section must identify all waste streams (or general waste stream types) that will be treated, all possible treatment goals with respect to the chemical and physical characteristics of the waste, and specify what waste treatment residual characterization will be performed to verify that the goal has been accomplished.	New Section B.1.4 includes a discussion of the waste streams to be treated and the treatment goals. New Section B.3.3 includes a discussion of waste characterization for treatment-derived wastes. Treatment goals are also discussed in Section 8.0 of the Unit-specific modules for each Unit where DOE/Sandia perform treatment.

Number	NMED Comment	DOE/Sandia Response
41	Treatment of hazardous waste has numerous waste analysis regulatory requirements that must be addressed in the Site-Wide WAP, including but not limited to: a. 20.4.1.300 NMAC (incorporating 40 CFR Section 262.10 (h)) requirement that treatment facilities (i.e., units) abide by all regulations applicable to generators of hazardous wastes including the determination of whether the treatment residue is a hazardous waste and what waste codes apply, b. 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1083 (b)) requirement specifying the procedure used to determine average VO concentration for treated wastes, c. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (b)) requirement that treatment facilities specify in a WAP the waste testing frequency and whether the analytical method is performed on treatment residue or on an extract of the residue, d. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (b)(3)(ii)) requirement that a treatment facilities keep a record of a notice to a disposal facility containing the following information; the treated waste's new waste code, whether the new waste is subject to LDRs, the identification of underlying hazardous constituents, determination of the waste's wastewater/non-wastewater category, waste analysis data (when available), what hazardous constituents are in soils, and particular certification statement(s), e. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.9 (b)) requirement specifying particular treatment standards for wastes carrying both listed and characteristic waste codes, and f. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.40) requirement addressing treatment standards in general including the requirement that mixtures of wastes attain the lowest applicable treatment standard. g. Site-Wide WAP fails to acknowledge that any ash or debris generated from the treatment of a waste stream containing a listed hazardous waste remains a "derived from" listed hazardous waste as specified at 20.4.1.200 NMAC (incorporating 40 CFR Section 261.3 (c)(2)(i)). h. Underlying hazardous constituents (UHC) are mentioned in Site-Wide WAP Section B.1.2.11, *Treated Wastes and Treatment Residuals*, as possible post-treatment analytes that may have been present in the untreated waste and potentially introduced by the treatment process. DOE/SNL must elaborate on how and what hazardous constituents might be introduced during the treatment process.	DOE/Sandia will characterize treatment residues that are newly generated as a result of treatment of RCRA-regulated wastes at the TTF, the RMWMF, or the AHCF, as discussed below: a. New Section B.1.4 indicates that Unit personnel will use the waste characterization procedures in the WAP to determine whether treated wastes and treatment residues are RCRA-regulated wastes and to assign EPA Hazardous Waste Numbers. b. Please see response to Comment 32(e). c. Revised Section B.3.1.3 includes a discussion of frequencies for testing treated wastes. Revised Section B.5.2.2 (formerly Section B.5.3) discusses whether the analysis is performed on treatment residue or on an extract of the residue. d. The recordkeeping requirements of 20 NMAC 4.1.800/40 CFR 268.7(b)(3)(ii) are addressed in Section 9.0 (formerly Appendix H) of the General Part B. e. Please see response to Comment 30(s). f. Revised Section B.3.1 includes a discussion of the limited instances in which DOE/Sandia mix RCRA-regulated and non-RCRA-regulated wastes. The resulting mixture is characterized as needed to obtain sufficient information for on-site management. As noted in Revised Section B.5.2.1, DOE/Sandia assume that all RCRA-regulated wastes managed at SNL/NM Units are restricted from land disposal (i.e., they do not meet the applicable treatment standards) except as described therein. g. New Section B.3.3 discusses characterization of treatment residues that are newly generated as a result of treatment of RCRA-regulated wastes at the TTF, the RMWMF, or the AHCF. Please see response to Comment 15(h) regarding characterization of ash from the TTF. h. As noted in new Section B.3.3, treatment processes such as chemical deactivation at the RMWMF may introduce additional hazardous constituents.

Number	NMED Comment	DOE/Sandia Response
	AIR EMISSIONS	
42	Site-Wide WAP Section B.5.4 essentially reiterates a portion of the applicable regulations and provides little information on the procedures DOE/SNL will use to comply. DOE/SNL must revise the Section to reference all applicable waste characterization requirements of 20.4.1.500 NMAC (incorporating 40 CFR Section 264, Subpart CC) and specify how it will comply with those regulations.	Revised Section B.5.3 (formerly Section B.5.4) discusses waste characterization that DOE/Sandia perform for compliance with 20 NMAC 4.1.500/40 CFR 264 Subpart CC. Additional discussion is included in revised Section 1.1.4.6 (formerly Section 1.1.6.6) of the General Part B.
43	Section B.5.4 states that generators are responsible for determining Subpart CC compliance and may do so based on AK. The Section does not reference the AK process specified at 20.4.1.600 NMAC (incorporating 40 CFR Section 265.1084 (a)(4)), as is required by 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1083 (a)(2)). Nor does the Section reference the direct sampling and analysis requirements at 20.4.1.600 NMAC (incorporating 40 CFR Section 265.1084 (a)(3)). DOE/SNL shall attach the waste analysis procedure for determining volatile organic concentrations referenced in GPB Section 1.1.6.6, *Preventing Releases to the Atmosphere*, Page SW-12 to the Site-Wide WAP.	Text has been added to revised Section B.5.3 (formerly Section B.5.4) to reference 20 NMAC 4.1.600/40 CFR 265.1084(a)(3) and (4) requirements. Because the waste analysis procedure for determining volatile organic concentrations is contained in the cited regulations, the procedure itself is not attached in the revised WAP.

Number	NMED Comment	DOE/Sandia Response
44	DOE/SNL must clarify in the WAP which hazardous wastes are exempt as suggested in the Site-Wide WAP Section B.5.4, third and sixth paragraphs. A hazardous waste management unit used *solely* (emphasis added) for mixed waste *in accordance with all applicable regulations* (emphasis added) under the Atomic Energy Act and the Nuclear Waste Policy Act is exempt from Subpart CC requirements under 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1080(b)(6)). WAP language has stretched the definition of "waste management unit" to include "waste management areas" within a unit. Provide justification for this interpretation. DOE/SNL must also explain in the WAP how it might demonstrate its compliance with all the above referenced applicable regulations.	The Subpart CC applicability of mixed waste stored in containers has been and is still deferred pending the resolution of inconsistencies between the Atomic Energy Act (AEA) and RCRA requirements. This comment implies that the terminology "hazardous waste management unit" and "waste management unit," as used in the cited regulation, are the same. The former term, although similar, describes storage facilities, such as container storage units (included in 20 NMAC 4.2 and 20 NMAC 4.1.101), and the latter term has been used in a more general sense by the EPA to include discrete containers in Subpart CC. DOE/Sandia note that the phrase "the waste management unit" is used in conjunction with "**a** tank, surface impoundment, or container" or "**each** ... container" (emphasis added) throughout 20 NMAC 4.1.500/40 CFR 264 Subpart CC. This indicates that individual containers (rather than entire container storage areas) are the units that are subject to the air emissions standards. The text in Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to reflect this more clearly. DOE/Sandia also note that the term "waste management unit" does not appear to have been modified in 20 NMAC 4.1.500/40 CFR 264.1080(b)(6) since the original regulation was promulgated on December 6, 1994. Sections IV.F and VII.A.1.d (*Federal Register*, Vol. 59, December 6, 1994, pages 62903 and 62914) of the preamble to the rule contain explanatory language that indicates the temporary deferral for radioactive mixed wastes was to be applied on the basis of individual containers. Section IV.F states that ". . the EPA has decided to temporarily defer application of Subpart CC standards to tanks, containers, and surface impoundments which are being used solely to manage radioactive mixed wastes . ." DOE/Sandia note the similarity of the explanation with the actual text of 20 NMAC 4.1.500/40 CFR 264.1080(b)(6). The technical basis for the deferral is explained in Section VII.A.1.d using drums and venting as an example of non-compatibility with radioactive mixed waste handling procedures. The subsequent discussion clarifying the use of the term "solely" in the specific regulation (*Federal Register*, Vol. 61, February 9, 1996, page 4904) does not address or change the use of the term "waste management unit." Overall, the title of the regulation and the examples and discussions used throughout the developmental language for the regulation appear to limit the Subpart CC requirement to containers rather than container storage units. Although the Subpart CC requirements cannot be applied to mixed waste through conditions in the RCRA-regulated waste facility permit until the technical basis for the mixed waste deferral in 20 NMAC 4.1.500/40 CFR 264.1080(b)(6) are resolved, DOE/Sandia manage this waste in a substantially equivalent manner, except for those instances where the Subpart CC requirements are in opposition to AEA requirements. DOE/Sandia are subject to DOE orders and policies, including those pertaining to management of radioactive wastes. DOE/Sandia manage wastes in accordance with the applicable requirements of DOE policies implementing the Atomic Energy Act of 1954, as amended. They are not discussed in the comprehensive Part B permit request because DOE policies and management of radioactive wastes are outside the scope of NMHWA and this permit.

Number	NMED Comment	DOE/Sandia Response
45	Air emission issues are addressed in GPB Section 1.1.6.6, *Preventing Releases to the Atmosphere.* The Section states DOE/SNL do not regularly manage RCRA-regulated wastes with organic concentrations greater than 10 percent by weight in applicable process equipment, and that such equipment will be used for less than 300 hours per calendar year. DOE/SNL shall provide a listing of the above referenced process equipment together with their precise location as an attachment to the Site-Wide WAP.	The requirements of 20 NMAC 4.1.500/40 CFR 264.1050(d) state "Each piece of equipment to which this subpart applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment." The requirements of 20 NMAC 4.1.500/40 CFR 264.1050(f) state that "Equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year is excluded from the requirements of §§ 264.1052 through 264.1060 of this subpart if it is identified, as required in § 264.1064(g)(6) of this subpart." 20 NMAC 4.1.500 /40 CFR 264.1064(g)(6) requires that DOE/Sandia identify, "either by list or location (area or group) of equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year" but does not require that such a list be provided in the application. Section 9.0 (formerly Appendix H) of the General Part B includes a list of records that will be maintained at each Unit. The last item on the list is "Air emissions records (as specified in 20 NMAC 4.1.500/40 CFR 264.1064 and 264.1089 [6-14-00])." This item includes the equipment list required under 20 NMAC 4.1.500 /40 CFR 264.1064(g)(6).
46	GPB Section 1.1.6.6, *Preventing Releases to the Atmosphere*, Page SW-12, and GPB Appendix B, *Site-wide Wastes Analysis Plan*, Section B.5.4, *Procedures to Ensure Compliance with Air Emission Requirements*, state that wastes subject to 20.4.1.500 NMAC (incorporating 40 CFR Section 264 Subpart CC) requirements are stored in primary containers with a design capacity less than or equal to 0.1 m^3. Waste stored in container with this volume are exempted from Subpart CC by 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1080 (b)(2)). DOE/SNL must clarify.	The referenced language has been deleted from the text in Section B.5.3 (formerly Section B.5.4), and the discussion of wastes that are exempt from Subpart CC requirements has been clarified. Additional discussion of exempt wastes is included in revised Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B.

Number	NMED Comment	DOE/Sandia Response
	LAND DISPOSAL RESTRICTIONS (LDRS)	
47	Revise the Site-Wide WAP to more thoroughly specify waste characterization requirements and procedures required to comply with LDRs under 20.4.1.800 NMAC (incorporating 40 CFR Part 268), including but not limited to: a. The storage prohibitions at 20.4.1.800 NMAC (incorporating 40 CFR Section 268.50). DOE/SNL must identify in the Site-Wide WAP those wastes it will not characterize for LDR standards in compliance with the Federal Facility Compliance Order mandated Site Treatment Plan (**STP**). Furthermore, if DOE/SNL does intend to store hazardous waste not listed in the STP for longer than one year, the Site-Wide WAP must recognize the waste characterization requirement to show that the wastes have attained LDR treatment standards. b. Characteristic waste analysis requirements at 20.4.1.800 NMAC (incorporating 40 CFR Section 268.9). DOE/SNL must specify in the Site-Wide WAP how generators will determine underlying hazardous constituents (**UHC**)s in compliance with 20.4.1.800 NMAC (incorporating 40 CFR Section 268.9 (a)). c. Testing frequency of treated waste at 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7(b)). Testing frequency of treated waste must be specified in the Site-Wide WAP. d. UHC Certification Statements at 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7 (b)(4)(iv) and (v)). Recognize in the Site-Wide WAP the record keeping requirements of the applicable certification statements.	DOE/Sandia assume that RCRA-regulated wastes in storage at SNL/NM Units do <u>not</u> meet LDR treatment standards and are restricted from land disposal, unless characterization data (including analytical data and/or acceptable knowledge) indicate otherwise. Such data are part of the operating record for the waste and are maintained in the same manner as data for all other wastes, as discussed in Section 9.0 (formerly Appendix H) of the General Part B. Therefore, separate mention is not needed. a. RCRA-regulated wastes that do not meet the treatment standards are subject to the prohibition on storage for longer than one year in 20 NMAC 4.1.800/40 CFR 268.50(a). Wastes that are subject to the Federal Facilities Compliance Order between DOE, Sandia, and NMED (October 1995) are exempt from the storage prohibition, as noted in Section B.5.2.1 in the revised WAP (formerly Section B.5.3). Information regarding whether a waste is subject to the FFCO is part of the operating record for the waste and is maintained in the same manner as data for all other wastes, as discussed in Section 9.0 (formerly Appendix H) of the General Part B. DOE/Sandia note that wastes subject to the FFCO are <u>not</u> exempt from characterization requirements. b. DOE/Sandia will characterize treatment residues that are newly generated as a result of treatment of RCRA-regulated wastes at the TTF, RMWMF, or AHCF in accordance with 20 NMAC 4.1.800/40 CFR 268.9(a). Text addressing this issue has been incorporated into Section B.5.2.3 (formerly Section B.5.3) of the revised WAP. c. Section B.3.1.3 has been revised to address frequencies for testing treated waste. d. The certification statements were and are included in the records discussed in Section 9.0 of the General Part B (formerly Appendix H). The information in Section B.5.2.3 of the revised WAP (formerly Section B.5.3) has been reorganized and revised to more explicitly refer to required LDR certifications.
48	Site-Wide WAP Section B.5.3 second paragraph states that Permittees will comply with requirements to test treated wastes as stipulated at 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7(b)) for off-site waste received at the Facility for treatment. 20.4.1.800 NMAC (incorporating 40 CFR Section 268.7(b)) applies to all waste treated at the Facility, not just off-site waste. DOE/SNL must alter the Application accordingly.	The text in Section B.5.2.2 of the revised WAP (formerly Section B.5.3) has been modified to clarify that the requirements of 20 NMAC 4.1.800/40 CFR 268.7(b) also apply to wastes treated at SNL/NM Units.

Number	NMED Comment	DOE/Sandia Response
	WASTE ANALYSIS PLAN SPECIFIC TO MIXED WASTES	
49	The application states that mixed wastes will be managed at the Radioactive and Mixed Waste Management Facility and the Auxiliary Hot Cell Facility. If this is the true, the application must categorically state that mixed wastes "will not" be managed at any other permitted location or unit.	Radionuclides are not regulated under NMHWA or the regulations in 20 NMAC 4.1 that govern the activities that are described in this application. Therefore, DOE/Sandia do not believe it is necessary or appropriate to specify whether radionuclides are present or absent in RCRA-regulated waste managed at any of the Units. The presence of radionuclides is indicated where it is appropriate with respect to compliance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC (described in Section 1.2 of the General Part B and each Unit-specific module) and Section B.5 of the WAP (Appendix B).
50	The Site-Wide WAP must include a separate section on mixed-wastes addressing the 20.4.1.500 NMAC (incorporating 40 CFR Section 264.1080 (b)(6)) Subpart CC exclusion of mixed wastes. Note that the Regulation excludes wastes managed in a unit used "only" for the management of radioactive mixed wastes. DOE/SNL must provide its reference regarding the exclusion extending to separate waste management areas within a unit mentioned in Section B.5.4, last paragraph. Also, if DOE/SNL wishes to make use of the exclusion, it must provide unit specific documentation that the wastes are managed in accordance with the Atomic Energy Act and the Nuclear Waste Policy Act.	Please see response to Comment 44.
51	Site-Wide WAP Overview Section 1.0, *Background*, page ii, last paragraph states that some of the wastes stored at the Auxiliary Hot Cell Facility "are subject to the Federal Facilities Compliance Order (FFCO). The Application must categorically clarify whether mixed wastes are to be stored or treated at any other permitted hazardous waste management unit.	Please see response to Comment 49.
52	The FFCO allows SNL to store mixed wastes with hazardous constituents exceeding the land disposal treatment standards stipulated at 20.4.1.800 NMAC (incorporating 40 CFR Section 268.50) beyond the one-year limit. Because of its implications for the waste analysis requirements for mixed waste, the FFCO and its associated Site Treatment Plan must be elaborated upon in the Site-Wide WAP.	RCRA-regulated wastes that do not meet the treatment standards are subject to the prohibition on storage for longer than one year in 20 NMAC 4.1.800/40 CFR 268.50(a). Wastes that are subject to the Federal Facilities Compliance Order between DOE, Sandia, and NMED (October 1995) are exempt from the storage prohibition, as noted in Section B.5.2.1 in the revised WAP (formerly Section B.5.3). Information regarding whether a waste is subject to the FFCO is part of the operating record for the waste and is maintained in the same manner as data for all other wastes, as discussed in Section 9.0 (formerly Appendix H) of the General Part B.
	REQUIREMENTS FOR IGNITABLE REACTIVE, AND INCOMPATIBLE WASTE GENERAL PART B, SECTION 1.1.3, PAGE SW-7;	
58	Identify the section of the WAP that deals with the procedures for characterizing these wastes.	As discussed in the WAP (Appendix B) Section B.3, wastes are characterized using acceptable knowledge or sampling and analysis. For wastes characterized using sampling and analysis, the EPA SW-846 procedures for characterizing ignitable and reactive wastes are identified in Table B-3 of the revised WAP. Compatibility is discussed in revised Section 1.1.2.2 (formerly Section 1.1.3) of the General Part B. DOE/Sandia determine compatibility in accordance with 20 NMAC 4.1.500/40 CFR 264, Appendix V, or equivalent information.

Number	NMED Comment	DOE/Sandia Response
	CLOSURE PLAN – APPENDIX F General Comments:	
91	Generally, the information in the Site-Wide Closure Plan, Appendix F, lacks the range of information and depth of detail to function as intended. In addition, it appears that the only unit specific information presented in module specific attachments F is data on the maximum volume of waste stored during the life of the facility.	The site-wide Closure Plan (Appendix F) has been revised to provide additional detail regarding closure procedures applicable to all RCRA-regulated waste management Units at SNL/NM. Information regarding individual Units is provided in revised Section 7.0 of each Unit-specific module. The complete closure plan for each Unit consists of the site-wide closure plan and the information in Section 7.0 of the Unit-specific module. Before closure of a Unit, the information in the Unit-specific module will be revised as needed (e.g., to provide Unit-specific sampling and analysis plans, or to incorporate updated decontamination technologies) and submitted to NMED for approval, as noted in the closure schedule in Table F-2.
92	DOE/SNL seems to know the regulatory drivers but needs to provide the details of how the closure of the various facilities will be conducted, because the regulations do not provide the procedures that the facility is supposed to use as a cook book at closure. Please elaborate on the requirements by providing more information.	Please see response to Comment 91.
93	As required by the New Mexico Hazardous Waste Management Regulations 20.4.1.500 NMAC, incorporating Section 264.112(b)(4) and (5), the written plan should contain the following: a. Closure performance standards, and how these will be achieved; b. Amendment of Closure Plan, and the rationale for that, the time allowed should also be discussed; c. A detailed description of the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during partial and final closure, including, but not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard; and d. A detailed description of other activities necessary during the closure period to ensure that all partial closures and final closure satisfy the closure performance standards, including, but not limited to, ground-water monitoring leachate collection, and run-on and run-off control. This required information should be provided in the general closure plan, and commensurate with unit complexity and site-specific technical need in the module attachment(s) F.	The revised site-wide closure plan and Section 7.0 of each revised Unit-specific module includes the information as follows: a. Performance standards are discussed in Sections F.3, F.4, and F.5 of the revised site-wide Closure Plan. If necessary, Section 7.0 of the appropriate Unit module will be updated before closure to provide additional Unit-specific information. b. Refer to Section F.8 of the revised site-wide Closure Plan. Additional detail has been provided regarding the rationale and time allowed for closure plan amendments. c. Refer to Sections F.5 and F.6 of the revised site-wide Closure Plan. If necessary, Section 7.0 of the appropriate Unit module will be updated before closure to provide additional Unit-specific information. d. This information is provided in Sections F.5 through F.11 of this revised site-wide Closure Plan, and in revised Section 7.0 of the appropriate Unit module. Soil and groundwater are not expected to be impacted by operations at container storage Units, as they are located inside buildings for protection from the weather, are equipped with impermeable secondary containment systems, and have been regularly inspected and maintained. Likewise, operation of the TTF is not anticipated to impact soil and groundwater, because the treatment occurs on an impermeable surface. However, in the event that soil contamination remains upon completion of closure activities at the TTF, DOE/Sandia will prepare a post-closure plan to address this contamination in accordance with 20 CFR 4.1.500/40 CFR 264.118.

Number	NMED Comment	DOE/Sandia Response
	Specific comments:	
94	While it is commendable that SNL recognized and described the DQO process in support of sampling plan development, 90 again, both the general closure plan and in particular the unit specific attachments lack necessary detail and can not function as an approved, enforceable plan. The existing Appendix and Attachments should be revised to include all necessary detail to support implementation for closure or a statement should be included which clarifies that a unit specific closure plan shall be developed and submitted for approval in the future. An example of a substantial (and consistent) deficiency in the current plan(s) is the absence of site-specific sampling grid or sample location designation on a facility diagram. The closure schedule should also be revised to address this requirement.	The site-wide Closure Plan in Appendix F has been revised to provide details for closure activities applicable to RCRA-regulated waste management units. Detailed Unit-specific information (e.g., sampling and analysis plans, improved decontamination technologies, etc.) will be provided in an updated Section 7.0 of the appropriate Unit module to be submitted to NMED for approval prior to closure of the Unit. The closure schedule presented in Section F.7 of the site-wide Closure Plan has been revised to include the submittal of updated Unit-specific information and NMED approval before closure begins.
	ACTIVE TEST SITES AND ACTIVE SOLID WASTE MANAGEMENT UNITS	
325	In the general part of the Permit application, provide a tabulated list of all outdoor active test sites and active Solid Waste Management Units. The list should include the name of each active test site or SWMU, their location, and a general description of the type or types of testing (for example: Building 6532 Test Site, approximately 100 ft east of Building 6532, Technical Area 3, small-scale explosives testing). The NMED plans to use this information to conduct future RCRA Facility Assessments (RFAs) to ensure that such sites, when decommissioned by SNL, are left in a condition that is protective of human health and the environment. SNL can also use the list to track sites that may need periodic sampling and analysis to protect site workers and the environment.	There are three active SWMUs at SNL/NM: • SWMU 83, Long Sled Track • SWMU 84, Gun Facilities • SWMU 240, Short Sled Track In addition, there are two active septic systems listed on Table A.2: • No. 1004, Bldg. 6969/RVR-Septic System (MO 118/251/252) • No. 1094, Live Firing Range (Coyote Test Field) septic system Active site descriptions and location information is included with the summary sheets in Part 4, Section 2.0 (Volume II). All current testing operations are conducted in accordance with applicable environmental laws and regulations. Upon decommissioning of a testing site, the area surrounding the testing operation will be surveyed to ensure that final cleanup activities are adequate and that no solid waste remains at the area.
	MODULE I: HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) General Comments Maps and Figures	
345	Section 1.2.6.6 Preventing Releases to the Atmosphere, page HWMF-6: This section discusses the use of fume hoods and drum vacuum hoods. What, if any, emission control equipment are on these hoods.	The fume hood and vacuum drum hoods are not equipped with emission control systems. They serve to limit undue exposure of Unit personnel to RCRA-regulated waste constituents. Accordingly, the text about these hoods has been deleted from Section 1.2.4.6 (formerly 1.2.6.6) and moved to Section 1.2.4.5 (formerly 1.2.6.5) of Module I, which discusses measures to prevent undue exposure. As described in Section 1.2.2 (formerly Section 1.2.3) of the General Part B, containers of RCRA-regulated waste are kept closed except when waste is added or removed. As described in Section 1.1.4.6 (formerly Section 1.1.6.6) of the General Part B, the containers that are subject to air emissions standards for containers are maintained in accordance with Container Level 1 standards in 20 NMAC 4.1.500/40 CFR 264.1086(c). Under these standards, waste transfer from one container to another does not require air emission control equipment.

Number	NMED Comment	DOE/Sandia Response
346	Section 1.2.6.6. Preventing releases to the atmosphere, page HWMF-6: Identify each container management area subject to the requirements of 20.4.1.500 NMAC incorporating 40 CFR 264 Subpart CC and what Container Level standards apply to these areas.	The requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC and DOE/Sandia's activities to meet them are described in Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B for all SNL/NM container storage areas, including the HWMF. The containers that are subject to air emissions standards for containers are maintained in accordance with Container Level 1 standards in 20 NMAC 4.1.500/40 CFR 264.1086(c). The waste management areas used for storage of containers that are subject to Level 1 standards are identified in Section 1.2.4.6 (formerly 1.2.6.6) of the HWMF Unit module. DOE/Sandia note that the phrase "the waste management unit" is used in conjunction with "**a** tank, surface impoundment, or container" or "**each** ... container" (emphasis added) throughout 20 NMAC 4.1.500/40 CFR 264 Subpart CC. This indicates that individual containers (rather than entire container storage areas) are the units that are subject to the air emissions standards. The text in Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to reflect this more clearly.
347	Section 1.2.6.6 Preventing Releases to the Atmosphere, page HWMF-6: Provide certify that the requirements of this subpart are met in accordance with 40 CFR 270.27(a)(2).	The heading of Section 1.2.4.6 (formerly 1.2.6.6) in Module I has been changed to indicate that it addresses the requirements of 20 NMAC 4.1.900/40 CFR 270.27(a)(2). The requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC and DOE/Sandia's activities to meet them are described in Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B for all SNL/NM container storage areas, including the HWMF.
348	Section 1.3.2 Container Handling, page HWMF-7P: Provide information on waste acceptance criteria and information on waste tracking at the unit.	The amount and types of information required by Unit personnel for determining whether a waste can be transported the HWMF are discussed in revised Section B.3.1 of the Waste Analysis Plan (Appendix B). The process for tracking wastes is described in new Section B.6.
	MODULE II: THERMAL TREATMENT FACILITY (TTF) GLOBAL COMMENTS	
356	Provide a list of all remote off-site research testing facilities and active solid waste management units (SWMUs).	Please see response to comment 325.
357	Submit information on off-site generated waste accepted for treatment, storage or disposal at DOE/SNL.	DOE/Sandia intend to accept RCRA-regulated wastes generated by off-site Sandia Corporation operations and occasionally from other (non-Sandia) DOE facilities. Due to the variable nature of the operations, the exact nature of future wastes cannot be predicted. However, the wastes are expected to be the same general types as described in Section B.1 of the WAP.

Number	NMED Comment	DOE/Sandia Response
	WASTE ANALYSIS PLAN FOR THE TTF	
359	Submit documentation of compliance with 20.4.1.600 NMAC (incorporating 40 CFR Section 265, Subpart P), and 20.4.1.900 NMAC, incorporating 40 CFR Section 270.32(b)(2): Section 265.375 Waste Analysis: Provide sufficient information regarding quantity, physical, and chemical characteristics of the waste specific to the TTF OB unit. Provide more detail on waste description than that included in the General Part B Permit Application Waste Analysis Plan. Include the halogen content in the waste and concentrations in the waste, of silver, lead, mercury, cadmium, chromium, arsenic, and barium, unless there is documented data that show that these elements are not present. Submit documentation of compliance with Section 265.381, i.e., Closure Requirements.	The information in the TTF WAP (Attachment B to Module II) has been incorporated into the revised site-wide WAP in Appendix B to the General Part B. The information has also been revised to reflect DOE/Sandia plans to use the TTF only for treatment of SASN waste generated during operations in Building 6715. Section B.1.4.1 in the revised WAP (formerly Section B.1 of Module II Attachment B) provides information regarding the physical and chemical characteristics of the SASN waste, which contains silver and nonhalogenated organic compounds. Revised Section 8.1 of Module II provides information on the quantity of the waste that can be treated at the TTF. Additional information about the SASN wastes treated at the TTF is also included in Section 9.0 of Module II. As described in the revised closure plan in Appendix F and in Section 7.0 of Module II, DOE/Sandia will remove all RCRA-regulated wastes and waste residues from the TTF at closure. DOE/Sandia fully expect to successfully complete clean closure of the unit. As noted in Appendix F and Section 7.5 of Module II, DOE/Sandia will prepare a detailed sampling and analysis plan and submit it to NMED for approval before closure. The sampling and analysis plan will address the extent of known or suspected releases at the Unit. The revised Unit-specific information in Section 7.7 includes DOE/Sandia's commitment to prepare a post-closure plan and perform post-closure care in the event that clean closure is not possible, as required by 20 NMAC 4.1.500/40 CFR 264.601.

Number	NMED Comment	DOE/Sandia Response
360	Submit evidence that all the hazardous waste burned at the TTF has the potential to detonate (including waste with low levels of high explosives, i.e., less than 10 percent). Acceptable evidence should include test results such as EPA Publication SW 846, Test Method for Evaluating Solid Waste, Subsection 6-2, Definition of Explosive Material, or the Bureau of Mines Gap Test or Deflagration/Detonation Transition Test. This information is required because RCRA precludes open burning of hazardous waste that is not detonable. [20.4.1.600 NMAC (incorporating 40 CFR Section 265.382), 52 FR 46946, 46952 (12/10/87)]	Revised Sections 1.0 and 8.1 of Module II include additional discussion of the waste treated at the TTF. According to published technical data (Wilden, 1986), the SASN treated at the TTF is categorized as a primary explosive. SASN crystals are formulated in solution and each discrete crystal has the potential to release its stored energy explosively (i.e., detonate). SASN is also a Class A explosive as defined in 49 CFR 173.5. It is not approved for transportation on public roads, manufactured commercially, nor even currently formulated for any known purpose other than the testing performed at SNL/NM. The TTF was specifically built to treat SASN slurry and SASN contaminated waste for these reasons. The wastes treated at the TTF may also contain pentaerythritol tetranitrate (PETN), another explosive compound. As stated in Chapter 7 of SW-846, Section 7.3, the definition of reactivity "is intended to identify wastes that, because of their extreme instability and tendency to react violently or explode, pose a problem at all stages of the waste management process. The definition is to a large extent a paraphrase of the narrative definition employed by the National Fire Protection Association. The Agency chose to rely almost entirely on a descriptive, prose definition of reactivity because most of the available tests for measuring the variegated class of effects embraced by the reactivity definition suffer from a number of deficiencies." The SASN waste meets the EPA characteristic of reactivity (D003), explosive subcategory, and the treatment standard in 20 NMAC 4.1.800/40 CFR 268.40 is deactivation. Virtually all current deactivation processes occur by open burning/open detonation. When considering handling, packaging, transportation, and treatment processes, DOE/Sandia conclude that on-site deactivation through open burning/open detonation is the method most protective of human health and the environment.

Number	NMED Comment	DOE/Sandia Response
361	DOE/SNL must assure compliance with the requirements for minimum distance from open burning to the property of others, [20.4.1.600 NMAC (incorporating 40 CFR Section 265.382)].	Land use around the TTF is described in Section 2.4 of Module II and shown on Figure 6. The land use within SNL/NM TA-III is industrial. The area of KAFB immediately north of TA-III is mostly open. As described in Section 8.1.1 of Module II, the net explosive weight will not exceed 2.4 pounds in any single treatment operation. The requirements for miscellaneous units in 20 NMAC 4.1.500/40 CFR 264 Subpart X (the requirements that DOE/Sandia must meet) do not specify minimum distance requirements for thermal treatment of explosive wastes. DOE/Sandia considers the requirements in 20 NMAC 4.1.600/40 CFR 265.382 to be relevant to the TTF even though they are not strictly applicable to permitted units. 20 NMAC 4.1.600/40 CFR 265.382 specifies a minimum distance of 670 feet to the property of others for detonation of waste explosives in quantities up to 100 pounds. The TTF is located 500 feet from the closest DOE/Sandia property line (at the north end of TA-III). This distance is adequate for the following reasons: • The Unit is currently operating under Permit NM5890110518-2 issued by NMED in November 1994. • The small area of KAFB that is within 670 feet of the TTF is unoccupied. • The Unit will process up to 2.4 pounds of explosives in each treatment operation, substantially less than the 100 pounds for which the 670-foot radius was established. The table in 20 NMAC 4.1.600/40 CFR 265.382 includes minimum distances for various quantities of explosives to be detonated. DOE/Sandia note that the minimum distance is increased by 40% to 80% for each tenfold increase in the quantity of explosives. If that same rule were applied to quantities of explosives less than 100 pounds, the minimum distance associated with detonation of 10 pounds of explosives would be less than 500 feet.
362	Submit an explanation of why the wastes treated or disposed of by open burning at the TTF cannot be treated or disposed of by other methods more protective of human health and the environment. Open burning should be used for treatment only when no other option is available that is more protective of human health and the environment.	Please see response to comment 360.

Number	NMED Comment	DOE/Sandia Response
363	Submit the Storm water Pollution Prevention Plan for the TTF, including details of storm water sampling conducted at the burn site.	Stormwater in SNL/NM TA-III (including the TTF) infiltrates into the soil and does not flow into waters of the US. Therefore, DOE/Sandia are not subject to the requirements in 40 CFR 122 for a stormwater discharge permit and Pollution Prevention Plan under the National Pollutant Discharge Elimination System. Storm water management at the TTF is described in revised Sections 1.2.4.2 and 1.2.1 of Module II and in revised Section B.3.3.1 of Appendix B. • As discussed in Section 1.2.4.2, the TTF site design prevents flooding and runon. The curb around the steel-lined concrete pad serves to contain storm water that collects on the pad. • As discussed in Section 1.2.1, storm water that collects on the pad drains to the catch tank. • DOE/Sandia may choose one of several options for managing the water in the catch tank. These options, and the criteria used in choosing one, are described in Appendix B, revised Section B.3.3.1.
364	Submit data and analysis that demonstrate compliance with performance standards under 20.4.1.500 NMAC (incorporating 40 CFR Section 264.601(a)(7), (a)(8), (a)(9), (b)(10) (b)(11), (c)(1), (c)(2), (c)(6), and (c)(7)) for deposition of contaminants to soil at the TTF from ash or entrained particles resulting from the burning of hazardous waste. This submittal shall include a consideration of the following information: a. submit summaries of ash sampling results and an assessment of the potential risk from ash deposition to soil; b. submit an analysis of possible degradation products of high explosives (HE) that may be generated and the potential risk from levels of the degradation products likely to be found in soil around the burn areas; c. submit information on whether VOC's are released during burning and what are potential quantities of VOC's released; d. submit a comparison of potential levels of contaminants in soil from ash on human health soil screening levels and DOE/SNL ecological screening levels; e. submit representative ash sampling data conducted for the purpose of waste disposal characterization.	Section 9.0 (formerly Attachment G) of Module II has been substantially revised to better address the standards in 20 NMAC 4.1.500/40 CFR 264.601. Revised Section 9.0 includes an analysis of the effects of treatment of SASN wastes at the TTF, with the following information: a. Waste characteristics are addressed in revised Section 9.1.1. The potential for migration from the Unit is discussed in revised Section 9.2. b. The TTF has been used historically for management of SASN wastes and very occasionally for management of other explosives. In the future, DOE/Sandia plan to use it only for management of SASN waste (that may occasionally include PETN), as discussed in the comprehensive Part B permit request. Degradation products are not expected to be formed because the treatment is completely effective, as described in Section 8.2. c. Volatile organic compounds are not expected to be released during treatment, because wastes are not placed in the burn pan until personnel are ready to begin treatment, and Unit personnel keep the burn pan covered if treatment is delayed, as noted in revised Section 9.1.2 (formerly Attachment G). As discussed in Section 8.2 (also formerly Attachment G), the high vapor pressure and low flash point of the volatile organic compounds, combined with the burner design of the Unit (discussed in Section 1.1) make it very likely that the compounds are completely destroyed by combustion after they evaporate from the liquid during treatment. d. The potential effects on human health are discussed in Section 9.3. The potential effects on animals and vegetation are discussed in Section 9.4. e. There are limited data available for the ash from treatment of SASN wastes. Silver was detected at a concentration of 140 mg/kg in the ash. Ash from treatment operations will be characterized for disposal as discussed in the site-wide Waste Analysis Plan in Appendix B, Section B.3.3.1 (formerly Section B.2.1 Attachment B to Module II).

Number	NMED Comment	DOE/Sandia Response
365	Include information into the WAP Section: "DOE/SNL shall analyze for all explosives compounds treated at the TTF OB unit during closure," to include metals, VOCs, SVOCs, and explosives, silver, perchlorate and the following compounds, unless a demonstration can be made that these compounds were not treated at the TTF: a. RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine), b. HMX (Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine), c. TNT (2,4,6-Trinitrotoluene), DNT (2,4- and 2,6-Dinitrotoluene), d. DNB(1,3-Dinitrobenzene), e. HCE (Hexachloroethane), Tetryl (Methyl-2,4,6-trinitrophenylnitramine), f. TNB (1,3,5-Trinitrobenzene), Nitrocellulose, g. TNG (Trinitroglycerol [nitroglycerin]), h. PETN (Pentaeerythritol tetranitrate), Nitroglycerin, i. NQ (Nitroguanidine), j. WP(White phosphorus), and k. EGDN (Ethylene glycoldinitrate)."	The TTF has been used historically for management of SASN wastes and occasionally for management of other explosives. In the future, DOE/Sandia plan to use it only for management of SASN waste (with some PETN), as discussed in the comprehensive Part B permit request. As noted in the site-wide Closure Plan (Appendix F) and in the TTF-specific closure plan in Section 7.0, DOE/Sandia will prepare a detailed sampling and analysis plan and submit it to NMED for approval before beginning closure. The sampling and analysis plan will be developed using records and documentation about all the RCRA-regulated wastes treated at the TTF during its life.
366	Provide a sampling and analysis plan including sampling locations, number of samples, depths and analytes for the TTF during its permitted life.	The closure schedule (Table F-3) in the site-wide closure plan (Appendix F) has been revised to indicate that DOE/Sandia will prepare and submit updated Unit-specific sampling and analysis plans to NMED for approval prior to closure of a given unit. The sampling and analysis plans will be developed using information from the entire operating history of the Unit and the most current relevant technologies.
367	**Module II, Attachment B**, Section B.1.1, Page TTF-B-2, Top paragraph, First sentence "**Description of Acceptable Waste Categories**"; "**Liquid Wastes contaminated with explosives that may be treated in the TTF include water, alcohols, and solvents (e.g. acetone).**" Provide reaction diagrams showing the combustion by-products of acetone, and measures to control their wind dispersal, as required by 20. 4.1.500 NMAC, incorporating 40 CFR Section 264.13(b) and 20. 4.1.900 NMAC, incorporating 40 CFR Section 270.14(b)(3). Further, it should be explained that liquids WILL be treated at the TTF, NOT "liquids may be treated at the TTF". This is to avoid being vague about the proposed treatment of reactive waste at the TTF.	As discussed in revised Section 8.2, DOE/Sandia expect complete combustion of the acetone and acetonitrile present in the SASN waste treated at the TTF. Unburned volatile organic compounds are not expected to be released during treatment, because wastes are not placed in the burn pan until personnel are ready to begin treatment, and Unit personnel keep the burn pan covered if treatment is delayed, as noted in revised Section 9.1.2 (formerly Attachment G). As discussed in Section 8.2 (formerly Attachment G), the high vapor pressure and low flash point of the volatile organic compounds, combined with the burner design of the Unit (Section 1.1) make it very likely that the compounds are completely destroyed by combustion after they evaporate from the liquid during treatment. Module II has been substantially revised to reflect DOE/Sandia plans to use the TTF only for treatment of SASN (with some PETN) waste generated during operations in Building 6715. The revisions include clarification that liquid wastes will be treated at the Unit. Waste analysis information that was formerly in Attachment B is now included in the revised site-wide Waste Analysis Plan in Appendix B. The waste analysis information has been revised to incorporate DOE/Sandia plans for treating SASN wastes and to clarify that liquids will be treated at the TTF.

Number	NMED Comment	DOE/Sandia Response
368	Section B.1.2, Chemical and Physical Properties, Second Sentence **"The RCRA-regulated constituents in the explosive wastes to be treated at the TTF largely consist of the following: ..."Reactive compounds (i.e., high explosives, propellants, pyrotechnics)."** Since the information in General Part B, Waste Analysis Plan only mentions explosives without additional information, please provide a detailed list of all the waste propellants, explosives, and pyrotechnics that DOE/SNL will treat at the OB unit. Include a summary of historical information on the volume and composition of these explosives contaminated wastes. Further, provide a description of the solubility of these wastes in water, mobility in soil and ground water, physical and molecular properties, and sorption properties of the waste relative to environmental media. [NOTE: The list and description presented on page 1-4, in Permit Attachment 1 of the current TTF Operating Permit contains the type of information needed to meet these requirements].	Some additional information regarding explosives was previously included in Attachment B to Module II. That information has been revised to reflect DOE/Sandia plans to use the TTF only for treatment of SASN wastes (which may include some PETN) from operations in Building 6715 and the revised information has been incorporated into the site-wide waste analysis plan in Appendix B. Because only the SASN wastes will be treated at the TTF, there is no longer a detailed list of all the waste propellants, explosives, and pyrotechnics. SASN waste characteristics are described in Section B.1.4.1 of the revised WAP and in revised Section 9.1.1 (formerly Attachment G) of Module II. Because the composition of the SASN is consistent and known based on a well-defined process, there is no need to include a summary of historical information on the composition of this waste. The environmental setting of the TTF (including the presence of surface water and groundwater) is discussed in Section 2.6. Sections 9.1 and 9.2 of revised Module II include evaluations of the potential for releases from the TTF and the migration of released constituents. The chemical properties of the waste constituents were considered in evaluating the migration potential in Section 9.2; therefore, a list of chemical properties is not necessary. At closure, DOE/Sandia will develop a sampling and analysis plan to determine the extent of any releases of constituents of all the RCRA-regulated wastes managed at the Unit during its life, as discussed in revised Section 7.0 of Module II.
369	Describe the parameters for which each waste stream at the TTF will be analyzed, since these were not mentioned in Appendix B of the General Part B Permit application. Explain why KOP will be used in lieu of chemical analysis of the wastes to be treated at the TTF.	Characterization of the wastes to be treated at the TTF is discussed in new Section B.3.2.1 of the site-wide WAP (Appendix B). Note that the information was previously included in Section B.2.1 of the TTF-specific WAP (Attachment B to Module II). As discussed in new Section B.3.2.1 of the site-wide WAP, waste to be treated at the TTF is characterized using knowledge of process instead of chemical analysis for the reasons stated. This explanation was also included in Section B.2.1 of Attachment B (the Unit-specific WAP) submitted to NMED on February 6, 2002.
370	Specify where copies of the Waste Analysis Plan (WAP) will be located at the TTF. Identify the designated personnel position(s) and organization responsible for updating the WAP.	The WAP and other Unit records are maintained at SNL/NM as discussed in Section 9.0 (formerly Appendix H) of the General Part B. The records at the Unit are readily available to Unit personnel and also to NMED upon request. Keeping the WAP at the Unit fully satisfies the requirements of 20 NMAC 4.1.500/40 CFR 264.13(b); additional information is not needed. As the permittee(s), DOE/Sandia are responsible for maintaining the records and updating documentation, including the WAP as needed to reflect changes in Unit operations or regulatory requirements.
	STANDARD OPERATING PROCEDURES AT THE TTF	
377	Module II, Attachment G, Page TTF-G-1, Section G.1, "Treatment Operations": Provide Standard Operating Procedures, including inspection, monitoring, and maintenance plan for the TTF including the OB pan, as required by 20.4.1.900 NMAC, incorporating 40 CFR Section 270.23(a)(2). [Note: The current operating permit, Permit Attachment 9, Pages 9-2 through 9-3 "*Waste Management Operations*" contains the type of detail needed to meet this requirement].	Treatment operations are discussed in detail in revised Section 8.0 of Module II. The TTF equipment is described in detail in Section 1.1, additional aspects of operating the equipment are discussed in Section 1.2, and inspections are discussed in Section 4.0. Together, these contain a complete description of operations that is similar to the description in the current operating permit.

Number	NMED Comment	DOE/Sandia Response
378	Provide the following information on the step-by-step directions on TTF open burning procedures, [i.e., the Standard Operating Procedures]: a. Explosive limits, the annual OB treatment and net explosive weight quantity, based on net explosive weight (NEW); b. Personnel limits during open burning e.g., at least 2 ("Buddy" system); c. Location of the TTF Open burn pan relative to electric power lines, adjacent facilities including the RMWMF; d. Safety precaution, like no smoking during operations; e. Fire fighting equipment to combat grass, brush, or equipment fires; f. Sequence of operation, starting from debriefing of explosive ordnance disposal personnel at the beginning of the operation, loading the burn pan (with waste first, then the donor charge), pouring of the propellant with extreme care to prevent the occurrence of spills, telephone or two-way radio communication during the entire operation, personnel protective cover, raising the flag at the beginning of operations, and notification of other agencies before the burn time; g. Checking treatment effectiveness by inspecting the burning device to ensure that all munitions have been burned; h. Removal and management of ashes, and how soon (i.e., how many hours) after each burn event. Explain how as soon as possible means in the following sentence from paragraph 5, Page TTF-G-3, "**Ash and particulate matter** (residues) **from the thermal treatment process are removed from the burn pan as soon as possible, and the pan is covered between treatments.**"	Not all of the items listed in the comment are applicable to the TTF or its operations; some are applicable to open burning/open detonation of explosives. The rest of the items are addressed in revised Module II as follows: a. The maximum net explosive weight in any single treatment operation is discussed in Section 8.1.1 (formerly Attachment G). b. Several people are typically on site during Unit operation. However, the Unit can be operated by a single person using the console in Building 6715, as described in revised Sections 1.2 and 8.1. c. There are no power lines in the vicinity of the TTF. The surrounding area is described in revised Section 2.0 (formerly Attachment A). d. Safety precautions are discussed in revised Section 1.2.4 (formerly 1.2.6) of Module II and in revised Section 1.1.4 (formerly Section 1.1.6) of the General Part B. e. The soil berms around the TTF are kept clear of vegetation, minimizing the chance of a brush fire caused by treatment operations. Firefighting equipment is discussed in Section 6.0 of Module II and in Appendix E of the General Part B. There is a fire hydrant northwest of Building 6715, as shown in revised Figure 9 (formerly Figure E-1 in Attachment E to Module II). f. Treatment operations (including the sequence of steps) are discussed in revised Sections 8.1 and 1.2. g. Treatment effectiveness is discussed in revised Section 8.2 and in Section B.3.3.1 of Appendix B (this section was formerly part of Attachment B to Module II). h. The burn pan lid is lowered during the cool down period. The length of the cool down period varies, but does not exceed 24 hours. Ash is removed from the pan after cool-down is complete and personnel have determined that treatment was effective, as discussed in revised Section 8.1.2.
379	Description of the TTF OB Treatment Unit, as required by 20. 4.1.900 NMAC, incorporating 40 CFR Section 270.23. Explain how the TTF OB Unit will be managed to control the releases of propellants, explosives, pyrotechnics as well as wind dispersal of ash and particulate matter to the environment, in order to meet the standards required by 20.4.1.500 NMAC, incorporating 40 CFR Section 264.601(a) and 20. 4.1.900 NMAC incorporating Section 270.23(c). In addition, explain what waste management activities the tank that is located outside the TTF between the waste generating building and the OB unit will be used for , since during the site tour of April 24, 2002 DOE/SNL personnel mentioned to NMED personnel that it wasn't currently used to hold hazardous waste destined for, and during burn activities.	Operation of the TTF is discussed in revised Sections 1.2 and 8.1 of Module II. DOE/Sandia do not treat propellants or pyrotechnics at the TTF. In order to control releases of explosive constituents of the waste during treatment, personnel treat small quantities at any one time. Unit personnel lower the burn pan lid as soon as possible after treatment is complete to minimize dispersal of the residue. These and other opportunities for releases to the environment are discussed in revised Section 9.1.2, together with equipment features and operating practices that mitigate the potential for environmental releases and meet the requirements of 20 NMAC 4.1.500/40 CFR 264.601 and 20 NMAC 4.1.900/40 CFR 270.23. The tank located north of the TTF and south of Building 6715 is discussed in revised Section 1.1. The tank collects wastewater from testing operations; the wastewater is not treated at the TTF.

Number	NMED Comment	DOE/Sandia Response
380	Provide a description of methods to control the deterioration of the open burning device, and the installation of a newer cover to prevent the accumulation of precipitation in the OB device during periods of inactivity, since site visit to the OB unit indicated that the cover is deteriorating due to the effects of rust/oxidation.	Because the Unit is located outside, some deterioration due to weather is expected. Unit personnel inspect the equipment as discussed in revised Section 4.0 and revised Appendix C of the General Part B and note deterioration that affects equipment performance. Corrective actions are taken and noted as discussed in Section 4.0. DOE/Sandia are currently refurbishing the test facilities in Building 6715 and will also replace some of the TTF equipment (including the burn pan lid) with newer equivalent equipment.
381	Provide a description of ancillary equipment such as piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of the explosive waste from its point of generation to the OB treatment pan.	Ancillary equipment (liquid transfer lines and a remotely-operated peristaltic pump) is described in revised Section 8.1.4.
382	**Module II, Attachment G**, Page TTF-G-3, Paragraph 6, second sentence, **"If the catch tank is nearing maximum capacity (175 gallons) <u>and the water IS NOT SUSPECTED</u> of being derived from the treatment of RCRA-regulated waste, the water will be discharged to the City of Albuquerque sewer treatment system."** Explain how accumulation of precipitation in the OB container device will be managed and disposed of, as required by 20.4.1.900 NMAC, incorporating 40 CFR Section 270.23(a)(1) and (2). Further, explain why DOE/SNL would use guesswork /suspicion, rather than chemical analysis of the precipitation water to determine whether it is hazardous before reaching a decision on the water quality and the method of disposal without chemical data.	Management of water that accumulates in the catch tank is discussed in detail in revised Section 1.2. As noted, the Unit is operated periodically, and ash is removed soon after treatment. If the precipitation has not contacted ash, it is assumed not to contain any RCRA-regulated waste constituents. In these cases, it is discharged to the sanitary sewer. If wastes have recently been treated, or the precipitation has contacted the ash, it will be analyzed as discussed in Section B.3.3.1 of Appendix B and handled accordingly.
383	Provide an estimate of maximum waste inventory in storage and treatment during the permitted life of the TTF (10 years), as required by 20.4.1.500 NMAC, incorporating 40 CFR Section 264.112(b)(3). In addition, explain the discrepancy in the waste amounts presented in the following sections of the TTF application: Module II, Page TTF-2, Section 1.1, last sentence, "The maximum volume of RCRA-regulated wastes in the TTF burn pan at any time is 20.8 gallons", and Page TTF-E-1, Paragraph 3, First sentence, "The TTF is used to thermally treat (i.e., burn) small quantities (i.e., <u>less than 190 pounds</u> of waste and other solids/liquids combined) of waste substances, waste liquids(e.g., water, solvents) contaminated with explosive substances, and waste items (e.g., rags, wipes, swabs...)". How much is less than 190 pounds?	Module II has been substantially revised to provide additional information about the Unit and also to reflect changes in planned Unit operations. In particular, the types and quantities of wastes to be treated have changed. Waste quantities are described in revised Sections 7.2 and 8.1.1. At closure, DOE/Sandia will provide an estimate of the quantity of waste treated during the life of the TTF. The maximum quantity of waste that can be placed in the Unit for treatment at any one time is equivalent to the volume of the burn pan (20.8 gallons). The mass will vary and could be as great as 190 pounds when liquids or solids are being treated. Note that 20.8 gallons of pure water weighs approximately 175 pounds; water with some solids will have a higher mass. However, the volume that can be placed in the pan is limited by the volume of the burn pan. More than 20.8 gallons of waste may be generated by a test; in that case, the waste would not be placed in the pan all at once.

Number	NMED Comment	DOE/Sandia Response
	SOIL AND VADOSE ZONE MONITORING	
386	Provide the following additional information on soil and vadose zone monitoring program at the TTF, as required by 20. 4.1.500 NMAC, incorporating 40 CFR Section 264.278; Section 264.601(b) and Section 264.13(b). a. Describe sample collection, sample preservation, shipment, sampling and analysis procedures, and chain of custody control, b. Provide details of the sampling and analysis plan for monitoring the vadose zone during treatment operations and for the potential of waste constituents to migrate into the ground water as required by 20.4.1.500 NMAC, incorporating 40 CFR 264.273, c. Describe how background soil samples will be taken, the appropriate locations of the background samples, and depths from which the samples will be obtained.	The TTF is designed and operated to contain the wastes and treatment residues in the burn pan and prevent contact with the soil. The soil berms surrounding the unit provide some protection from wind and precipitation and also serve as a safety barrier in the event of detonation of large pieces of explosive waste. The berms and surrounding soil do not provide treatment in the manner of a land treatment unit that would be subject to 20 NMAC 4.1.500/40 CFR 264.278. The berms and surrounding soil are not expected to contain RCRA-regulated waste constituents. As discussed in revised Section 9.1.2, operation of the TTF is not anticipated to impact soil and groundwater. Therefore, DOE/Sandia do not believe soil and vadose zone monitoring is necessary. DOE/Sandia will develop a sampling and analysis plan for the TTF and submit it to NMED for approval prior to closure, as discussed in Section 7.0 of Module II and Appendix F of the General Part B. DOE/Sandia expect to complete clean closure of the TTF. However, in the event that soil contamination remains upon completion of closure activities at the TTF, DOE/Sandia will prepare a post-closure plan to address this contamination in accordance with 20 NMAC 4.1.500/40 CFR 264.118, as discussed in revised Section 7.7 of Module II.
	CLOSURE AND POST-CLOSURE PLANS In accordance with the requirements contained in 20.4.1.500 NMAC, incorporating 40 CFR Section 264.112 through Section, 264.115, Section 264.115, Section 264.117-118, and 20.4.1.900 NMAC, incorporating 40 CFR Section 270.14(b):	
387	Explain why closure activities specific to the TTF are not described in detail, as contained in the current operating Permit issued in 1994. Provide information on TTF closure addressing the following topics: Closure procedures, Soil and liquid sampling procedures, sample handling and documentation, sample shipping, analysis, and decontamination verification.	Section 7.0 of Module II and Appendix F have been revised to provide some additional information about closure activities. The information is not described in detail because DOE/Sandia will submit a detailed Unit-specific closure plan to NMED for approval prior to initiation of closure activities at the TTF. Specifically, sampling and analysis plans will be developed and submitted to NMED for approval before closure, as noted in revised Section 7.5 of Module II and in the revised site-wide closure plan in Appendix F.
388	Provide information on the TTF OB Unit which should include the following: a. Submit an outline of the procedures for removal of hazardous waste, residues or post investigation derived waste, and contaminated soils as well as the location of disturbed soils when removed; b. Provide the estimated year of closure of the OB Unit; c. Submit a description of the location and number of copies of the Closure and Post-Closure Plans for the TTF OB pan; d. Name the personnel responsible for storage, updating of facility copies of the Closure and Post-Closure Plans, and the procedure for updating all other copies of the subject plans. e. Explain the potential request for extension of closure time.	Before closure, Section 7.0 of Module II will be revised as needed (e.g., to provide Unit-specific sampling and analysis plans, or to incorporate updated decontamination technologies) and submitted to NMED for approval. a. Removal of wastes and residues are mentioned in the revised site-wide closure plan. They will be addressed in detail in the updated plan. b. The estimated year of closure is discussed in revised Section 7.4. Closure is not expected during the life of the permit. c. Copies of the closure plan will be maintained at the TTF, as described in revised Section 9.0 of the General Part B. d. DOE/Sandia personnel will update the closure plan as needed prior to closure, as discussed in Section 7.0. e. If needed, DOE/Sandia will request an extension to time allowed for closure, as discussed in Section F.7 in the site-wide closure plan (Appendix F).

Number	NMED Comment	DOE/Sandia Response
389	Submit a detailed contingency Post-Closure Plan and Post-Closure Care mechanisms as per 20.4.1.500 NMAC, incorporating 40 CFR Section 264.603 in order to fulfill the requirements of 40 CFR Section 264.601. This required information was not included in the Permit Renewal Application.	Operation of the TTF is not anticipated to impact soil and groundwater. However, in the event that soil contamination remains upon completion of closure activities at the TTF, DOE/Sandia will prepare a post-closure plan to address this contamination in accordance with 20 NMAC 4.1.500/40 CFR 264.118. Section 7.7 has been added to the Unit-specific module to address this issue.
390	Present a detailed Quality Assurance/Quality Control Program (QA/QC), or QA/QC Management Plan that will be applied during soil sampling and analysis at closure, to ensure that representative discrete soil samples are taken at, and around the TTF.	General information about QA/QC procedures is included in revised Section F.6 of the site-wide closure plan (Appendix F). Detailed QA/QC procedures for sampling and analysis will be provided in the Unit-specific sampling and analysis plan to be submitted to NMED for approval prior to closure of the TTF, as discussed in Section 7.5 of Module II.
391	Provide a sketch drawing of the TTF showing the locations where confirmatory soil samples will be taken, and the proposed number of samples.	General information about sampling and analysis is included in revised Section F.6 of the site-wide closure plan (Appendix F.) Sample locations will be provided in the Unit-specific sampling and analysis plan to be submitted to NMED for approval prior to closure of the TTF, as discussed in Section 7.5 of Module II.
	PROTECTION OF GROUND WATER	
392	Hydrology as required by 20. 4.1.900 NMAC, incorporating 40 CFR Section 270.23(b). The Permit Applicant must provide a detailed description of the hydrology below the TTF. (This may be available through published or private reports. Include a copy or copies of the references used.).	The hydrology below the TTF and all of TA-III has been studied extensively and characterized as part of ongoing DOE/Sandia activities, including the RCRA corrective action (Environmental Restoration) program. Hydrology information is presented in many Sandia National Laboratories reports, including the "Fiscal Year 2002 Annual Groundwater Monitoring Report" (# 75-1077-5), the "Final Site-Wide Environmental Impact Statement for Sandia National Laboratories" (DOE/EIS-0281), and the Draft SNL Long-Term Monitoring Strategy for Groundwater (Feb 2001). All of these have previously been submitted to NMED. Relevant information about the hydrogeology is summarized in new Section 2.6 of revised Module II. Sources of the information are included in the revised list of references in Section 10.0 (formerly Section 4.0) of Module II.
393	Provide site-specific data for initially characterizing the OB Unit and the surrounding area. Any saturated zones must be identified. Discuss appropriate spatial and temporal intervals for data collection prior to initiating any data collection program.	The general SNL/NM site (including TA-III) has been studied extensively and characterized as part of ongoing DOE/Sandia activities, including the RCRA corrective action (Environmental Restoration) program. The environmental setting is described in new Section 2.6 of revised Module II. As noted there, the uppermost saturated zone is located at a depth of 500 feet. Please see response to comment 392 for additional discussion of site hydrology. DOE/Sandia believe the existing data are adequate for site characterization and an assessment of environmental performance and impacts as required in 20 NMAC 4.1.500/40 CFR 264 Subpart X. Therefore, DOE/Sandia do not propose to perform any additional site characterization at this time.

Number	NMED Comment	DOE/Sandia Response
394	Prevention of Releases Explain what measures will be incorporated into the OB treatment unit design to exclude water from entering the units. [Direct rainfall entering the open burn device could cause a hydraulic head that would drive waste constituents into the vadose zone.	Storm water management at the TTF is described in Sections 1.2.4.2 and 1.2.1 of Module II and in Appendix B, Section B.3.3.1. As discussed in Section 1.2.4.2, the TTF site design prevents flooding and runon. Precipitation falling on the berms and areas around the unit drains off the site toward the west. It does not pond on site. The curb around the steel-lined concrete pad serves to contain storm water that collects on the pad. As discussed in Section 1.2.1, storm water that collects on the pad drains to the catch tank. It does not come into contact with the surrounding soil and does not create a hydraulic head for transport of RCRA-regulated waste constituents that might be present. The water collected in the catch tank is managed as described in new Section B.3.3.1 in the site-wide WAP (Appendix B).
395	Provide information on the nearest ground water monitoring well. List the indicator parameters and hazardous waste constituents that are analyzed for. Include an account of how background values for each proposed monitoring parameter or constituent were determined to meet the requirements contained in 20.4.1.900 NMAC, incorporating 40 CFR Section 270.14(c)(6)(iii).	The TTF is not a regulated Unit as defined in 20 NMAC 4.1.500/40 CFR 264.90(a)(2). It has not released RCRA-regulated wastes in the past. As discussed in Appendix A, Section A.6 of the General Part B, it is not subject to the groundwater protection and monitoring requirements of 20 NMAC 4.1.500/ 40 CFR 264 Subpart F because it is not a regulated unit or solid waste management unit. DOE/Sandia currently have one regulated unit (the Chemical Waste Landfill near the RMWMF in the southeast corner of TA-III) that is subject to the groundwater protection and monitoring requirements of 20 NMAC 4.1.600/40 CFR 265 Subpart F. Groundwater monitoring at the Chemical Waste Landfill is addressed in Part 3 of the comprehensive Part B permit request.
396	Describe how DOE/SNL determine the direction of ground water flow at the TTF, the rate of flow. [20.4.1.500 NMAC, incorporating 40 CFR Section 264.601(a)(5)].	The hydrology below the TTF and all of TA-III has been studied extensively and characterized as part of ongoing DOE/Sandia activities, including the RCRA corrective action (Environmental Restoration) program. Please see response to comment 392 for additional discussion. Groundwater in the area near the TTF flows toward the west, as discussed in new Section 2.6 of revised Module II.
397	Provide an account of the precipitation patterns at the TTF, proximity to, and withdrawal rates of current and potential ground water users, as required by 20.4.1.500 NMAC, incorporating 40 CFR Section 264.601(b)(3) and 40 CFR Section 264.601(b)(5).	The environmental setting of the TTF is described in new Section 2.6 of Module II. It includes information about precipitation and groundwater in the vicinity of the TTF, in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264.601(b)(3) and (b)(5).
398	Include an account of water quality standards, water quality data and uses. These data will allow NMED to evaluate the impact of the activities at the OB Unit on surface aquatic environment in compliance with the requirements of 20.4.1.500 NMAC, incorporating 40 CFR Section 264.601(b)(7), and 40 CFR Section 264.601(b)(8).	The environmental setting of the TTF is described in new Section 2.6 of Module II. Water quality standards, water quality data, and uses of surface water are not applicable to the Unit, because there is no surface water in the vicinity of the TTF. The nearest surface water is the Rio Grande, 7 miles west of the TTF. There is no surface water flow from TA-III to the Rio Grande, and operation of the TTF will not affect the river.

Number	NMED Comment	DOE/Sandia Response
	AIR QUALITY ASSESSMENTS Please submit the following information to NMED, as required in 20.4.1.500 NMAC, incorporating 40 CFR Section 264.601(c)(1) and 20.4.1.900 NMAC, incorporating 40 CFR Section 270.23(b):	
399	Provide a description of the operating conditions of the OB Unit on a case-by-case basis. [Examples are: not to expose ash residues from the OB unit to the open air when wind speed is greater than 15 miles per hour (24 km/hr), allowable quantities of waste at the OB pan per event, operating time frames, acceptable meteorological conditions (e.g., how many inches of rain does the area where TTF is located receive per year), ambient air monitoring requirements, meteorological monitoring etc.].	Treatment operations are described in detail in revised Section 8.1 of Module II. Some information about operations is also included in revised Section 1.2. The information in Section 8.1 includes operating times, operating conditions (including weather), operating practices, and quantities of waste treated. New Section 2.6 in Module II describes DOE/Sandia's ongoing meteorological and ambient air quality monitoring programs. Data indicate that ambient air quality is in compliance with New Mexico and national ambient air quality standards. In addition, the risk assessment in revised Section 9.3 of Module II indicates that operation of the TTF does not present a hazard to personnel in the area. As noted in revised Section 1.2.4.6 (formerly 1.2.6.6), DOE/Sandia operate the TTF under the terms of a permit for open burning of explosives issued by the Albuquerque / Bernalillo County Air Quality Control Board. The current permit does not require air monitoring associated with the treatment process. DOE/Sandia do not believe ambient air monitoring is necessary for the reasons cited above.
400	Submit a description of the effectiveness and reliability of any systems and structures used to reduce or prevent emissions of hazardous constituents to the air. This may be demonstrated by semi-annual sampling and analysis programs following the last waste treatment event [20.4.1.500 NMAC, incorporating 40 CFR Section 264.601(c)(2)].	Treatment effectiveness is described in revised Section 8.2. DOE/Sandia do not have analytical data for the air in the vicinity of the TTF during treatment operations. The explosive nature of the waste makes it difficult to obtain such data in a safe manner. Based on the design of the Unit and the composition of the wastes, DOE/Sandia conclude that the wastes are completely burned and decompose to gaseous byproducts and ash. This conclusion is based on the extremely high vapor pressure and low flash points of the solvents in the wastes to be treated, combined with the design of the TTF (described in Section 1.1).
	RISK ANALYSIS	
401	A description of the existing air quality, other sources of contamination and the potential cumulative impact on human health and the environment. Present an estimate of the individual excess lifetime cancer risk.	Ambient air quality in Bernalillo County and near the TTF is described in new Section 2.6 of Module II. Data from DOE/Sandia's ongoing monitoring program indicates that ambient air quality is in compliance with New Mexico and national ambient air quality standards. Operation of the TTF is not expected to affect air quality. DOE/Sandia evaluated the potential human health risk at the TTF (the maximum exposure point) and determined that operation of the TTF will not affect human health, as discussed in revised Section 9.3 of Module II. Silver is the only constituent of potential concern at the TTF. Silver is not carcinogenic. Therefore, DOE/Sandia did not estimate incremental lifetime cancer risk due to TTF operations.

Number	NMED Comment	DOE/Sandia Response
402	An outline of the potential for health risks caused by human exposure (including the explosive ordnance OB personnel) to hazardous waste constituents;	Health risks due to human exposure are discussed in new Section 9.3 in Module II. These are associated with exposure to silver in the residual ash if the ash were carried out of the burn pan by the wind; this is the most significant transport scenario at the TTF (the scenarios are summarized in Table 7). Unit personnel may also be exposed to hazards associated with the explosive nature of the waste. Features and operating practices to mitigate the hazards are discussed in revised Sections 1.2.2.2 and 1.2.4.5 (formerly 1.2.6.5) in Module II.
403	A discussion of potential damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to hazardous waste constituents from the OB Unit. Discuss other exposure pathways such as: plant ingestion by herbivores, prey consumption by carnivores, and water ingestion pathways;	Potential damage to animals, vegetation, and physical structures is discussed in new Section 9.4 in Module II. There are no crops or domestic animals in the area. The most critical plants and animals are those that are threatened and endangered; these are addressed in the assessment in new Section 9.4. Pathways for migration or degradation of constituents from the TTF are discussed in revised Section 9.2 of Module II and summarized in Table 7. Food chain uptake could occur, but the potential is low because of the small size of the site, the disturbed nature of the habitat, and the continued operations at the site. Potential for transport through ingestion of surface water is low because the site is relatively flat and arid, and wastes and residues are not present much of the time. As noted in new Section 2.6 in Module II, silver has been included in analyses of soil and vegetation samples collected over the past several years near the TTF. Silver concentrations in the soil and vegetation are consistent with concentrations in soil and vegetation from areas outside SNL/NM.
404	Provide an ecological risk assessment considering the presence of the following endangered or threatened species at or around the TTF OB treatment unit, including, but not limited to the following species: a. Bald Eagle (Haliaeetus leucocephalus alascanus); b. Burrowing Owl (Strix Occidentalis lucida); c. American Peregrine Falcon (Falco peregrinus anatum); d. Whooping Crane (Grus americana); e. Southwestern Willow Flycatcher [Empidonax ludovicianus (3ssp.)]; f. Gray Vireo (Vireo vicinior); and g. Meadow Jumping Mouse (Zapus hudsonius luteus)	DOE/Sandia performed an ecological screening assessment that considered the presence of threatened and endangered species near the TTF. The assessment is discussed in new Section 9.4 in Module II. DOE/Sandia have conducted biological field surveys and reviewed previously documented surveys to identify the presence of sensitive species and key habitat areas at each of the SNL/NM solid waste management units located within the boundaries of KAFB. Each of the species listed in this comment except the bald eagle and whooping crane may occur or are known to occur on KAFB. None of them have been identified near the TTF or are suspected of being present in the vicinity.

Number	NMED Comment	DOE/Sandia Response
405	A description of any sensitive receptors within a 2 kilometer radius, and an estimate of exposed individuals living and/or working on the OB premises;	One sensitive plant species has been identified in TA-III as discussed in new Section 9.4.4 in Module II. Other sensitive species have not been observed but may occur in TA-III. However, the habitat quality of the TTF and the surrounding area in TA-III is poor due to the presence of people and industrial operations. The habitat quality in the area north of TA-III is similar to that within TA-III. Building 6715 is occupied only during test activities, when 5-20 people are present. These personnel are the most exposed individuals who were evaluated in the human health risk assessment discussed in new Section 9.3 in Module II. The assessment indicates that the TTF does not present a risk (Section 9.3.3). Approximately 237 people work in nearby continuously-occupied buildings, as summarized in new Table 8 in Module II. The remaining buildings in the vicinity of the TTF (i.e., those not listed in Table 8) are used sporadically for tests or research activities (in the same manner as Building 6715) and are not continuously occupied.
406	Calculations of the lifetime cancer risk as a function of downwind concentrations, unit risk value, and exposure duration;	DOE/Sandia evaluated the potential human health risk at the TTF (the maximum exposure point), as discussed in new Section 9.3 in Module II. None of the chemicals of potential concern that are associated with the wastes treated at the TTF are carcinogenic. Therefore, DOE/Sandia did not estimate incremental lifetime cancer risk due to TTF operations, as discussed in new Sections 9.3.2 and 9.3.3.
407	An explanation of how atmospheric air quality will be monitored to detect air borne hazardous and energetic waste contaminants and constituents during the active life of the OB Unit.	New Section 2.6 in Module II describes DOE/Sandia's ongoing ambient air quality monitoring programs. Data indicate that ambient air quality is in compliance with New Mexico and national ambient air quality standards. DOE/Sandia anticipate that operations at the TTF will affect only the air quality in the immediate vicinity, and only during operations. Surrounding areas will not be affected. In addition, the risk assessment in revised Section 9.3 of Module II indicates that operation of the TTF does not present a hazard to personnel in the area. As noted in revised Section 1.2.4.6 (formerly 1.2.6.6), DOE/Sandia operate the TTF under the terms of a permit for open burning of explosives issued by the Albuquerque / Bernalillo County Air Quality Control Board. The current permit (Multiple Event Open Burning Permit No. 76-OB-5-2003) does not require air monitoring associated with the treatment process. DOE/Sandia have not monitored the air in the vicinity of the TTF during treatment operations. The explosive nature of the waste makes it difficult to perform such monitoring in a safe manner. Based on the design of the Unit and the composition of the wastes, DOE/Sandia conclude that the wastes are completely burned and decompose to gaseous byproducts and ash. This conclusion is based on the extremely high vapor pressure and low flash points of the solvents in the wastes to be treated, combined with the design of the TTF (described in Section 1.1).
408	Provide a detailed network of receptor points to permit the estimation and identification of receptor points that are exposed to maximum contaminant concentrations.	Workers at the TTF and those in nearby buildings are the people who would be exposed to maximum concentrations; they are described in Section 9.3. Animals and vegetation in the area that might be affected by treatment at the TTF are discussed in Section 9.4 of Module II.

Number	NMED Comment	DOE/Sandia Response
409	Provide a detailed estimation of the exposed population. The non-inhalation pathways (ingestion and dermal) must be addressed using appropriate pathway exposure models.	The potentially exposed population consists of: – Unit personnel. They are closest to the TTF, but are present only during activities at Building 6715. Unit personnel are inside Building 6715 during treatment, as described in revised Section 1.2.4.5 (formerly 1.2.6.5) of Module II. Unit personnel are present at the TTF itself (performing inspections and other activities) before treatment and after the cool-down period. – Workers in nearby buildings. These DOE/Sandia personnel are farther away from the TTF, but they are present at their locations all the time during normal work hours (i.e., 40 hours per week). The entire population and modeled exposure is described in revised Section 9.3. The potential transport mechanisms (including inhalation, ingestion, and dermal exposure) for chemicals of potential concern at the TTF are summarized in Table 7 in Module II.
410	If operating procedures will require wetting of the open burn area before and after each operation, describe how this will be accomplished and what measures will be taken to minimize release of hazardous waste to the environmental media.	Wastes and water will not come into contact with surrounding soil during normal Unit operations. Unit features that serve to minimize releases are discussed in revised Section 9.1.2 of Module II. Solid items are usually covered in water to render them stable enough to be carried to the Unit for treatment. The quantity of water is as small as possible. The water is contained in the burn pan and does not contact the surrounding soil. In the unlikely event of spillage from the burn pan, the water and waste will be contained on the steel-lined concrete pad. The soil berms surrounding the Unit are kept free of vegetation, minimizing fire danger and eliminating the need to wet the berms before treatment. Small quantities of explosives may be kicked out into the steel-lined concrete pad as discussed in Section 8.1.2, but these do not typically contact the surrounding soil. Wastes that are spilled on the ground during transfer to the burn pan will be wetted with just enough water to stabilize the explosives. The wastes and surrounding soil will be excavated as soon as possible, placed in the burn pan, and treated as described in revised Section 9.1.2. Thus, the released wastes will be contained and removed.
411	Provide a brief historical description of TTF and the OB areas, and the presence of any archeological sites.	Historical information (with respect to archaeological sites on KAFB and DOE buffer lands) is described in revised Section 10.0 of the General Part B. There are no known archaeological sites in the vicinity of the TTF, as discussed in new Section 2.6 of Module II.

Number	NMED Comment	DOE/Sandia Response
	POTENTIAL PATHWAYS OF EXPOSURE AND POTENTIAL EXPOSURE MAGNITUDE	
412	Please describe the potential for the public and personnel working nearby to be exposed to hazardous wastes, as required by 20.4.1.900 NMAC, incorporating 40 CFR Section 270.23(c). Include the following: Information on how long waste will remain in the unit before it is burned, the length of time after operation of the unit before re-entry of personnel to the detonation site is allowed, and procedures for management of ash residues, unexploded ordnance, and post-detonation soils.	The potential for the public to be exposed to hazardous wastes at the TTF is minimal due to the access controls discussed in revised Section 2.1 (formerly Appendix A) of Module II. The potential for Unit personnel and people working nearby to be exposed to hazardous wastes is minimized by the practices discussed in revised Section 1.2.4.5 (formerly 1.2.6.5) of Module II, and also by the features of the Unit described in revised Section 9.1.2. Operating practices (including practices during the time periods before and after treatment, management of the ash, and the potential for untreated explosives) are described in revised Sections 8.1 and 9.1. DOE/Sandia do not treat unexploded ordnance at the Unit, and soils surrounding the Unit are not affected by treatment operations. Thus, these are not addressed in the TTF permit renewal request.
	HEALTH AND SAFETY PLAN	
413	Provide a stand-alone health and safety plan for routine operations at the OB Unit. The information may be in a section titled "health and safety procedures" during reactive waste management operations.	Health and safety are a fundamental part of the Unit design and operations; it is therefore difficult and somewhat confusing to separate the health and safety aspects from other performance aspects of Unit design and operation. A stand-alone health and safety plan is not consistent with the format of the rest of the comprehensive Part B permit request. All the elements of a health and safety plan are incorporated into the discussions of Unit features and operations in revised Module II. Features of the Unit that mitigate the hazards associated with treatment of explosive wastes are discussed in revised Sections 1.1, 1.2.4.4 (formerly 1.2.6.4), and Table 4. Operating practices that are designed to minimize exposure to hazardous constituents and protect the health and safety of Unit personnel and workers in surrounding areas are discussed in revised Sections 1.2.2.1, 1.2.2.2, 1.2.4.5 (formerly 1.2.6.5), 8.1.2, and 8.1.3.

Number	NMED Comment	DOE/Sandia Response
	NOISE CONSIDERATIONS	
414	Describe how noise from open burning activities will be controlled, since noise will be carried in the direction of the wind towards the nearby office buildings, such as the High Bay Waste Storage and the Auxiliary Hot Cell Facilities, and the RMWMF. Provide the distance of the TTF OB Unit from these office buildings, and also the minimum safety distances to the property of others, as required by 20.4.1.600 NMAC, incorporating 40 CFR Section 265.382.	The noise associated with treatment operations is described in Section 1.2.4.5 of Module II. Unit personnel will be aware of the noise, but will be inside Building 6715 and will not be affected. The nearest continuously-occupied building is approximately 795 feet east southeast of the TTF. It is downwind of the TTF approximately 10 percent of the time. Personnel in this area will be aware of the warning bells but will not be affected by TTF operations. The AHCF is located approximately 2560 feet east of the TTF. The RMWMF is located approximately 3 miles south southeast of the TTF. Personnel at these Units will not be affected by treatment operations at the TTF. Please see the response to Comment 361 for a discussion of the distance from the TTF to the property of others.

Number	NMED Comment	DOE/Sandia Response
	WASTE MINIMIZATION	
415	Please present a plan that addresses the following items which shall be required of DOE/SNL in writing annually by December 1, for the previous year ending September 30, as required by 20.4.1.300 NMAC, incorporating 40 CFR Section 262.41(a)(6-7) and 20.4.1.500 NMAC, incorporating 40 CFR Section 264.75(h) and (i). Include in the plan an indication that: a. DOE/SNL has a program in place to reduce the volume and toxicity of all hazardous and energetic wastes which are generated by the Facility operations to the degree determined to be economically practicable; and the proposed method of treatment is the most practicable method currently available to DOE/SNL which minimizes the present and future threat to human health and the environment. This certified plan must address the items below: i). Any written policy or statement that outlines goals, objectives, and/or methods for source reduction and recycling of hazardous waste at the Facility; ii). Any employee training or incentive programs designed to identify and implement source reduction and recycling opportunities; iii). Any source reduction and/or recycling measures implemented in the last five years or planned for the near future; iv). An itemized list of the dollar amounts of capital expenditures and operating costs devoted to source reduction and recycling of hazardous waste; v). Factors that have prevented implementation of source reduction and/or recycling; vi). Sources of information on source reduction and/or recycling received at the Facility (e.g., local government, trade associations, suppliers, etc.); vii). An investigation of additional waste minimization efforts which could be implemented at the Facility. This investigation shall analyze the potential for reducing the quantity and toxicity of each waste stream through production reformulation, recycling, and all other appropriate means, and an assessment of the technical feasibility, and potential waste reduction for each option;	DOE/Sandia have developed a program to reduce the volume and toxicity of RCRA-regulated wastes in accordance with the requirements of 20 NMAC 4.1.300/40 CFR 262.41(a)(6,7) and 264.75(h, i). The most recent biennial report (submitted to NMED on March 1, 2002) was completed according to the forms and instructions provided by EPA. As noted in Section 9.0 (formerly Appendix H) of the General Part B, DOE/Sandia annually certify that a waste minimization program is in place in accordance with the waste minimization provision in Section 3002(b) of the Resource Conservation and Recovery Act (RCRA). The certification is available at the SNL/NM Units. 20 NMAC 4.1.900/40 CFR 270 does not include a requirement for submitting either the certification or the plan as part of a Part B permit application. DOE/Sandia will provide a copy of the most current plan upon separate request by NMED. a. DOE/Sandia have determined that the TTF is the most appropriate method for treating the explosive wastes generated by test operations in Building 6715, as discussed in the response to Comment 360. The waste minimization provision of RCRA allows DOE/Sandia (as the generator) to choose the compliance mechanisms that are most suitable for SNL/NM. The program that DOE/Sandia have developed and implemented includes most of the elements listed by NMED as described below. i. DOE/Sandia have a written policy that includes goals and objectives for waste minimization and pollution prevention. ii. Waste minimization and pollution prevention are one of many areas included in general environmental, safety, and health training. iii. DOE/Sandia periodically evaluate and report on various aspects of environmental performance, including waste minimization and pollution prevention. iv. DOE/Sandia do not separately track capital expenditures for pollution prevention and waste minimization. v. Factors that prevent implementation of source reduction or recycling activities are discussed in the periodic evaluations and reports described in (iii) vi. Sources of information (including local government, trade associations, NMED, and EPA) about waste minimization and pollution prevention (including recycling) are available to all DOE/Sandia personnel through the SNL/NM internal computer network and various newsletters. vii. DOE/Sandia assess SNL/NM waste-generating operations to identify opportunities for improvement.

Number	NMED Comment	DOE/Sandia Response
	b. The certified plan shall also include: i). A flow chart or matrix detailing all hazardous wastes the Permittee's Facility produces, by quantity and type and by building/area; ii). A written determination that demonstrates the need to use those processes which produce a particular energetic/reactive waste due to a lack of alternative processes, available technology, or available alternative processes that would produce less volume of hazardous waste.	b. The program also addresses the following: i. DOE/Sandia track and periodically review the quantities and types of RCRA-regulated wastes generated. The types of RCRA-regulated wastes generated at SNL/NM are discussed in Appendix B of the General Part B. DOE/Sandia do not have a matrix of all RCRA-regulated wastes at SNL/NM. Such a matrix would not provide useful information for predicting waste generation or for identifying waste minimization opportunities because of the complexity and variability of individual operations and wastes. ii. Please see response to Comment 360 for a discussion of appropriate treatment for the explosive wastes generated at Building 6715.
	LAND DISPOSAL RESTRICTIONS	

Number	NMED Comment	DOE/Sandia Response
416	Provide information on how DOE/SNL plans to comply with all land disposal restrictions at the TTF, and how DOE/SNL will manage and treat energetic wastes restricted from land disposal, and the treatment requirements listed in 20.4.1.800 NMAC, incorporating 40 CFR Section 268.40 for explosives subcategory D003 wastes deactivation and attainment of the treatment standards for constituents listed in 40 CFR Section 268.48, as required under 20.4.1.800 NMAC, incorporating 40 CFR Section 268 Subpart D.	The treatment process (deactivation) for energetic (D003) wastes is described in Section 8.1 of Module II. Waste characterization (including characterization of wastes generated by treatment operations at the TTF) is addressed in Appendix B. Characterization of treatment residues is specifically addressed in Section B.3.3.1 of Appendix B (formerly Section B.2.2 of Attachment B to Module II). Waste characterization for compliance with the treatment standards in 20 NMAC 4.1.800/40 CFR 268 Subpart D (including characterization of treatment residues) is discussed in revised Section B.5.2.2 of Appendix B.
	MODULE III: RSI COMMENTS ON THE RMWMF	
417	Module III, Section 1.2.2, Containment Systems. "Design and operation of container storage areas." Liquids that accumulate in spill pallets or sumps must be analyzed and removed, as required by 20.4.1.900 NMAC incorporating 40 CFR 270.15(a)(5). The statement that accumulated liquids "**may be sampled and analyzed as needed**" is insufficient.	Characterization of accumulated liquids is now described in revised Section 1.1.1 (formerly Section 1.1.2) of the General Part B. The description has been revised to provide more detail about the process and to clearly describe the two purposes for characterizing the accumulated liquid. The first is to determine the most appropriate method for removing it, and the second is to characterize it for further management. If Unit personnel are able to clearly identify the source of the liquid, they can then remove it and adequately characterize it for further management using knowledge of the source. Sampling and analysis would not be needed. This is the situation described in the statement "may be sampled and analyzed as needed". If the source cannot be clearly identified, Unit personnel sample and analyze the liquid to meet the two purposes listed above. The description in Section 1.2.1 (formerly Section 1.2.2) of Module III has been revised to direct the reader to revised Section 1.1.1 (formerly Section 1.1.2) of the General Part B.
425	Module III, Section 1.2.2, Containment Systems. "Test for free liquids." Provide a description of the tests that will be performed to test for free liquids in accordance with 20.4.1.900 NMAC incorporating 40 CFR 270.15(b)(1).	New Section 1.3.2.4 in Module III notes that Unit personnel verify the absence of free liquids in containers before storing them in areas without secondary containment. As described in new Section 1.2.2.4 of the General Part B, the determination is based on information provided by the initial generator, as described in revised Section B.3.1 of Appendix B.
431	Part 2, Section 1.1.6.6. "Preventing Releases to the Atmosphere." Wastes subject to Part CC. It is stated that a determination of volatile organic concentration will be made to establish whether wastes are above the 500 ppmw standard provided in 20.4.1.500 NMAC incorporating 40 CFR 264.1082, and that the generator "**documents it for that waste stream**." Provide a description of where in the operating record this documentation will be made available.	The record of determination of volatile organics in each container of RCRA-regulated waste and the applicability of air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC is included in the written operating record described in Section 9.0 of the General Part B (formerly Appendix H). The fourth item in the second bullet in Section 9.0 is "records and results of RCRA-regulated waste analyses and determinations." Revised Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B includes a statement noting that the record of determination of Subpart CC applicability is maintained with Unit records.

Number	NMED Comment	DOE/Sandia Response
433	Module III, Section 1.2.6.6. "Preventing Releases to the Atmosphere." Container Level 1 standards. It is stated that non-radioactive non-remediation wastes will be stored in primary containers that 1) have a design capacity of less than 0.1 cubic meter (m^3) or 2) are U.S. Department of Transportation-approved and have a design capacity greater than 0.1 m^3 but less than 0.46 m^3. Describe how air pollution from these containers will be controlled in accordance with Container Level 1 standards as provided in 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086(b)(1).	The paragraph in Module III that is referenced in this comment has been deleted because it was redundant with an identical paragraph in Section 1.1.4.6 (formerly 1.1.6.6) in the General Part B. Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to clearly describe DOE/Sandia's practices for controlling air emissions in accordance with Container Level 1 standards for those containers subject to the air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC.
434	Module III, Section 1.2.6.6. "Preventing releases to the atmosphere. " Container Level 2 and 3 standards. Because there is no description for how Container Level 2 and 3 standards will be complied with, it is assumed that the conditions that require Container Level 2 and 3 will not take place at the RMWMF during the life of the RCRA Part B Permit as provided in 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086. This section should clarify whether or not Container Level 2 or 3 standards will be required at the RMWMF. If Container Level 2 or 3 standards will be required during the life of the RCRA Permit, a complete description of how applicable standards will be complied with should be provided.	DOE/Sandia do not perform activities that are subject to Container Level 2 or Level 3 standards, as noted in revised Section 8.2 (formerly Appendix G) of the General Part B and in revised Section 8.1.7 (formerly Attachment G) of this module. Although DOE/Sandia perform treatment (including stabilization) in containers, such treatment is not subject to Container Level 3 standards because it meets one or more of the exemptions noted in Section 8.2 of the General Part B, or because the waste being treated contains less than 500 parts per million volatile organic compounds.
435	Module III, Section 1.2.6.6. "Preventing releases to the atmosphere." Identification of each container area. Identify each container area subject to the requirements of 20.4.1.500 NMAC incorporating 40 CFR 264 Subpart CC and certify that that the requirements of this subpart are met in accordance with 40 CFR 270.27(a)(2).	Section 1.2.4.6 (formerly 1.2.6.6) of Module III has been revised to indicate the waste management areas that may be used for storage of containers that are subject to the air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC. DOE/Sandia note that the phrase "the waste management unit" is used in conjunction with "**a** tank, surface impoundment, or container" or "**each** ... container" (emphasis added) throughout 20 NMAC 4.1.500/40 CFR 264 Subpart CC. This indicates that individual containers (rather than entire container storage areas) are the units that are subject to the air emissions standards. The text in Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to reflect this more clearly. Revised Section 1.1.4.6 also more clearly describes DOE/Sandia's practices for controlling air emissions in compliance with Container Level 1 standards for those containers subject to the standards. The certification statement included in Section 12.0 of the General Part B serves as a certification for the entire comprehensive Part B permit request, including the description of DOE/Sandia's compliance with the air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC.
436	Module III, Section 1.2.6.6. "Preventing releases to the atmosphere. " Container covers. It is stated that container covers are "**maintained in closed and sealed conditions.**" Clarify whether or not covers meet design requirements to form a continuous barrier that are composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere, as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086(c).\	The paragraph in Module III that is referenced in this comment has been deleted because it was redundant with an identical paragraph in revised Section 1.1.4.6 (formerly 1.1.6.6) in the General Part B. Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to clearly describe DOE/Sandia's practices for controlling air emissions in accordance with Container Level 1 standards (including container covers) for those containers subject to the air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC.

Number	NMED Comment	DOE/Sandia Response
437	Module III, Section 1.1.1 "Inspections." Reporting of non-compliances. As required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.1090, for each occurrence when hazardous waste is placed in the hazardous waste management unit in noncompliance with 20.4.1.500 NMAC incorporating 40 CFR Part 264.1082(c)(1) and (c)(2), the owner or operator shall submit a written report within 15 days of the time that the owner or operator becomes aware of the occurrence. These reporting requirements should be set forth in Module III of the RCRA Part B Permit.	DOE/Sandia note that the phrase "the waste management unit" in 20 NMAC 4.1.500/40 CFR 264.1090(a) refers to "a tank, surface impoundment, or container" (emphasis added) in the first part of the same sentence. This indicates that individual containers (rather than entire container storage areas) are the units which are exempt from the air emissions standards if they meet the requirements of 20 NMAC 4.1.500/40 CFR 264.1082(c). Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to clearly describe DOE/Sandia's practices for controlling air emissions in accordance with Container Level 1 standards. Unit personnel will manage individual containers in accordance with Container Level 1 standards when they become subject to the standards. If personnel discover that a container should have been managed in accordance with the standards but was not, DOE/Sandia will file a report in accordance with 20 NMAC 4.1.500/40 CFR 264. 1090(a). The reporting requirement is described in revised Section 1.1.4.6 of the General Part B (instead of Module III) because it is applicable to all containers at SNL/NM that are subject to Container Level 1 standards.
438	Module III, Attachment G. "Treatment Plan." Process vents and control devices. The Treatment Plan should clarify whether or not process vents or closed-vent systems and control devices will be required by any of the treatment technologies listed as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.1032 and Part 264.1033. If required, the Treatment Plan should describe how all applicable requirements of these regulations will be complied with.	DOE/Sandia do not use any of the processes identified in 20 NMAC 4.1.500/40 CFR 264, Subpart AA for treatment of RCRA-regulated wastes, and therefore do not require emissions control systems specified in 264.1032 and 1033.
439	Module III, Section 1.2.6.6. "Preventing Releases to the Atmosphere." Negative pressure venting system. It should be clarified whether the described negative pressure ventilation system in Building 6920 is intended to meet any specific RCRA control system requirements.	The ventilation system in Building 6920 is not required for compliance with any specific control system requirements in 20 NMAC 4.1.500/40 CFR 264. However, it serves to limit undue exposure of Unit personnel to RCRA-regulated waste constituents. Accordingly, the text about the system has been deleted from Section 1.2.4.6 (formerly 1.2.6.6) in Module III and moved to Section 1.2.4.5 (formerly 1.2.6.5) which discusses measures to prevent undue exposure.
440	Part 2, Appendix F.4 and F.4.3. "Closure Plan." How the final closure will be conducted. In Section F.4 DOE/SNL describes a phased closure approach where sampling and analysis activities will be conducted if RCRA constituents were known to have been released from the facility. Regardless of whether or not a release has been documented, NMED will require that building floors and other storage areas be decontaminated (washed) and a radiological screening be completed prior to closure. This section should describe decontamination procedures that will be conducted to meet the closure standard required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.111 and Part 264.112.	The general closure method is described in revised Section F.5 of the site-wide closure plan (Appendix F). The closure performance standard is discussed in revised Section F.4. Section 7.0 of each Module provides additional Unit-specific information. DOE/Sandia will prepare a Unit-specific sampling and analysis plan, update the decontamination plan for each Unit, and submit both plans to NMED for approval prior to closure. The most appropriate decontamination method is best determined after consideration of the entire operating history of activities at a Unit (i.e., when preparing the updated closure plan). DOE/Sandia may then discover that washing building floors and other storage areas is not needed or appropriate. With respect to requirements for a radiological survey at closure: radionuclides are not regulated under NMHWA or the regulations in 20 NMAC 4.1 that govern the activities that are described in this application. Therefore, DOE/Sandia do not believe it is necessary or appropriate to include such a requirement in the closure plan or permit.

Number	NMED Comment	DOE/Sandia Response
441	Part 2, Appendix F. "Closure Plan." Methods for removing, transporting, treating, storing, or disposing. Describe the methods that will be used to remove, transport, treat, store, or dispose of all hazardous waste, and identify all hazardous waste management unit(s) to be used, if applicable, as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.111 and Part 264.112.	The site-wide Closure Plan has been revised to provide additional detail regarding closure procedures applicable to all RCRA-regulated waste management Units at SNL/NM. Information regarding individual Units is provided in Section 7.0 of each Unit-specific module. As noted in Section F.3 of the revised site-wide Closure Plan (Appendix F), DOE/Sandia will remove remaining wastes from each Unit as the first step of closure. Prior to closure of a Unit, its Unit-specific closure information will be revised as needed (e.g., to provide a detailed Unit-specific sampling and analysis plan, or to provide additional information about removing wastes if needed).
442	Module III, Attachment G. "Treatment Plan." Proposed treatment technologies. The Treatment Plan for the RMWMF lists five treatment technologies. The RMWMF is being permitted as a container storage area, and as such, treatment in containers is appropriate under RCRA. Clarify that the proposed treatment technologies will be performed at the RMWMF in containers, and in doing so, these treatment technologies do not require permitting under 20.4.1.500 NMAC incorporating 40 CFR Part Section 264 Subpart X.	All treatment at the RMWMF will be performed in containers as stated in Section 8.0 (formerly Attachment G to Module III and Appendix G to the General Part B). The treatment will be performed on batches of 5000 pounds or less. Most of the treatment occurs in containers of 55 gallons or less. In many cases, the container is then used for waste disposal. Examples include: • Chemical deactivation of individual items or the contents of individual containers of waste. • Macroencapsulation of wastes in 55-gallon drums and smaller containers. • Stabilization of waste in containers such as commercially available 5-gallon buckets and cement mixing pans. • Dissolution of solid items in pans and buckets. Physical treatment (volume reduction through separation) was mislabeled as mechanical processing in the February 2002 Part A and Part B permit applications. The treatment does not involve a dedicated treatment unit such as a compactor or shredder, and therefore does not meet the definition of a miscellaneous unit. The treatment consists of reducing waste volume by using hand tools to separate items with RCRA-regulated constituents from larger items. In some cases, the RCRA-regulated waste item may undergo further treatment in containers.
443	Module III, Attachment G. "Treatment Plan." Thermal deactivation. The Treatment Plan for the RMWMF lists thermal deactivation as one of the five treatment technologies. If the proposed treatment activity is carried out as described in Part 2, Appendix G.18, this unit must be permitted as a miscellaneous unit or meet the definition of a tank or container as described in 20.4.1.500 NMAC incorporating 40 CFR Subpart X. This section should clarify that the proposed thermal deactivation treatment will be performed in a tank or container, or a request for a RCRA Permit as a miscellaneous unit should be submitted.	The thermal treatment at the RMWMF occurs in a portable piece of equipment that meets the definition of container. It is described in Section 8.0 of Module III (formerly Attachment G to Module III and Appendix G to the General Part B).
444	Module III, Section 1.2.2, "Containment Systems. " Containers holding only wastes that do not contain free liquids. Explain how it can be verified that containers determined to be holding only wastes that do not contain free liquids actually do not contain free liquids, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.175(c).	Please see response to Comment 425.

Number	NMED Comment	DOE/Sandia Response
	MODULE IV: RSI COMMENTS ON THE HIGH BAY WASTE STORAGE FACILITY	
450	Module IV, Section 1.2.2, Containment Systems. Design and operation of container storage areas. Liquids that accumulate in spill pallets or sumps must be analyzed and removed according to 20.4.1.900 NMAC incorporating 40 CFR 270.15(a)(5). The statement that accumulated liquids "**may be sampled and analyzed as needed**" is insufficient.	DOE/Sandia have determined that the storage capacity provided by the High Bay Waste Storage Facility (HBWSF) will not be needed in the future. Therefore, the Unit has been withdrawn from the comprehensive Part B permit request. DOE/Sandia will continue to operate the Unit under interim status as shown in the General Part A, and will amend the closure plan for the Unit to fully incorporate the requirements of 20 NMAC 4.1.600/40 CFR 265.112. The amended plan will be submitted to NMED for approval before September 30, 2003.
451	Module IV, Section 1.2.2, Containment Systems. Test for free liquids. Provide a description of the tests that will be performed to test for free liquids in accordance with 20.4.1.900 NMAC incorporating 40 CFR 270.15(b)(1).	Please see response to comment 450.
457	Part 2, Appendix F.4 and F.4.3. Closure Plan. How the final closure will be conducted. In Section F.4 describes a phased closure approach where sampling and analysis activities will be conducted if RCRA constituents were known to have been released from the facility. Regardless of whether or not a release has been documented, NMED requires that building floors and other storage areas be decontaminated (washed) and a radiological screening be completed prior to closure. This section should describe decontamination procedures that will be conducted to meet the closure standard as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.111 and Part 264.112.	Please see response to comment 450.
458	Part 2, Appendix F. Closure Plan. Methods for removing, transporting, treating, storing, or disposing. Describe the methods that will be used to remove, transport, treat, store, or dispose of all hazardous waste, and identify all hazardous waste management unit(s) to be used, if applicable, as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.11 and Part 264.112.	Please see response to comment 450.
459	Module IV, Section 1.2.6.6. Preventing releases to the atmosphere. Container Level 1 standards. It is stated that non-radioactive non-remediation wastes will be stored in primary containers that 1) have a design capacity of less than 0.1 cubic meter (m^3) or 2) are U.S. Department of Transportation-approved and have a design capacity greater than 0.1 m^3 but less than 0.46 m^3. Describe how air pollution from these containers will be controlled in accordance with Container Level 1 standards as provided in 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086(b)(1).	Please see response to comment 450.

Number	NMED Comment	DOE/Sandia Response
460	Module IV, Section 1.2.6.6. Preventing releases to the atmosphere. Container Level 2 and 3 standards. Because there is no description for how Container Level 2 and 3 standards will be complied with, it is assumed that the conditions that require Container Level 2 and 3 will not take place at the HBWSF during the life of the RCRA Part B Permit as provided in 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086. This section should clarify whether or not Container Level 2 or 3 standards will be required at the HBWSF. If Container Level 2 or 3 standards will be required during the life of the RCRA Permit, a complete description of how applicable standards will be complied with should be provided.	Please see response to comment 450.
461	Module IV, Section 1.2.6.6. Preventing releases to the atmosphere. Container covers. It is stated that "container covers are "**maintained in closed and sealed conditions.**" Clarify whether or not covers meet design requirements to form a continuous barrier that are composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere, as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086(c).	Please see response to comment 450.
462	Module IV, Section 1.1.1 Inspections. Reporting of noncompliances. As required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.1090, for each occurrence when hazardous waste is placed in the hazardous waste management unit in noncompliance with 20.4.1.500 NMAC incorporating 40 CFR Part 264.1082(c)(1) and (c)(2), the owner or operator shall submit a written report within 15 days of the time that the owner or operator becomes aware of the occurrence. These reporting requirements should be set forth in Module IV of the RCRA Part B Permit renewal application.	Please see response to comment 450.
463	Part 2, Section 1.1.6.6. Preventing Releases to the Atmosphere. Wastes subject to Part CC. It is stated that a determination of volatile organic concentration will be made to establish whether wastes are above the 500 ppmw standard provided in 20.4.1.500 NMAC incorporating 40 CFR Section 264.1082, and that the generator "**documents it for that waste stream.**" Provide a description of where in the operating record this documentation will be made available.	Please see response to comment 450.
465	Module IV, Section 1.2.2, Containment Systems. Containers holding only wastes that do not contain free liquids. Explain how it can be verified that containers determined to be holding only wastes that do not contain free liquids actually do not contain free liquids as required by 20.4.1.500 NMAC incorporating 40 CFR Section 264.175(c).	Please see response to comment 450.

Number	NMED Comment	DOE/Sandia Response
	MODULE V: RSI COMMENTS ON THE AUXILLARY HOT CELL FACILITY	
470	Module V, Section 1.2.2, Containment Systems. Design and operation of container storage areas. Liquids that accumulate in spill pallets or sumps must be analyzed and removed according to 20.4.1.900 NMAC incorporating 40 CFR 270.15(a)(5). The statement that accumulated liquids "**may be sampled and analyzed as needed**" is insufficient.	Characterization of accumulated liquids is now described in revised Section 1.1.1 (formerly Section 1.1.2) of the General Part B. The description has been revised to provide more detail about the process and to clearly describe the two purposes for characterizing the accumulated liquid. The first is to determine the most appropriate method for removing it, and the second is to characterize it for further management. If Unit personnel are able to clearly identify the source of the liquid, they can then remove it and adequately characterize it for further management using knowledge of the source. Sampling and analysis would not be needed. This is the situation described in the statement "may be sampled and analyzed as needed". If the source cannot be clearly identified, Unit personnel sample and analyze the liquid to meet the two purposes listed above. The description in Section 1.2.1 (formerly Section 1.2.2) of Module V has been revised to direct the reader to revised Section 1.1.1 (formerly Section 1.1.2) of the General Part B.
471	Module V, Section 1.2.2, Containment Systems. Test for free liquids. Provide a description of the tests that will be performed to test for free liquids in accordance with 20.4.1.900 NMAC incorporating 40 CFR 270.15(b)(1).	Please see response to comment 425.
477	Part 2, Appendix F.4 and F.4.3. Closure Plan. How the final closure will be conducted. In Section F.4 describes a phased closure approach where sampling and analysis activities will be conducted if RCRA constituents were known to have been released from the facility. Regardless of whether or not a release has been documented, NMED requires that building floors and other storage areas be decontaminated (washed) and a radiological screening be completed prior to closure. This section should describe decontamination procedures that will be conducted to meet the closure standards, as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.111 and Part 264.112.	Please see response to comment 440.
478	Part 2, Appendix F. Closure Plan. Methods for removing, transporting, treating, storing, or disposing. Describe the methods that will be used to remove, transport, treat, store, or dispose of all hazardous waste, and identify all hazardous waste management unit(s) to be used, if applicable, as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.11 and Part 264.112.	Please see response to comment 441.

Number	NMED Comment	DOE/Sandia Response
479	Module V, Section 1.2.6.6. Preventing releases to the atmosphere. Container Level 1 standards. It is stated that non-radioactive non-remediation wastes will be stored in primary containers that 1) have a design capacity of less than 0.1 cubic meter (m^3) or 2) are U.S. Department of Transportation-approved and have a design capacity greater than 0.1 m^3 but less than 0.46 m^3. Describe how air pollution from these containers will be controlled in accordance with Container Level 1 standards as provided in 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086(b)(1).	The paragraph in Module V that is referenced in this comment has been deleted because it was redundant with an identical paragraph in revised Section 1.1.4.6 (formerly 1.1.6.6) in the General Part B. Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to clearly describe DOE/Sandia's practices for controlling air emissions in accordance with Container Level 1 standards for those containers subject to the air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC.
480	Module V, Section 1.2.6.6. Preventing releases to the atmosphere. Container Level 2 and 3 standards. Because there is no description for how Container Level 2 and 3 standards will be complied with, it is assumed that the conditions that require Container Level 2 and 3 will not take place at the AHCF during the life of the RCRA Part B Permit as provided in 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086. This section should clarify whether or not Container Level 2 or 3 standards will be required at the AHCF. If Container Level 2 or 3 standards will be required during the life of the RCRA Permit, a complete description of how applicable standards will be complied with should be provided.	Please see response to Comment 434.
481	Module V, Section 1.2.6.6. Preventing releases to the atmosphere. Container covers. It is stated that "container covers are "**maintained in closed and sealed conditions.**" Clarify whether or not covers meet design requirements to form a continuous barrier that are composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086(c).	The paragraph in Module V that is referenced in this comment has been deleted because it was redundant with an identical paragraph in revised Section 1.1.4.6 (formerly 1.1.6.6) in the General Part B. Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to clearly describe DOE/Sandia's practices for controlling air emissions in accordance with Container Level 1 standards (including container covers) for those containers subject to the air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC.
482	Module V, Section 1.2.1 Inspections. Reporting of non-compliances. As required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.1090, for each occurrence when hazardous waste is placed in the hazardous waste management unit in noncompliance with 20.4.1.500 NMAC incorporating 40 CFR Part 264.1082(c)(1) and (c)(2), the owner or operator shall submit a written report within 15 days of the time that the owner or operator becomes aware of the occurrence. These reporting requirements should be set forth in Module V of the RCRA Part B Permit.	DOE/Sandia note that the phrase "the waste management unit" in 20 NMAC 4.1.500/40 CFR 264.1090(a) refers to "**a** tank, surface impoundment, or container" (emphasis added) in the first part of the same sentence. This indicates that individual containers (rather than entire container storage areas) are the units which are exempt from the air emissions standards if they meet the requirements of 20 NMAC 4.1.500/40 CFR 264.1082(c). Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to clearly describe DOE/Sandia's practices for controlling air emissions in accordance with Container Level 1 standards. Unit personnel will manage individual containers in accordance with Container Level 1 standards when they become subject to the standards. If personnel discover that a container should have been managed in accordance with the standards but was not, DOE/Sandia will file a report in accordance with 20 NMAC 4.1.500/40 CFR 264. 1090(a). The reporting requirement is described in revised Section 1.1.4.6 of the General Part B (instead of Module V) because it is applicable to all containers at SNL/NM that are subject to Container Level 1 standards.

Number	NMED Comment	DOE/Sandia Response
483	Module V, Section 1.2.6.6. Preventing releases to the atmosphere. Ventilation and Exhaust Systems. Clarify whether the described ventilation and exhaust systems at the AHCF are intended to satisfy any requirements of RCRA.	The ventilation/exhaust system in Building 6597 is not required for compliance with any specific control system requirements in 20 NMAC 4.1.500/40 CFR 264. However, it serves to limit undue exposure of Unit personnel to RCRA-regulated waste constituents. Accordingly, the text about the system has been deleted from Section 1.2.4.6 (formerly 1.2.6.6), revised, and moved to Section 1.2.4.5 (formerly 1.2.6.5) which discusses measures to prevent undue exposure.
484	Module V, Attachment G. Treatment Plan. Proposed treatment technologies. The Treatment Plan for the AHCF lists four treatment technologies. The AHCF is being permitted as a container storage area, and as such, treatment in containers is appropriate under RCRA. Clarify that the proposed treatment technologies will be performed at the AHCF in containers, and in doing so, these treatment technologies do not require permitting under 20.4.1.500 NMAC incorporating 40 CFR Part 264 Subpart X.	Please see response to Comment 442.
485	Part 2, Section 1.1.6.6. Preventing Releases to the Atmosphere. Wastes subject to Part CC. It is stated that a determination of volatile organic concentration will be made to establish whether wastes are above the 500 ppmw standard provided in 20.4.1.500 NMAC incorporating 40 CFR 264.1082, and that the generator "**documents it for that waste stream**." Provide a description of where in the operating record that this documentation will be made available.	The record of determination of volatile organics in each container of RCRA-regulated waste and applicability of air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC is included in the written operating record described in Section 9.0 of the General Part B (formerly Appendix H). The fourth item in the second bullet in Section 9.0 is "records and results of RCRA-regulated waste analyses and determinations." Revised Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B includes a statement noting that the record of determination of Subpart CC applicability is maintained with Unit records.
487	Module V, Section 1.2.2, Containment Systems. Containers holding only wastes that do not contain free liquids. Explain how it can be verified that containers determined to be holding only wastes that do not contain free liquids actually do not contain free liquids as required by 20.4.1.500 NMAC incorporating 40 CFR 264.175(c).	Please see response to comment 425.
	MODULE VI: RSI COMMENTS ON THE MANZANO STORAGE BUNKERS	
492	Module III, Section 1.2.2, Containment Systems. Design and operation of container storage areas. Liquids that accumulate in spill pallets or sumps must be analyzed and removed according to 20.4.1.900 NMAC incorporating 40 CFR 270.15(a)(5). The statement that accumulated liquids "**may be sampled and analyzed as needed**" is insufficient.	Characterization of accumulated liquids is now described in Section 1.1.1 (formerly Section 1.1.2) of the General Part B. The description has been revised to provide more detail about the process and to clearly describe the two purposes for characterizing the accumulated liquid. The first is to determine the most appropriate method for removing it, and the second is to characterize it for further management. If Unit personnel are able to clearly identify the source of the liquid, they can then remove it and adequately characterize it for further management using knowledge of the source. Sampling and analysis would not be needed. This is the situation described in the statement "may be sampled and analyzed as needed". If the source cannot be clearly identified, Unit personnel sample and analyze the liquid to meet the two purposes listed above. The description in Section 1.2.1 (formerly Section 1.2.2) of Module VI has been revised to direct the reader to revised Section 1.1.1 (formerly Section 1.1.2) of the General Part B.

Number	NMED Comment	DOE/Sandia Response
493	Module III, Section 1.2.2, Containment Systems. Test for free liquids. Provide a description of the tests that will be performed to test for free liquids in accordance with 20.4.1.900 NMAC incorporating 40 CFR 270.15(b)(1).	Please see response to Comment 425.
498	Part 2, Appendix F.4 and F.4.3. Closure Plan. How the final closure will be conducted. In Section F.4 describes a phased closure approach where sampling and analysis activities will be conducted if RCRA constituents were known to have been released from the facility. Regardless of whether or not a release has been documented, NMED will require that building floors and other storage areas be decontaminated (washed) and a radiological screening be conducted prior to closure. This section should describe decontamination procedures that will be conducted to meet the closure standard as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.111 and Part 264.112.	Please see response to comment 440.
499	Part 2, Appendix F. Closure Plan. Methods for removing, transporting, treating, storing, or disposing. Describe the methods that will be used to remove, transport, treat, store, or dispose of all hazardous waste, and identify all hazardous waste management unit(s) to be used, if applicable, as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.11 and Part 264.112.	Please see response to comment 441
500	Module IV, Section 1.2.6.6. Preventing releases to the atmosphere. Container Level 1 standards. It is stated that non-radioactive non-remediation wastes will be stored in primary containers that 1) have a design capacity of less than 0.1 cubic meter (m^3) or 2) are U.S. Department of Transportation-approved and have a design capacity greater than 0.1 m^3 but less than 0.46 m^3. Describe how air pollution from these containers will be controlled in accordance with Container Level 1 standards as provided in 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086(b)(1).	The paragraph in Module VI that is referenced in this comment has been deleted because it was redundant with an identical paragraph in revised Section 1.1.4.6 (formerly 1.1.6.6) in the General Part B. Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to clearly describe DOE/Sandia's practices for controlling air emissions in accordance with Container Level 1 standards for those containers subject to the air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC.
501	Module IV, Section 1.2.6.6. Preventing releases to the atmosphere. Container Level 2 and 3 standards. Because there is no description for how Container Level 2 and 3 standards will be complied with, it is assumed that the conditions that require Container Level 2 and 3 will not take place at the MSB during the life of the RCRA Part B Permit as provided in 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086. This section should clarify whether or not Container Level 2 or 3 standards will be required at the MSB. If Container Level 2 or 3 standards will be required during the life of the RCRA Permit, a complete description of how applicable standards will be complied with should be provided.	Please see response to Comment 434.

Number	NMED Comment	DOE/Sandia Response
502	Module III, Section 1.2.6.6. Preventing releases to the atmosphere. Container covers. It is stated that "container covers are "**maintained in closed and sealed conditions.**" Clarify whether or not covers meet design requirements to form a continuous barrier that are composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere as required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.1086(c).	The paragraph in Module VI that is referenced in this comment has been deleted because it was redundant with an identical paragraph in revised Section 1.1.4.6 (formerly 1.1.6.6) in the General Part B. Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to clearly describe DOE/Sandia's practices for controlling air emissions in accordance with Container Level 1 standards (including container covers) for those containers subject to the air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC.
503	Module IV, Section 1.1.1 Inspections. Reporting of noncompliances. As required by 20.4.1.500 NMAC incorporating 40 CFR Part 264.1090, for each occurrence when hazardous waste is placed in the hazardous waste management unit in noncompliance with 20.4.1.500 NMAC incorporating 40 CFR Part 264.1082(c)(1) and (c)(2), the owner or operator shall submit a written report within 15 days of the time that the owner or operator becomes aware of the occurrence. These reporting requirements should be set forth in Module IV of the RCRA Part B Permit.	DOE/Sandia note that the phrase "the waste management unit" in 20 NMAC 4.1.500/40 CFR 264.1090(a) refers to "**a** tank, surface impoundment, or container" (emphasis added) in the first part of the same sentence. This indicates that individual containers (rather than entire container storage areas) are the units which are exempt from the air emissions standards if they meet the requirements of 20 NMAC 4.1.500/40 CFR 264.1082(c). Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B has been revised to clearly describe DOE/Sandia's practices for controlling air emissions in accordance with Container Level 1 standards. Unit personnel will manage individual containers in accordance with Container Level 1 standards when they become subject to the standards. If personnel discover that a container should have been managed in accordance with the standards but was not, DOE/Sandia will file a report in accordance with 20 NMAC 4.1.500/40 CFR 264.1090(a). The reporting requirement is described in revised Section 1.1.4.6 of the General Part B (instead of Module VI) because it is applicable to all containers at SNL/NM that are subject to Container Level 1 standards.
504	Part 2, Section 1.1.6.6. Preventing Releases to the Atmosphere. Wastes subject to Part CC. It is stated that a determination of volatile organic concentration will be made to establish whether wastes are above the 500 ppmw standard provided in 20.4.1.500 NMAC incorporating 40 CFR Section 264.1082, and that the generator "**documents it for that waste stream.**" Provide a description of where in the operating record that this documentation will be made available.	The record of determination of volatile organics in each container of RCRA-regulated waste and applicability of air emissions standards in 20 NMAC 4.1.500/40 CFR 264 Subpart CC is included in the written operating record described in Section 9.0 of the General Part B (formerly Appendix H). The fourth item in the second bullet in Section 9.0 is "records and results of RCRA-regulated waste analyses and determinations." Revised Section 1.1.4.6 (formerly 1.1.6.6) of the General Part B includes a statement noting that the record of determination of Subpart CC applicability is maintained with Unit records.
506	Module VI, Section 1.2.2, Containment Systems. Containers holding only wastes that do not contain free liquids. Explain how it can be verified that containers determined to be holding only wastes that do not contain free liquids actually do not contain free liquids as required by 20.4.1.500 NMAC incorporating 40 CFR Section 264.175(c)	Please see response to comment 425.

Attachment B

Redline-Strikeout Copy of Revised Text and Figures

DOE/Sandia Response to NMED Comments on Parts 2 and 4

Task # HWB-SNL-02-002

PART 2
General Part B, Appendices A - F
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~~H Site-Wide Record Keeping and Reporting for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units~~

Modules

I HWMF Hazardous Waste Management Facility

II TTF Thermal Treatment Facility

III RMWMF Radioactive and Mixed Waste Management Facility

IV Reserved~~HBWSF High Bay Waste Storage Facility~~

V AHCF Auxiliary Hot Cell Facility

VI MSB Manzano Storage Bunkers

Overview

OVERVIEW

1.0 BACKGROUND

Sandia National Laboratories (SNL) is a multi-purpose engineering and science laboratory owned by the U.S. Department of Energy (DOE) and co-operated by Sandia Corporation (Sandia), a subsidiary of Lockheed Martin, and the DOE. Sandia designs non-nuclear components for the nation's nuclear weapons, performs a wide variety of energy research and development projects, and works on assignments that respond to national security threats. Sandia National Laboratories/New Mexico (SNL/NM) is located on Kirtland Air Force Base (KAFB) southeast of Albuquerque, New Mexico. SNL/NM consists of five technical areas (TAs) and several remote testing areas situated in the eastern half of the 80~~78~~-square-mile KAFB.

Sandia generates wastes that are regulated under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act and implementing regulations, specifically the New Mexico Administrative Code (NMAC) Title 20, Chapter 4. In this Part B permit request, these wastes are referred to as RCRA-regulated wastes (i.e., wastes that meet the regulatory definition of hazardous or mixed wastes). RCRA-regulated wastes are generated during SNL/NM operations and ongoing corrective actions for solid waste management units (SWMUs). The corrective actions are conducted under the SNL/NM Environmental Restoration (ER) Project.

Since November 19, 1980, Sandia/DOE have~~s~~ managed RCRA-regulated wastes at SNL/NM under the applicable requirements of Title 40 of the Code of Federal Regulations, Parts 260-270, and with the requirements of NMAC Title 20, Chapter 4, as they became effective. Sandia/DOE~~'s~~ operations include:

- **Chemical Waste Landfill (CWL).** Sandia/DOE operated the CWL in the southeastern corner of SNL/NM TA-III~~3~~ for disposal of RCRA-regulated wastes under interim status until 1985. Sandia/DOE are closing the landfill under interim status according to a closure plan approved by the New Mexico Environment Department (NMED). Two voluntary corrective measures (VCM) have been performed at the CWL: a vapor extraction VCM, and a landfill excavation VCM. ~~Sandia/DOE is currently removing wastes and waste constituents from the landfill and underlying soil as part of a voluntary corrective measure.~~ The CWL is a regulated unit under RCRA. Groundwater assessment and monitoring information for the CWL is ~~included as~~addressed in ~~Part 2 of~~ this comprehensive Part B permit request. Sandia/DOE will prepare corrective measures documentation as required by the closure plan.

- **Hazardous Waste Management Facility (HWMF).** The HWMF consists of several buildings within a fenced area located south of SNL/NM TA-I~~1~~. The HWMF is used for storage and packaging of RCRA-regulated wastes. The wastes are transported to off-site RCRA-permitted facilities for treatment, storage, and/or disposal. These wastes are generated during SNL/NM operations and corrective action activities. The Part B hazardous waste operating permit for the HWMF was issued in August 1992 and expired~~s~~ on August 6, 2002. The~~is~~ comprehensive Part B permit request submitted to NMED on February 6, 2002 included~~s~~ a request for the renewal of the HWMF operating permit. Sandia/DOE

revised most of the request in response to NMED's comments dated October 10, 2002. The complete updated request for renewal of the HWMF operating permit is included in this April 2003 submittal.

- **Thermal Treatment Facility (TTF).** The TTF consists of a burn cage with ancillary equipment located in a fenced area south of Building 6715 in the northern part of SNL/NM TA-III~~3~~. The TTF is used for thermal treatment of explosive wastes generated by SNL/NM operations. RCRA-regulated treatment residuals are transported to off-site permitted facilities for treatment, storage, and/or disposal. The Part B hazardous waste operating permit for the TTF was issued on November 4, 1994. The~~is~~ comprehensive Part B permit request submitted to NMED on February 6, 2002 included~~s~~ a request for the renewal of the TTF operating permit. Sandia/DOE revised most of the request in response to changes in planned operations and NMED's comments dated October 10, 2002. The complete updated request for renewal of the TTF operating permit is included in this April 2003 submittal.

- **Radioactive and Mixed Waste Management Facility (RMWMF).** The RMWMF consists of several buildings within a fenced area located at the southeastern corner of SNL TA-III~~3~~, west of the CWL. The RMWMF is used for storage, treatment, and packaging of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. RCRA-regulated wastes and treated residues are transported to off-site permitted facilities for treatment, storage, and/or disposal. The RMWMF is operated under interim status. The~~is~~ comprehensive Part B permit request submitted to NMED on February 6, 2002 included~~s~~ a Part B permit application for operation of the RMWMF, which superseded~~s~~ the application submitted to the NMED in December 1996. Sandia/DOE revised most of the application in response to NMED's comments dated October 10, 2002. The complete updated application for operation of the RMWMF is included in this April 2003 submittal.

- **High Bay Waste Storage Facility (HBWSF).** The HBWSF is an area within Building 6596 in SNL/NM TA-V~~5~~. The HBWSF is used for storage and packaging of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. RCRA-regulated wastes are transported to off-site permitted facilities for treatment, storage, and/or disposal. The HBWSF is operated under interim status. The~~is~~ comprehensive Part B permit request submitted to NMED in February 2002 included~~s~~ a Part B permit application for operation of the HBWSF, which superseded~~s~~ the application submitted to the NMED in December 1996. In February 2003, Sandia/DOE decided to withdraw the Part B permit application for the HBWSF. Sandia/DOE continue to operate the Unit under interim status and will submit a revised closure plan to NMED for approval during 2003.

- **Manzano Storage Bunkers (MSB).** The MSB are a set of Units used for storage of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The seven bunkers within the ~~that comprise the~~ MSB are located within the former Manzano Base in the eastern part of KAFB. RCRA-regulated wastes are typically transported to other SNL/NM Units for storage and/or treatment before being transported to permitted off-site facilities for further treatment, storage, and/or disposal. The MSB are operated under interim status. The~~is~~ comprehensive Part B permit request submitted to NMED in February 2002

includeds a Part B permit application for operation of the MSB, which supersededs the application submitted to the NMED in December 1996. In February 2003, Sandia/DOE decided to withdraw the Part B permit application for two of the bunkers. Sandia/DOE continue to operate the two Units under interim status and will submit a revised closure plan to NMED for approval during 2003. Sandia/DOE revised much of the application in response to NMED's comments dated October 10, 2002. The complete updated application for operation of the remaining five bunkers in the MSB is included in this April 2003 submittal.

- **Auxiliary Hot Cell Facility (AHCF).** The AHCF is located in Building 6597 in SNL/NM TA-V5. The AHCF will be used for treatment, packaging, and storage of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The AHCF will be used to manage wastes that do not meet the waste acceptance criteria for the RMWMF or the HBWSF and cannot be characterized, treated, or prepared for shipment to permitted off-site facilities for treatment, storage, or disposal. Some of these wastes are subject to the Federal Facilities Compliance Order (FFCO) between the NMED, DOE, and Sandia. Theis comprehensive Part B permit request submitted to NMED on February 6, 2002 includeds an application for operation of the AHCF. Sandia/DOE revised most of the application in response to NMED's comments dated October 10, 2002. The complete updated application for operation of the AHCF is included in this April 2003 submittal.

  DOE and Sandia have separately requested permission to add the additional waste management capacity afforded by the AHCF under interim status because of the need to manage the RCRA-regulated wastes in a timely and compliant manner and in order for DOE and Sandia to meet the milestones set forth in the DOE/SNL Site Treatment Plan for Mixed Waste, Compliance Plan Volume, of the FFCO.

- **Corrective action for SWMUs at SNL/NM.** Sandia/DOE haves identified numerous SWMUs throughout SNL/NM, and areis conducting corrective action under Module IV of the Part B Permit issued by the U.S. Environmental Protection Agency (EPA) under the 1984 Hazardous and Solid Waste Amendments to RCRA. This The comprehensive Part B permit request submitted to NMED on February 6, 2002 includeds the required information for SWMUs and Areas of Concern (AOCs) which) that qualify to be on the permit as determined by NMED. Sandia/DOE updated the information in response to NMED's comments dated October 10, 2002. The complete set of updated information is included in this April 2003 submittal.

- **Corrective Action Management Unit (CAMU).** The CAMU wasis used for staging, treatment, and containment of remediation wastes generated during ER Project activities. The CAMU includeds staging areas for bulk and containerized waste, a treatment pad, and a containment cell. The CAMU is located at SNL/NM SWMU 107 in the southeastern corner of SNL/NM TA-III3, northwest of the CWL and the RMWMF. The 5-year authorization to operate the CAMU under Permit Module IV was issued by EPA on September 25, 1997, and expireds on September 20, 2002. Theis comprehensive Part B permit request submitted to NMED on February 6, 2002 includeds a request for renewal of the operating authorizations associated with the CAMU. Sandia/DOE completed operations at

the CAMU in early 2003, and are currently closing the Unit in accordance with an approved closure plan. Sandia/DOE will prepare a post-closure care application during 2003 and submit it to NMED under separate cover.

- CAMU Temporary Unit (TU) for soil stabilization operations. ~~Sandia/DOE completed stabilization operations during 2002 and early 2003.~~The temporary unit was one of two treatment units used to treat remediation wastes at the CAMU. ~~received authorization for treatment (i.e., stabilization) of soils to be placed in the CAMU. The TU authorization was issued on June 19, 1998, and expires one year after Sandia/DOE certify that the TU is complete and ready for operation. Soil stabilization operations are expected to begin in 2002, after Sandia/DOE have made the required certification.~~ The~~is~~ comprehensive Part B permit request submitted to NMED on February 6, 2002 included~~s~~ a revised and updated request for authorization to operate the TU.

  Sandia/DOE completed operations at the TU in early 2003, and are currently closing the Unit in accordance with an approved closure plan. When closure activities are complete, Sandia/DOE will withdraw the request for authorization of the TU.

- CAMU Low Temperature Thermal Desorption Unit (LTTD) Unit. The LTTD unit was one of two treatment units used to treat remediation wastes at the CAMU. ~~Sandia/DOE received permission from NMED to operate the LTTD to treat soils to be placed in the CAMU. The temporary authorization was issued on August 3, 1998, and expires 6 months after the start of LTTD operations. Treatment operations are expected to begin in 2002. This~~ The comprehensive Part B permit request submitted to NMED on February 6, 2002 ~~includes~~ included a request for continuance of ~~the~~ a temporary authorization issued by NMED on August 3, 1998 ~~to~~for ~~operate~~ operation of the LTTD unit. In NMED's initial response dated March 22, 2002, the NMED determined that the temporary authorization was no longer valid and that a separate permit application for LTTD operation was required. Based on that direction, DOE and Sandia transmitted a newly prepared Class 2 permit modification request for operation of the LTTD unit on June 11, 2002. On September 24, 2002, the NMED transmitted a final approval, with conditions. LTTD operations are now complete and the unit is undergoing closure as approved by the NMED. When closure activities are complete, Sandia/DOE will withdraw the request for authorization of the LTTD unit.

2.0 COMPREHENSIVE PART B PERMIT REQUEST

The operations described in Section 1.0 have been addressed separately in past Sandia/DOE permitting activities. Each unit is included in this comprehensive Part B permit request, as requested by the NMED. The request is organized into five parts.

2.1 Part 1

Part 1 consists of this updated introduction,introduction; a summary of Sandia/DOE's public notice activities associated with the this original permit request submitted in February 2002, and an updated general RCRA Part A permit request. The RCRA Part A includes a list of RCRA-regulated wastes managed at SNL/NM, types of management activities, capacities, waste volumes, and photographs of each unit.

2.2 Part 2

Part 2 consists of the updated Part B permit renewal request/application for the nineesix RCRA-regulated waste management units associated with ongoing operations at SNL/NM.: Sandia/DOE revised most of the February 2002 request in response to NMED's comments dated October 10, 2002. Part 2 includes complete applications and renewal requests for the HWMF, TTF, RMWMF, HBWSF, AHCF, and five MSB.

In order to minimize redundant information, the permit request is presented in the following format:

- A "general" Part B that serves as an umbrella document. The general Part B contains general and site-wide SNL/NM information applicable to all nineesix of the waste management units, addressing the general information requirements of NMAC Title 20, Chapter 4.
- FiveSix "modules" – one for the set of five bunkers in the MSB, and one for each of the other units listed above. Each module contains unit-specific information addressing the requirements of NMAC Title 20, Chapter 4. For clarity and consistency, the information in each unit-specific module is arranged in the same order as the information in the Ggeneral Part B.

The exact order of the information is shown in the table of contents at the beginning of the Ggeneral Part B and in the tables of contents for each module and section. The Ggeneral Part B includes a table of regulatory references and the location of the corresponding information in the permit renewal request/application.

2.3 Part 3

Part 3 consists of a revised discussion of the groundwater information for regulated units (the CWL is the only such unit at SNL/NM). The discussion has been revised in response to NMED comments dated October 10, 2002. The discussion includes a complete listing of groundwater

~~reports and data that have been previously provided to the NMED and EPA. The individual submittals are not included here but are available on request.~~

2.4 Part 4

Part 4 consists of updated information about SWMUs at SNL/NM. It includes three sections:

- An introduction, including a description of the Sandia/DOE process for identifying SWMUs;
- A summary of the required information for each SWMU and AOC that qualifies to be on the permit as determined by NMED; and
- A summary of supplemental information about Canyons Groundwater, Technical Area III/V Groundwater, and Tijeras Arroyo Groundwater (TAG).

2.5 Part 5

Part 5 has not been updated at this time (April 2003). It consists of the requests for the renewal or continuance of authorization to operate ~~waste management units associated with SNL/NM corrective action activities~~the Corrective Action Management Unit (CAMU), and two associated treatment units, that were submitted to NMED in February 2002.

- Authorization to operate the CAMU and its elements: staging areas for bulk and containerized waste, the treatment pad, and the containment cell.
- Authorization to operate the ~~temporary~~ Temporary ~~unit~~ Unit (TU) for soil stabilization.
- Authorization to operate the Low-Temperature Thermal ~~Desorption(~~Desorption (LTTD) Unit.

~~These units were originally addressed through Class II and Class III modifications under Module IV of the SNL/NM Part B Permit. The modification requests included all of the relevant information that would be required in a Part B permit application. Sandia/DOE have requested modifications to these authorizations several times since they were first issued. Because each modification request included all of the relevant original information, the most current modification request is included ihere.~~

The CAMU and associated treatment units, the TU and the LTTD unit, have completed operations and are undergoing closure in accordance with closure plans approved by NMED. A post-closure care application for the CAMU is being prepared. Sandia/DOE will complete the CAMU post-closure care application in 2003 and will request that this submittal be substituted in the comprehensive Part B permit request as the CAMU permit application. For the CAMU treatment units, a request to withdraw the LTTD unit and TU from the comprehensive Part B permit request will be transmitted following completion of the closure process.

~~The exact order of the information is shown in the table of contents at the beginning of Part 5 and in the table of contents for each individual request. Each section of Part 5 includes a table of regulatory references and the location of the corresponding information in that section.~~

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Part 1 – General Part A

MAIL THE COMPLETED FORM TO: The Appropriate EPA Regional or State Office.	United States Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION FORM**	
1. Reason for Submittal (See instructions on page 25) CHECK CORRECT BOX(ES)	**Reason for Submittal:** ☐ To provide initial notification (to obtain an EPA ID Number for hazardous waste, universal waste, or used oil activities). ☐ To provide subsequent notification (to update site identification information). ☐ As a component of a First RCRA Hazardous Waste Part A Permit Application. ☒ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # 5) ☐ As a component of the Hazardous Waste Report.	
2. Site EPA ID Number (See instructions on page 26)	**EPA ID Number:** *NM5 890 110 518*	
Site Name (See instructions on page 26)	**Name:** *Sandia National Laboratories*	
4. Site Location Information (See instructions on page 26)	**Street Address:** *1515 Eubank Blvd. SE*	
	City, Town, or Village: *Albuquerque*	**State:** *NM*
	County Name: *Bernalillo*	**Zip Code:** *87123*
5. Site Location (See instructions on page 26)	**Site Land Type :** ☐ Private ☐ County ☐ District ☒ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other	
6. North American Industry Classification System (NAICS) Code(s) for the Site (See instructions on page 26)	**A.** *92811*	**B.** *54171*
	C.	**D.**
7. Site Mailing Address (See instructions on page 27)	**Street or P.O. Box:** *P.O. Box 5400, Sandia Site Office*	
	City, Town, or Village: *Albuquerque*	
	State: *NM*	
	Country: *USA*	**Zip Code:** *87185-5400*
8. Site Contact Person (See instructions on page 27)	**First Name:** *John* **MI:**	**Last Name:** *Gould*
	Phone Number: *(505)-845-6089*	**Phone Number Extension:**
9. Legal Owner and Operator of the Site (See instructions on pages 27 and 28)	**A. Name of Site's Legal Owner:** *US Department of Energy*	**Date Became Owner (mm/dd/yyyy):** *11/01/1949*
	Owner Type: ☐ Private ☐ County ☐ District ☒ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other	
	B. Name of site's Operator: *Sandia Corporation*	**Date Became Operator (mm/dd/yyyy):** *11/01/1949*
	Operator Type: ☐ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☒ Other	

EPA ID No.	N	M	5	8	9	0	1	1	0	5	1	8

10. Type of Regulated Waste Activity (Mark 'X' in the appropriate boxes. See instructions on pages 28 to 32)

A. Hazardous Waste Activities

1. Generator of Hazardous Waste
(Choose only one of the following three categories)

☒ a. LQG: Greater than 1,000 kg/mo (2,200 lbs./mo) of non-acute hazardous waste; or

☐ b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs/mo.) of non-acute hazardous waste; or

☐ c. CESQG: Less than 100 kg/mo (220 lbs./mo.) of non acute hazardous waste

In addition, indicate other generator activities (check all that apply)

☐ d. United States Importer of Hazardous Waste

☒ e. Mixed Waste (hazardous and radioactive) Generator

For Items 2 through 6, check all that apply:

☐ **2. Transporter of Hazardous Waste**

☒ **3. Treater, Storer, or Disposer of Hazardous Waste (at your site)** Note: A hazardous waste permit is required for this activity.

☐ **4. Recycler of Hazardous Waste (at your site)** Note: A hazardous waste permit may be required for this activity.

5. Exempt Boiler and/or Industrial Furnace

☐ a. Small Quantity On-site Burner Exemption

☐ b. Smelting, Melting and Refining Furnace Exemption

☐ **6. Underground Injection Control**

B. Universal Waste Activities *None*

1. Large Quantity Handler Of Universal Waste (accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste generated and/or accumulated at your site. (check all boxes that apply):

	Generated	Accumulated
a. Batteries	☐	☐
b. Pesticides	☐	☐
c. Thermostats	☐	☐
d. Lamps	☐	☐
e. Other (specify) _____	☐	☐
f. Other (specify) _____	☐	☐
g. Other (specify) _____	☐	☐

☐ **2. Destination Facility for Universal Waste:**
Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities *None*

1. Used Oil Transporter – Indicate Type(s) of Activity(ies)

☐ a. Transporter

☐ b. Transfer Facility

2. Used Oil Processor and/or Re-refiner – Indicate Type(s) of Activity(ies)

☐ a. Processor

☐ b. Re-refiner

☐ **3. Off-Specification Used Oil Burner**

4. Used Oil Fuel Marketer – Indicate Type(s) of Activity

☐ a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner

☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

11. Description of Hazardous Wastes (See instructions on page 33) *(n/a per instructions)*

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

EPA ID No.	N	M	5	8	9	0	1	1	0	5	1	8

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-regulated hazardous wastes handled at you site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed for waste codes.

12. Comments (See instructions on Page 33)

None

13. 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 managed 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. **(See instructions on page 33)**

Signature of owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Owner: *Karen Boardman, ~~Michael Zamorski, Area~~ Manager, US Department of Energy, Sandia Site Office ~~of Kirtland Site Operations~~*	
	Co-Operator: *Karen Boardman, ~~Michael Zamorski, Area~~ Manager, US Department of Energy, Sandia Site Office ~~of Kirtland Site Operations~~*	
	Co-Operator: *Donald H. Blanton, Vice President Human Resources & Protection Services, Sandia Corporation*	

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United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact (See instructions on page 35)	**First Name:** *John*	**MI:**	**Last Name:** *Gould*
	Phone Number: *505-845-6089*		**Phone Number Extension:**
2. Facility Permit Contact Mailing Address (See instructions on page 35)	**Street Address:** *P.O. Box 5400, US Department of Energy, Sandia Site Office*		
	City, Town, or Village: *Albuquerque*		**State:** *NM*
	County Name: *USA*		**Zip Code:** *87185-5400*
3. Legal Owner Mailing Address and Telephone Number (See instructions on page 36)	**Street or P.O. Box:** *P.O. Box 5400*		
	City, Town, or Village: *Albuquerque*		
	State: *NM*		
	Country: *USA*	**Zip Code:** *87185-5400*	**Phone Number:** *505-845-4094*
4. Operator Mailing Address and Telephone Number (See instructions on page 36)	**Street or P.O. Box:** *P.O. Box 5800, Department 3100*		
	City, Town, or Village: *Albuquerque*		
	State: *NM*		
	Country: *USA*	**Zip Code:** *87185-5400*	**Phone Number:** *505-844-8516*
5. Facility Existence Date (See instructions on page 36)	**Facility Existence Date (mm/dd/yyyy):** *11/19/1980*		

6. Other Environmental Permits (See instructions on page 36) *See Appendix A*

A. Permit Type	B. Permit Number	C. Description

7. Nature of Business (Provide a brief description; see instructions on page 37)

Sandia National Laboratories/New Mexico is a multi-program research and Development (R&D) laboratory of the U.S. Department of Energy. Missions include R&D related to nuclear weapons, energy, and other programs of national interest.

8. Process Codes and Design Capacities (See instructions on page 37)

A. PROCESS CODE - ***Enter the code from the list of process codes below that best describes each process to be used at the facility. Thirteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 9.***

B. PROCESS DESIGN CAPACITY- For each code entered in column A, enter the capacity of the process.

1. **AMOUNT - Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.**
2. **UNIT OF MEASURE** - ***For each amount entered in column B(1), enter the code in column B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.***

C. PROCESS TOTAL NUMBER OF UNITS - ***Enter the total number of units for each corresponding process code.***

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Disposal:	
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet; Hectare-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure L isted Below
	Storage:	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Acres; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
	Treatment:	
T01	Tank Treatment	Gallons Per Day; Liters Per Day; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; or Metric Tons Per Hour
T02	Surface Impoundment Treatment	Gallons Per Day; Liters Per Day; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Pounds Per Hour; Short Tons per Day; Kilograms Per Hour; Metric Tons Per Day; or Metric Tons Per Hour
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Gallons Per Day; Liters Per Hour; or Million Btu Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; Btu Per Hour; or Million Btu Per Hour
T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour ; Short Tons Per Hour; Kilograms Per Hour; M etric T ons Per Day; M etric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Liters Per Hour; Kilograms Per Hour; or Million Btu Per Hour
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
T87	Smelting, Melting, or Refining Furnace	Gallons Per Day; Liters Per Day; Pounds Per Hour ; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Gallons Per H our; Liters Per Hour; or Million Btu Per Hour
T88	Titanium Dioxide Chloride Oxidation Reactor	
T89	Methane Reforming Furnace Pulping Liquor Recovery	
T90	Furnace Combustion Device Used In	
T91	The Recovery Of Sulfur Values From Spent Sulfuric Acid Halogen Acid Furnaces Other Industrial Furnaces	
T92	Listed In 40 CFR §260.10	
T93		
T94	Containment Building –Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
	Miscellaneous (Subpart X)	
X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per H our; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour ; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; or Million Btu Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit of Measure Listed Below

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
Galloms	G	Short Tons Per Hour	D	Cubic Yards	Y
Gallons Per Hour	E	Metric Tons Per Hour	W	Cubic Meters	C
Gallons Per Day	U	Short Tons Per Day	N	Acres	B
Liters	L	Metric Tons Per Day	S	Acre-feet	A
Liters Per Hour	H	Pounds Per Hour	J	Hectares	Q
Liters Per Day	V	Kilograms Per Hour	R	Hectare-meter	F
		Million BTU Per Hour	X	BTU Per Hour	I

8. Process Codes and Design Capacities (Continued) *See Appendix B*

EXAMPLE FOR COMPLETING Item 8 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons

Line Number	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
1	S 0 1	586,836.0~~607,076.0~~	G	~~005~~012	
2	T 0 4	945.0	G	002	
3	T 0 4	52.0~~10.0~~	J	~~001~~004	
4	~~X 0 2~~	~~40.0~~	~~J~~	~~002~~	
5	X 0 ~~3~~ 1	20.8~~2.0~~	G	001	

NOTE: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 37 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
2	T 0 4	120	U	002	Chemical Deactivation
2	T 0 4	220	U	002	Macroencapsulation
2	T 0 4	605	U	002	Stabilization
3	T 0 4	10	J	001	Thermal Deactivation
3	T 0 4	40	J	002	Physical Treatment
3	T 0 4	2	J	001	Amalgamation

10. Description of Hazardous Wastes (See instructions on page 37)

A. EPA HAZARDOUS WASTE NUMBER - Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	*CODE*	*METRIC UNIT OF MEASURE*	*CODE*
POUNDS	*P*	*KILOGRAMS*	*K*
TONS	*T*	*METRIC TONS*	*M*

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

a. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate the waste will be stored, treated, and/or disposed at the facility.

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

i. Enter the first two as described above.
ii. Enter "000" in the extreme right box of Item 10.D(1).
iii. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 10.E.

b. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in Item 10.D(2) or in Item 10.E(2).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

c. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.

d. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.

e. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING Item 10 (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		*A. EPA Hazardous Waste No. (Enter code)*				*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (Enter Code)*	*D. PROCESSES*									
								(1) PROCESS CODES (Enter Code)									*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
X	1	K	0	5	4	900	P	T	0	3	D	8	0				
X	2	D	0	0	2	400	P	T	0	3	D	8	0				
X	3	D	0	0	1	100	P	T	0	3	D	8	0				
X	4	D	0	0	2												Include With Above

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
1	P001	125	K	S01				
2	P002	110	K	S01				
3	P003	110	K	S01				
4	P004	110	K	S01				
5	P005	125	K	S01				
6	P006	110	K	S01				
7	P007	110	K	S01				
8	P008	110	K	S01				
9	P009	110	K	S01				
10	P010	110	K	S01				
11	P011	125	K	S01				
12	P012	110	K	S01				
13	P013	110	K	S01				
14	P014	110	K	S01				
15	P015	110	K	S01				
16	P016	110	K	S01				
17	P017	110	K	S01				
18	P018	110	K	S01				
19	P020	110	K	S01				
20	P021	110	K	S01				
21	P022	200	K	S01				
22	P023	110	K	S01				
23	P024	110	K	S01				
24	P026	110	K	S01				
25	P027	110	K	S01				
26	P028	110	K	S01				
27	P029	1,600	K	S01				
28	P030	350	K	S01				
29	P031	110	K	S01				
30	P033	110	K	S01				
31	P034	110	K	S01				
32	P036	110	K	S01				
33	P037	110	K	S01				
34	P038	110	K	S01				
35	P039	110	K	S01				
36	P040	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
37	P041	110	K	S01				
38	P042	110	K	S01				
39	P043	110	K	S01				
40	P044	110	K	S01				
41	P045	110	K	S01				
42	P046	110	K	S01				
43	P047	110	K	S01				
44	P048	110	K	S01				
45	P049	110	K	S01				
46	P050	110	K	S01				
47	P051	110	K	S01				
48	P054	110	K	S01				
49	P056	110	K	S01				
50	P057	110	K	S01				
51	P058	110	K	S01				
52	P059	110	K	S01				
53	P060	110	K	S01				
54	P062	110	K	S01				
55	P063	110	K	S01				
56	P064	250	K	S01				
57	P065	110	K	S01				
58	P066	110	K	S01				
59	P067	110	K	S01				
60	P068	110	K	S01				
61	P069	110	K	S01				
62	P070	110	K	S01				
63	P071	110	K	S01				
64	P072	110	K	S01				
65	P073	110	K	S01				
66	P074	110	K	S01				
67	P075	110	K	S01				
68	P076	110	K	S01				
69	P077	110	K	S01				
70	P078	130	K	S01				
71	P081	110	K	S01				
72	P082	110	K	S01				
73	P084	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
74	P085	110	K	S01				
75	P087	150	K	S01				
76	P088	110	K	S01				
77	P089	110	K	S01				
78	P092	110	K	S01				
79	P093	110	K	S01				
80	P094	110	K	S01				
81	P095	110	K	S01				
82	P096	110	K	S01				
83	P097	110	K	S01				
84	P098	150	K	S01				
85	P099	110	K	S01				
86	P101	110	K	S01				
87	P102	110	K	S01				
88	P103	110	K	S01				
89	P104	200	K	S01				
90	P105	110	K	S01				
91	P106	1100	K	S01				
92	P108	110	K	S01				
93	P109	110	K	S01				
94	P110	110	K	S01				
95	P111	110	K	S01				
96	P112	110	K	S01				
97	P113	150	K	S01				
98	P114	110	K	S01				
99	P115	110	K	S01				
100	P116	110	K	S01				
101	P118	110	K	S01				
102	P119	110	K	S01				
103	P120	125	K	S01				
104	P121	110	K	S01				
105	P122	110	K	S01				
106	P123	110	K	S01				
107	P127	110	K	S01				
108	P128	110	K	S01				
109	P185	110	K	S01				
110	P188	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
111	P189	110	K	S01				
112	P190	110	K	S01				
113	P191	110	K	S01				
114	P192	110	K	S01				
115	P194	110	K	S01				
116	P196	110	K	S01				
117	P197	110	K	S01				
118	P198	110	K	S01				
119	P199	110	K	S01				
120	P201	110	K	S01				
121	P202	110	K	S01				
122	P203	110	K	S01				
123	P204	110	K	S01				
124	P205	110	K	S01				
125	U001	110	K	S01				
126	U002	1,100	K	S01				
127	U003	350	K	S01				
128	U004	110	K	S01				
129	U005	110	K	S01				
130	U006	110	K	S01				
131	U007	110	K	S01				
132	U008	200	K	S01				
133	U009	110	K	S01				
134	U010	110	K	S01				
135	U011	110	K	S01				
136	U012	125	K	S01				
137	U014	110	K	S01				
138	U015	110	K	S01				
139	U016	110	K	S01				
140	U017	110	K	S01				
141	U018	110	K	S01				
142	U019	250	K	S01				
143	U020	110	K	S01				
144	U021	110	K	S01				
145	U022	110	K	S01				
146	U023	110	K	S01				
147	U024	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
148	U025	110	K	S01				
149	U026	110	K	S01				
150	U027	110	K	S01				
151	U028	5,100	K	S01				
152	U029	110	K	S01				
153	U030	110	K	S01				
154	U031	600	K	S01				
155	U032	600	K	S01				
156	U033	110	K	S01				
157	U034	110	K	S01				
158	U035	150	K	S01				
159	U036	600	K	S01				
160	U037	150	K	S01				
161	U038	110	K	S01				
162	U039	110	K	S01				
163	U041	110	K	S01				
164	U042	110	K	S01				
165	U043	110	K	S01				
166	U044	250	K	S01				
167	U045	125	K	S01				
168	U046	110	K	S01				
169	U047	110	K	S01				
170	U048	110	K	S01				
171	U049	110	K	S01				
172	U050	110	K	S01				
173	U051	175	K	S01				
174	U052	125	K	S01				
175	U053	110	K	S01				
176	U055	125	K	S01				
177	U056	350	K	S01				
178	U057	125	K	S01				
179	U058	110	K	S01				
180	U059	110	K	S01				
181	U060	110	K	S01				
182	U061	110	K	S01				
183	U062	110	K	S01				
184	U063	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
185	U064	110	K	S01				
186	U066	110	K	S01				
187	U067	125	K	S01				
188	U068	110	K	S01				
189	U069	200	K	S01				
190	U070	150	K	S01				
191	U071	110	K	S01				
192	U072	110	K	S01				
193	U073	110	K	S01				
194	U074	110	K	S01				
195	U075	300	K	S01				
196	U076	110	K	S01				
197	U077	300	K	S01				
198	U078	150	K	S01				
199	U079	150	K	S01				
200	U080	1,100	K	S01				
201	U081	110	K	S01				
202	U082	110	K	S01				
203	U083	110	K	S01				
204	U084	110	K	S01				
205	U085	110	K	S01				
206	U086	110	K	S01				
207	U087	110	K	S01				
208	U088	110	K	S01				
209	U089	110	K	S01				
210	U090	110	K	S01				
211	U091	110	K	S01				
212	U092	110	K	S01				
213	U093	110	K	S01				
214	U094	110	K	S01				
215	U095	110	K	S01				
216	U096	110	K	S01				
217	U097	110	K	S01				
218	U098	110	K	S01				
219	U099	110	K	S01				
220	U101	110	K	S01				
221	U102	120	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
222	U103	110	K	S01				
223	U105	110	K	S01				
224	U106	110	K	S01				
225	U107	150	K	S01				
226	U108	150	K	S01				
227	U109	110	K	S01				
228	U110	110	K	S01				
229	U111	110	K	S01				
230	U112	1,100	K	S01				
231	U113	110	K	S01				
232	U114	110	K	S01				
233	U115	110	K	S01				
234	U116	110	K	S01				
235	U117	130	K	S01				
236	U118	110	K	S01				
237	U119	110	K	S01				
238	U120	110	K	S01				
239	U121	300	K	S01				
240	U122	600	K	S01				
241	U123	135	K	S01				
242	U124	110	K	S01				
243	U125	110	K	S01				
244	U126	110	K	S01				
245	U127	110	K	S01				
246	U128	110	K	S01				
247	U129	110	K	S01				
248	U130	110	K	S01				
249	U131	150	K	S01				
250	U132	125	K	S01				
251	U133	350	K	S01				
252	U134	2,100	K	S01				
253	U135	175	K	S01				
254	U136	110	K	S01				
255	U137	110	K	S01				
256	U138	110	K	S01				
257	U140	150	K	S01				
258	U141	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
259	U142	110	K	S01				
260	U143	110	K	S01				
261	U144	400	K	S01				
262	U145	110	K	S01				
263	U146	110	K	S01				
264	U147	200	K	S01				
265	U148	110	K	S01				
266	U149	110	K	S01				
267	U150	110	K	S01				
268	U151	1,400	K	S01				
269	U152	110	K	S01				
270	U153	110	K	S01				
271	U154	600	K	S01				
272	U155	110	K	S01				
273	U156	110	K	S01				
274	U157	110	K	S01				
275	U158	125	K	S01				
276	U159	225	K	S01				
277	U160	150	K	S01				
278	U161	150	K	S01				
279	U162	200	K	S01				
280	U163	110	K	S01				
281	U164	110	K	S01				
282	U165	1,100	K	S01				
283	U166	110	K	S01				
284	U167	110	K	S01				
285	U168	110	K	S01				
286	U169	300	K	S01				
287	U170	110	K	S01				
288	U171	125	K	S01				
289	U172	110	K	S01				
290	U173	110	K	S01				
291	U174	110	K	S01				
292	U176	110	K	S01				
293	U177	150	K	S01				
294	U178	150	K	S01				
295	U179	200	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
296	U180	200	K	S01				
297	U181	150	K	S01				
298	U182	125	K	S01				
299	U183	125	K	S01				
300	U184	125	K	S01				
301	U185	125	K	S01				
302	U186	150	K	S01				
303	U187	110	K	S01				
304	U188	125	K	S01				
305	U189	110	K	S01				
306	U190	110	K	S01				
307	U191	110	K	S01				
308	U192	110	K	S01				
309	U193	110	K	S01				
310	U194	110	K	S01				
311	U196	125	K	S01				
312	U197	110	K	S01				
313	U200	110	K	S01				
314	U201	125	K	S01				
315	U202	110	K	S01				
316	U203	110	K	S01				
317	U204	125	K	S01				
318	U205	110	K	S01				
319	U206	110	K	S01				
320	U207	110	K	S01				
321	U208	110	K	S01				
322	U209	120	K	S01				
323	U210	125	K	S01				
324	U211	200	K	S01				
325	U213	450	K	S01				
326	U214	110	K	S01				
327	U215	110	K	S01				
328	U216	110	K	S01				
329	U217	110	K	S01				
330	U218	110	K	S01				
331	U219	125	K	S01				
332	U220	600	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
333	U221	110	K	S01				
334	U222	110	K	S01				
335	U223	1,100	K	S01				
336	U225	150	K	S01				
337	U226	4,100	K	S01				
338	U227	1,600	K	S01				
339	U228	1,100	K	S01				
340	U234	110	K	S01				
341	U235	110	K	S01				
342	U236	110	K	S01				
343	U237	110	K	S01				
344	U238	110	K	S01				
345	U239	350	K	S01				
346	U240	110	K	S01				
347	U243	110	K	S01				
348	U244	110	K	S01				
349	U246	110	K	S01				
350	U247	110	K	S01				
351	U248	110	K	S01				
352	U249	110	K	S01				
353	U271	110	K	S01				
354	U278	110	K	S01				
355	U279	110	K	S01				
356	U280	110	K	S01				
357	U328	110	K	S01				
358	U353	110	K	S01				
359	U359	200	K	S01				
360	U364	110	K	S01				
361	U367	110	K	S01				
362	U372	110	K	S01				
363	U373	110	K	S01				
364	U387	110	K	S01				
365	U389	110	K	S01				
366	U394	110	K	S01				
367	U395	110	K	S01				
368	U404	110	K	S01				
369	U409	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
370	U410	110	K	S01				
371	U411	110	K	S01				
372	F001	265,000	K	S01	T04	X02	X03	
373	F002	272,000	K	S01	T04	X02	X03	
374	F003	275,000	K	S01	T04	X02	X03	
375	F004	1,500	K	S01	T04	X02	X03	
376	F005	262,000	K	S01	T04	X02	X03	
377	F006	200	K	S01				
378	F007	6,500	K	S01				
379	F008	200	K	S01				
380	F009	200	K	S01				
381	F010	200	K	S01				
382	F011	200	K	S01				
383	F012	100	K	S01				
384	F019	100	K	S01				
385	F020	100	K	S01				
386	F021	100	K	S01				
387	F022	100	K	S01				
388	F023	100	K	S01				
389	F024	100	K	S01				
390	F025	100	K	S01				
391	F026	100	K	S01				
392	F027	150	K	S01				
393	F028	100	K	S01				
394	FO32	100	K	S01				
395	F034	100	K	S01				
396	F035	100	K	S01				
397	F037	100	K	S01				
398	F038	100	K	S01				
399	F039	250,000	K	S01	T04			
400	D001	125,500	K	S01	T04	X02	X03	
401	D002	58,000	K	S01	T04	X02		
402	D003	41,000	K	S01	T04	X03		
403	D004	39,000	K	S01	T04	X02		
404	D005	48,000	K	S01	T04	X02		
405	D006	105,000	K	S01	T04	X02		
406	D007	66,000	K	S01	T04	X02		

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
407	D008	125,000	K	S01	T04	X02		
408	D009	40,000	K	S01	T04	X02		
409	D010	2,000	K	S01	T04	X02		
410	D011	45,000	K	S01	T04	X02	X03	
411	D012	25,050	K	S01				
412	D013	150	K	S01				
413	D014	150	K	S01				
414	D015	150	K	S01				
415	D016	150	K	S01				
416	D017	150	K	S01				
417	D018	32,000	K	S01	T04	X02		
418	D019	25,200	K	S01	T04	X02		
419	D020	25,050	K	S01	T04	X02		
420	D021	25,100	K	S01	T04	X02		
421	D022	26,000	K	S01	T04	X02		
422	D023	25,050	K	S01	T04	X02		
423	D024	25,050	K	S01	T04	X02		
424	D025	25,050	K	S01	T04	X02		
425	D026	25,100	K	S01	T04	X02		
426	D027	25,100	K	S01	T04	X02		
427	D028	26,000	K	S01	T04	X02		
428	D029	25,100	K	S01	T04	X02		
429	D030	25,500	K	S01	T04	X02		
430	D031	25,050	K	S01	T04	X02		
431	D032	25,100	K	S01	T04	X02		
432	D033	25,100	K	S01	T04	X02		
433	D034	25,500	K	S01	T04	X02		
434	D035	40,000	K	S01	T04	X02		
435	D036	25,100	K	S01	T04	X02		
436	D037	25,100	K	S01	T04	X02		
437	D038	25,100	K	S01	T04	X02		
438	D039	27,000	K	S01	T04	X02		
439	D040	30,000	K	S01	T04	X02		
440	D041	25,050	K	S01	T04	X02		
441	D042	25,050	K	S01	T04	X02		
442	D038	25,100	K	S01	T04	X02		
443	D039	27,000	K	S01	T04	X02		

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
444	D040	30,000	K	S01	T04	X02		
445	D041	25,050	K	S01	T04	X02		
446	D042	25,050	K	S01	T04	X02		
447	D043	25,050	K	S01	T04	X02		

11. Map (See instructions on page 38 : *See Figure B-1*

Attach to this application a topographic map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

12. Facility Drawing (See instructions on Page 39: *See Appendix B*

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

13. Photographs (See instructions on page 39): *See Appendix B*

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

14. Comments (See instructions on page 39)

General Part A – Appendix A

APPENDIX A

ACTIVE ENVIRONMENTAL PERMITS

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Sandia National Laboratories/New Mexico
Active Environmental Permits as of 031/3122/032

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
SEWER WASTEWATER				
General	2069 A-5	0301/233/00	06/30/03	COA
General	2069 F-5	01/3/00	076/310/03	COA
Microelectronics Development Laboratory	2069 G-54	067/01/0298	05/31/052	COA
General	2069 I-4	01/24/00	01/31/04	COA
General	2069 K-43	037/01/0298	102/3128/042	COA
SURFACE DISCHARGE				
Pulsed Power Development Facilities (Discharge Plan)	DP-530	09/21/01	09/21/06	NMED
STORM WATER				
National Pollution Discharge Elimination System "Multi-sector General" Permit	NMR05A961	02/01	09/30/05	EPA
Storm Drain, Sanitary Sewer, and Domestic Water System Modernization	NMR10B507	06/29/99	06/31/03 (estimated date)	EPA
NPDES construction permit for the Joint Computational Engineering Laboratory	[b]	04/20/02	10/03	EPA
Joint Computational Engineering Laboratory	[b]	01/28/02	07/31/09 (estimated date)	EPA
ECOLOGICAL				
New Mexico Department of Game and Fish, for Scientific/Educational Purposes, Authorization for Taking of Protected Wildlife	2931	01/01/02	12/31/02 [a]	New Mexico Department of Game and Fish
Fish and Wildlife Special Purpose Salvage Permit (for migratory birds)	MB040780-0	05/30/01	12/31/03	U.S. Fish and Wildlife Service
UNDERGROUND STORAGE TANKS				
9,750 gal emergency generator fuel		07/1/01	06/30/03	NMED, PST Bur.
20,000 gal oil storage tank		07/1/01	06/30/03	NMED, PST Bur.
20,000 gal oil storage tank		07/1/01	06/30/03	NMED, PST Bur.

NOTE:
[a] Applied for permit renewal, not yet received.
[b] Permit number not issued yet.
COA = City of Albuquerque
NMED = New Mexico Environment Department
EPA = U.S. Environmental Protection Agency
~~UST~~ PST Bur. = Petroleum~~Underground~~ Storage Tank Bureau

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 03/31/03 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
ABOVEGROUND STORAGE TANKS				
1,024,000 gal storage tank	b	07/01/02	06/30/03	NMED
508,000 gal storage tank	b	07/01/02	06/30/03	NMED
213,898 gal storage tank	b	07/01/02	06/30/03	NMED
209,421 gal storage tank	b	07/01/02	06/30/03	NMED
45,490 gal storage tank	b	07/01/02	06/30/03	NMED
44,129 gal storage tank	b	07/01/02	06/30/03	NMED
10,000 gal storage tank	b	07/01/02	06/30/03	NMED
10,000 gal storage tank	b	07/01/02	06/30/03	NMED
10,000 gal storage tank	b	07/01/02	06/30/03	NMED
75,000 gal storage tank	b	07/01/02	06/30/03	NMED
75,000 gal storage tank	b	07/01/02	06/30/03	NMED
75,000 gal storage tank	b	07/01/02	06/30/03	NMED
250,000 gal storage tank	b	07/01/02	06/30/03	NMED
250,000 gal storage tank	b	07/01/02	06/30/03	NMED
250,000 gal storage tank	b	07/01/02	06/30/03	NMED
250,000 gal storage tank	b	07/01/02	06/30/03	NMED
250,000 gal storage tank	b	07/01/02	06/30/03	NMED
250,000 gal storage tank	b	07/01/02	06/30/03	NMED
250,000 gal storage tank	b	07/01/02	06/30/03	NMED
25,000 gal storage tank	b	07/01/02	06/30/03	NMED

NOTE:
[b] Permit number not issued yet.
NMED = New Mexico Environment Department

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 03~~1~~/31~~22~~/03~~2~~ (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
RCRA				
"RCRA Part B Operating Permit" for the Hazardous Waste Management Facility Module I - General Permit Conditions Module II - General Facility Conditions Module III - Containers	NM5890110518-1	08/06/92	08/06/02 [c]	NMED
"RCRA Part B Operating Permit" Module IV - Hazardous and Solid Waste Amendments Portion for Solid Waste Management Units	NM5890110518-1	08/26/93	09/20/02 [c]	EPA/NMED
"RCRA Part B Operating Permit" for the Thermal Treatment Facility Module I - General Permit Conditions Module II - General Facility Conditions Module III - Containers	NM5890110518-2	12/04/94	12/04/04 [c]	NMED
~~"RCRA~~ General Part A ~~and B~~ Permit Request~~Applications for Hazardous Waste Management Units"~~ ~~For the hazardous component in~~ Storage and/or treatment of RCRA-regulated ~~mixed~~ waste ~~stored and/or treated~~ at twelve~~three~~ waste management Units~~areas~~.	NM5890110518	~~Interim status~~ First submitted 8/90; Rev. 4~~3~~, 05/28/02~~11/96~~	Pending Review [b] (No expiration date)	NMED
Class III Permit Modification for the Management of Hazardous Remediation Waste in the Corrective Action Management Unit (CAMU), Technical Area III	NM5890110518	09/25/97	09/20/02 [c]	~~EPA~~/NMED
Class II Permit Modification for Temporary Treatment Operations at the CAMU	NM5890110518	04~~6~~/04~~19~~/02~~98~~	One year after TU is ready for operation	~~EPA~~/NMED
Class II Permit Modification ~~Temporary Authorization~~ for Low Temperature Thermal Desorption Treatment Operations ~~Unit~~ at the CAMU	NM5890110518	09~~8~~/24~~03~~/02~~98~~	None~~6 months after the start of operations~~	NMED
Comprehensive Part B Permit Request Storage and/or treatment of RCRA-regulated waste at nine waste management Units.	NM5890110518	02/06/02 [c]		NMED
TSCA				
~~Risk-Based Approval for Cleanup of the Chemical Waste Landfill~~		~~Notification 12/98~~	~~No expiration date~~	~~EPA Region 6~~
~~Storage of Soils Containing Polychlorinated Biphenyls (PCBs) at Regulated Levels~~		~~04/28/00 and 05/22/01~~	~~Storage period extended pending EPA decision on 40 CFR 761.61(c) request~~	~~EPA Region 6~~
Risk-Based Approval Request under 40 CFR 761.61(c); Risk-Based Method for Management of PCB Materials; Chemical Waste Landfill and CAMU		~~Pending~~06/26/02	No expiration date	EPA ~~Region 6~~

NOTE:

[a] Applied for permit renewal; not yet received

[~~c~~b] Submitted application for renewal on 02/06/2002, ~~and awaiting~~ undergoing agency review.

EPA = U.S. Environmental Protection Agency
NMED = New Mexico Environment Department
RCRA = Resource Conservation and Recovery Act
TSCA = Toxic Substances Control Act

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 01/22/02 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
AIR (Open Burn Permits)				
Fire Extinguisher (Fire Training)		[d]		COA
Burn Site ~~(Building 9830)~~		[d]		COA
Burn Site/Sled Track ~~(Wood Crib Fire Tests)~~		[d]		COA
Burn Site (Large Pool Fire Tests)		[d]		COA
~~185' Drop Tower (Alternative Fuel Tanks)~~				~~COA~~
Explosive Testing ~~(Thermite Applications)~~		[d]		COA
9920 and Sled Track ~~(Explosive Testing)~~		[d]		COA
Thermal Treatment Facility (permit must be submitted to NMED within 30 days of receipt)	76-OB-51-20032	031/218/032	12/31/032	COA
AIR (Permits & Registrations)				
Hammermill -Facility	144	08/28/85	Biennial update	COA
Fire Laboratory used for the Authentication of Modeling and Experiments	196	05/19/88	Registration[†]	COA
Neutron Generator Facility	374- MI	07/17/98	Biennial update	COA
Neutron Generator Recertification	396	05/07/96	Biennial update~~Registration†~~	COA
Standby diesel generators (four)	402 ~~(old 150)~~	05/07/96	Biennial update	COA
Radioactive & Mixed Waste Management Facility	415- M1	11/24/99	Biennial update	COA
Isotope Production Facility ~~(Hot Cell Facility)~~	428	07/08/96	Biennial update	COA
Title V Operating Permit	515 (pending)	Submitted[b a] 03/1/96	Pending (5 yr renewal)	COA
Classified Waste Landfill	560	12/17/96	Biennial update	COA
Classified Waste Landfill	NESHAP	06/96	Approval[††]	EPA~~,Region 6~~
Advanced Manufacturing Processes Laboratory	646	01/23/97	Biennial update	COA
Portable Burn Pools	647	05/05/97	Biennial update	COA
Chemical Waste Landfill (CWL) Excavation	540	5/19/99	Registration[†]	COA
Chemical Waste Landfill -Voluntary Corrective Measure	648	05/23/97	Registration[†]	COA
Soil Washing / Soil Stabilization Unit, CAMU	888-M1	08/21/024~~/20/98~~	Biennial update	COA
High Energy Radiation Megavolt Electron Source-III	NESHAP	6/29/88	Approval[††]	EPA
Advanced Manufacturing Prototype Facility	1406	11/6/00	Registration[†]	COA
Microelectronics Development Laboratory	1678	12/23/02	Biennial update	COA
Emergency Generator	924	5/5/98	Biennial update	COA
Processing and Environmental Technology Laboratory	925-M1	035/05/0198	Biennial update	COA

NOTE:

[a] Applied for permit renewal; not yet received

[d] COA issues open burn permits annually. Sandia/DOE have applied for/will apply for this permit for calendar year 20023.

[†] Registration = Certificate, no permit required.

[††] Approval = EPA does not issue a permit.

EPA = U.S. Environmental Protection Agency

General Part A – Appendix B

APPENDIX B

LOCATION-SPECIFIC PROCESS CODE LISTINGS, DESIGN CAPACITIES, FIGURES, AND PHOTOGRAPHS

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LOCATION-SPECIFIC PROCESS CODE LISTINGS AND DESIGN CAPACITIES

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Explanation of Process Code Listings and Design Capacities at the Hazardous Waste Management Facility

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	99,950 gallons	Building 958
Container storage area	7,590 gallons	Building 959
Container storage area	5,005 gallons	Modular Storage Building 958B
Container storage area	5,005 gallons	Modular Storage Building 958C
Total S01	**117,550 gallons**	

Explanation of Process Code Listings and Design Capacities at the Thermal Treatment Facility

Description	Capacity	Associated Structure/Building
Line 5 X01~~3~~ Treatment: Thermal		
Thermal treatment of explosive waste	20.8~~2~~ gallons/batch 1902~~0~~ pounds/batch	South of Building 6715
Total X01~~3~~	**20.8~~2~~ gallons/batch** **1902~~0~~ pounds /batch**	

Explanation of Process Code Listings and Design Capacities at the Radioactive and Mixed Waste Management Facility

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	13,420 gallons	Building 6920
Container storage area	7,810 gallons	Building 6921
Container storage area	83,160 gallons	Building 6925
Container storage area	83,160 gallons	Building 6926
Container storage area	1,100 gallons	Modular Storage Building
Container storage area	1,100 gallons	Modular Storage Building
Container storage area	19,800 gallons	Asphalt area N, E, and W of Building 6920
Total S01	**209,550 gallons**	

Line 3 T04 Other Treatment (in containers)		
Chemical deactivation	65 gallons/day	Building 6920, Building 6921
Macroencapsulation	165 gallons/day	Building 6920, Building 6921, Building 6925
Stabilization	550 gallons/day	Building 6920, Building 6921
Thermal deactivation	10 pounds/hour	Building 6920
Amalgamation	2 pounds/hour	Building 6920, Building 6921
Total T04	**780 gallons/day and 120 pounds/hour**	

Line 4 T04~~X02~~ Other Treatment (physical treatment) ~~Mechanical Processing~~		
Physical treatment ~~Mechanical processing~~	20 pounds/hour	Building 6920, Building 6921
Total ~~X02~~T04	**20 pounds/hour**	

Explanation of Process Code Listings and Design Capacities at the High Bay Waste Storage Facility

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	100,320 gallons	Building 6596
Total S01	**100,320 gallons**	

Explanation of Process Code Listings and Design Capacities at the Auxiliary Hot Cell Facility

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	2,200 gallons	Building 6597
Storage silos	1,456 gallons	Building 6597
Total S01	**3,656 gallons**	

Line 2 T04 Other Treatment (in containers)		
Chemical deactivation	55 gallons/day	Building 6597
Macroencapsulation	55 gallons/day	Building 6597
Stabilization	55 gallons/day	Building 6597
Total T04	**165 gallons/day**	

Line 4 T04~~X02~~ Other Treatment (physical treatment)~~Mechanical Processing~~		
Physical treatment ~~Mechanical processing~~	20 pounds/hour	Building 6597
Total T04~~X02~~	**20 pounds/hour**	

Explanation of Process Code Listings and Design Capacities at the Manzano Storage Bunkers

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	50,160 gallons	Type B Bunkers Bunkers 37034 and 37063
Container storage area	50, 160~~70,400~~ gallons	Type C Bunkers Bunkers 37078 and 37118
Container storage area	55,440 gallons	Type D Bunkers Bunkers 37045, 37055, and 37057
Total S01	**155,760~~176,000~~ gallons**	

FIGURES

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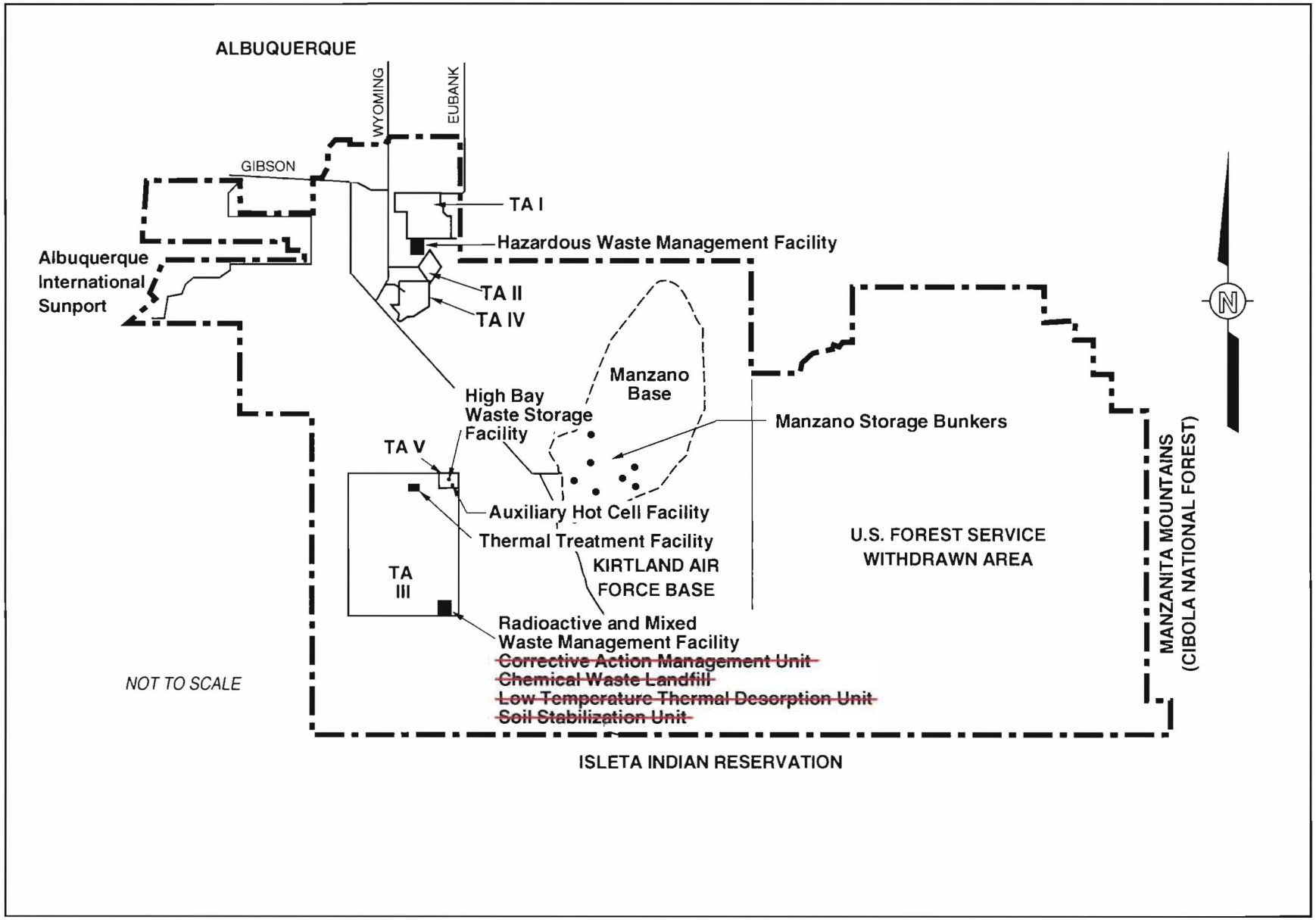


Figure B-2

Sandia National Laboratories/New Mexico, Technical Areas (TAs) and Resource Conservation and Recovery Act-Regulated Waste Management Units

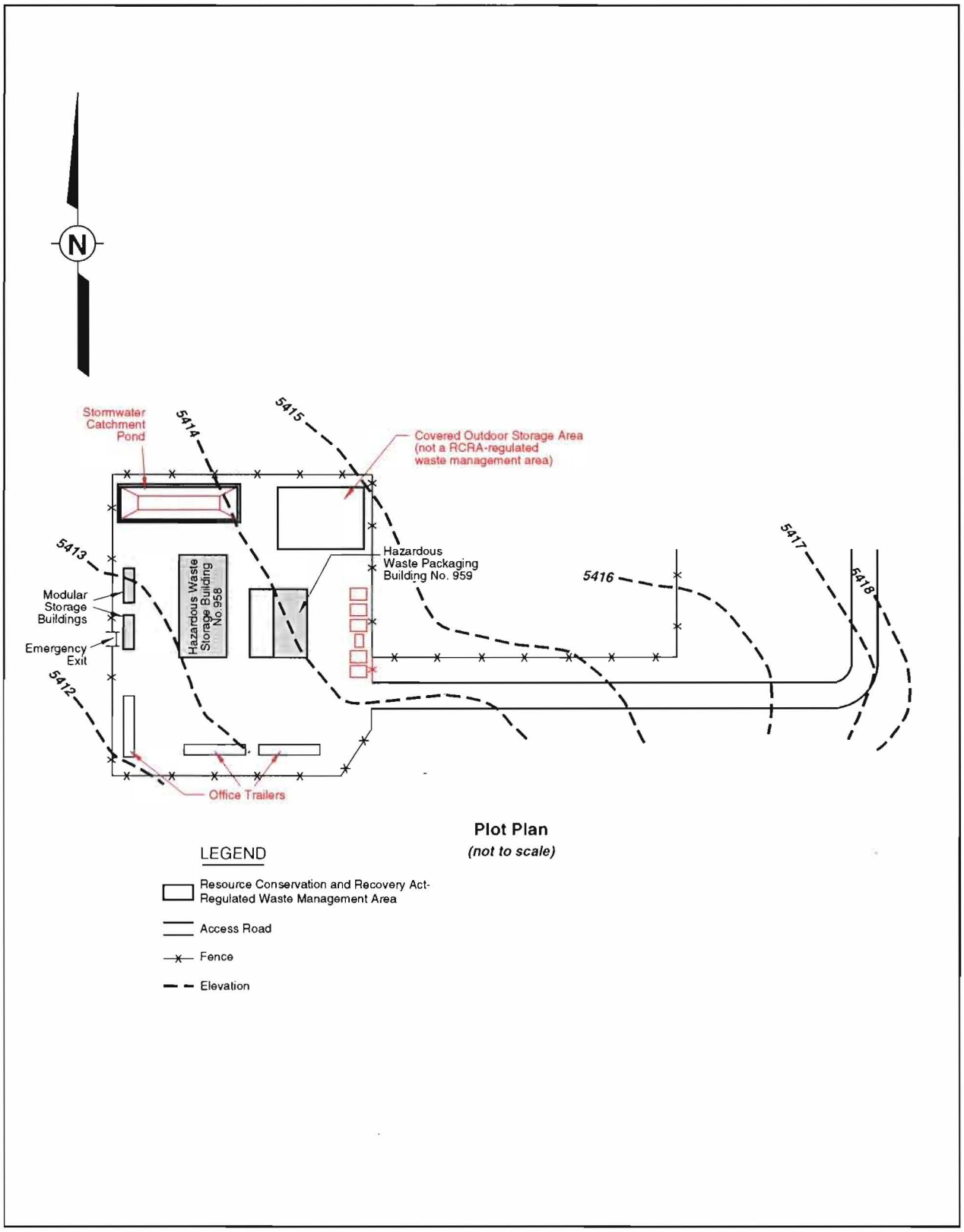
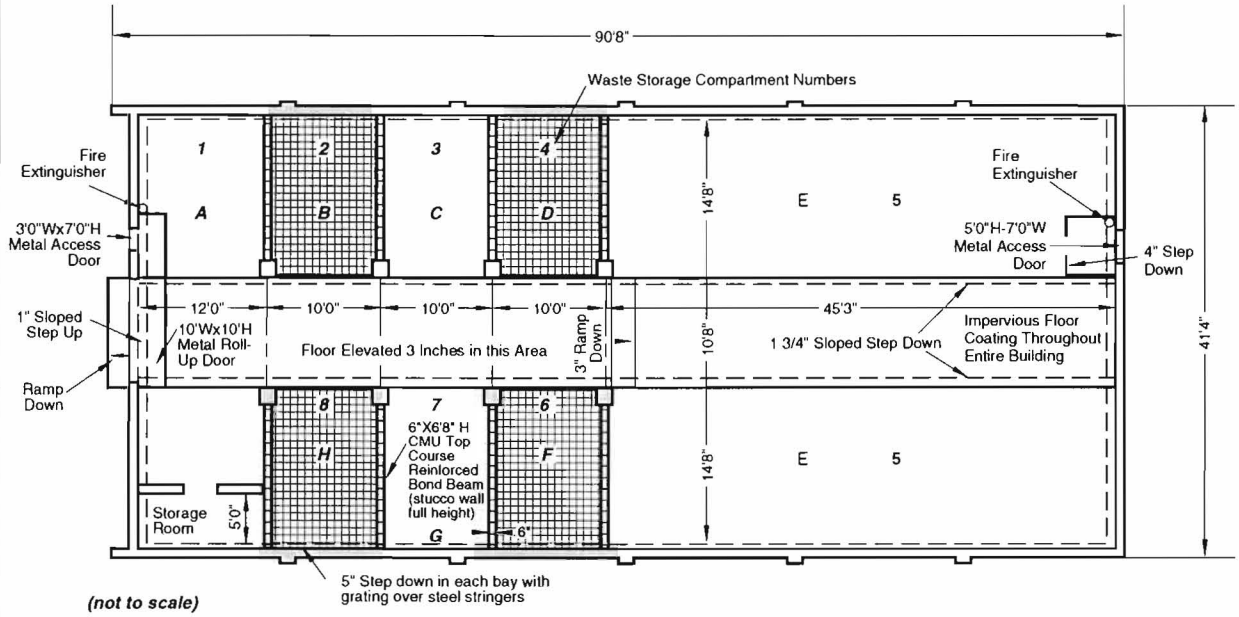


Figure B-3
Hazardous Waste Management Facility, Resource Conservation and Recovery Act-Regulated Waste Management Areas

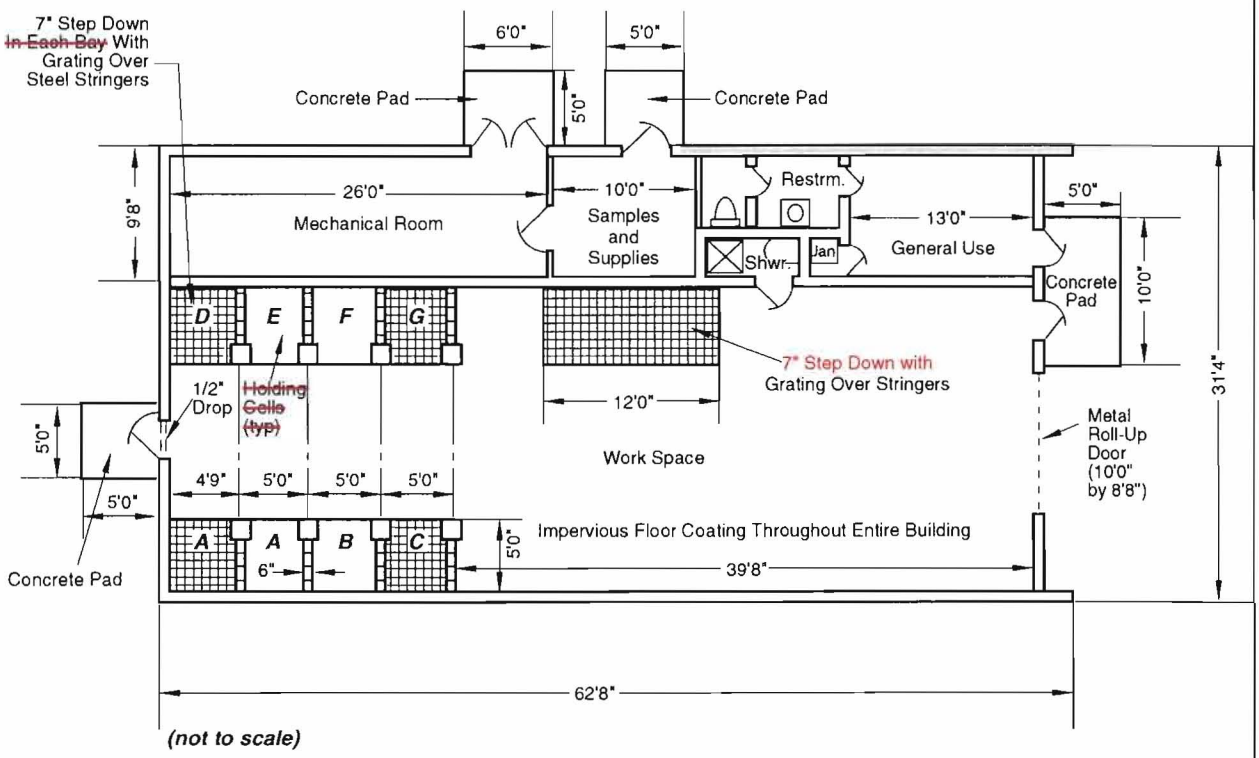


Typical Waste Segregation Groups

- A Holding Bay
- B Poisons
- C Flammables
- D Oxidizers
- E Hydrocarbons, Organics, Solvents, Non-Regulated Wastes
- F Corrosives (caustics)
- G Corrosives (acids or caustics)
- H Corrosives (acids)

Note: Cells 1-4 and 6-8 are constructed with a 5" step down and grating over steel stringers. Cell 5 is not equipped with grating.

Figure B-4
Hazardous Waste Storage Building (Building 958), Floor Plan



Typical Waste Segregation Groups

- A Hydrocarbons, Organics, and Solvents
- B Class 9 Solids and Liquids
- C Poisons
- D Oxidizing Mineral Acids, Non-Acidic Oxidizers
- E Non-Regulated Waste
- F Caustics
- G Organic Acids, Non-Oxidizing Mineral Acids, Mercury

Note: All storage cells equipped as shown for Cell D: 7" step down and steel grating over stringers.

Figure B-5
Hazardous Waste Packaging Building (Building 959), Floor Plan

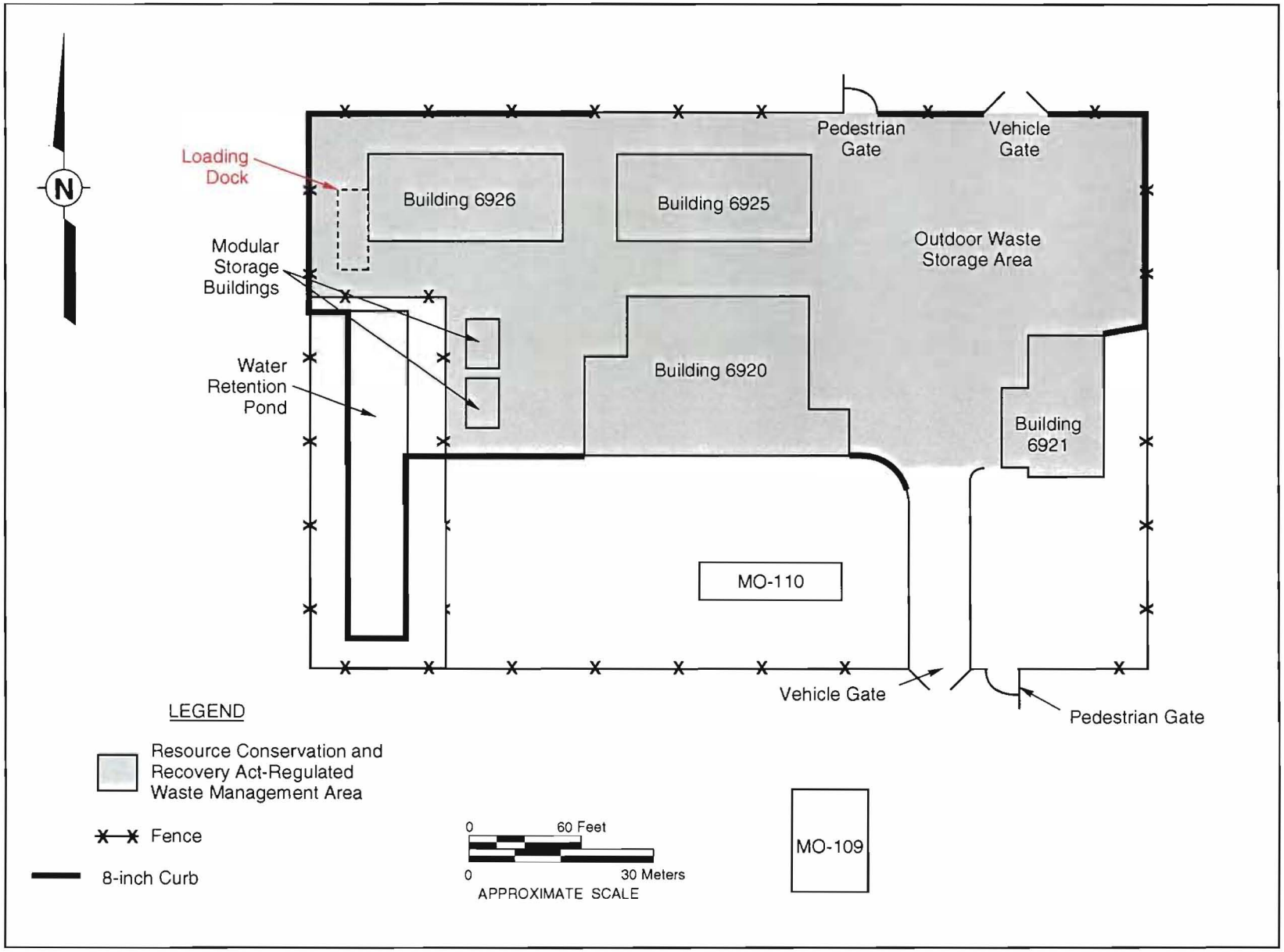


Figure B-9
Radioactive and Mixed Waste Management Facility,
Resource Conservation and Recovery Act-Regulated Waste Management Areas

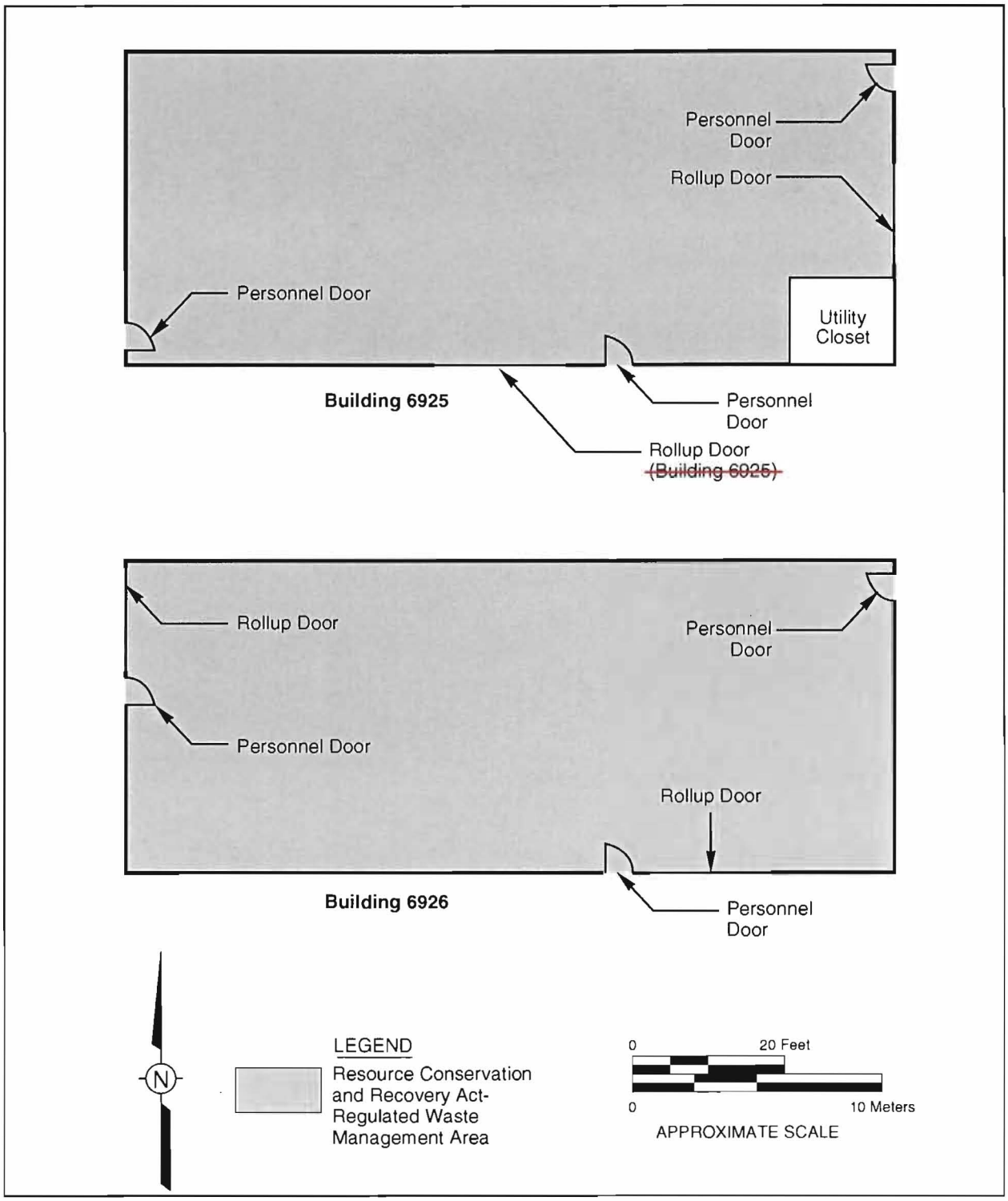


Figure B-12

Radioactive and Mixed Waste Management Facility Compound, Buildings 6925 and 6926, Resource Conservation and Recovery Act-Regulated Waste Management Areas

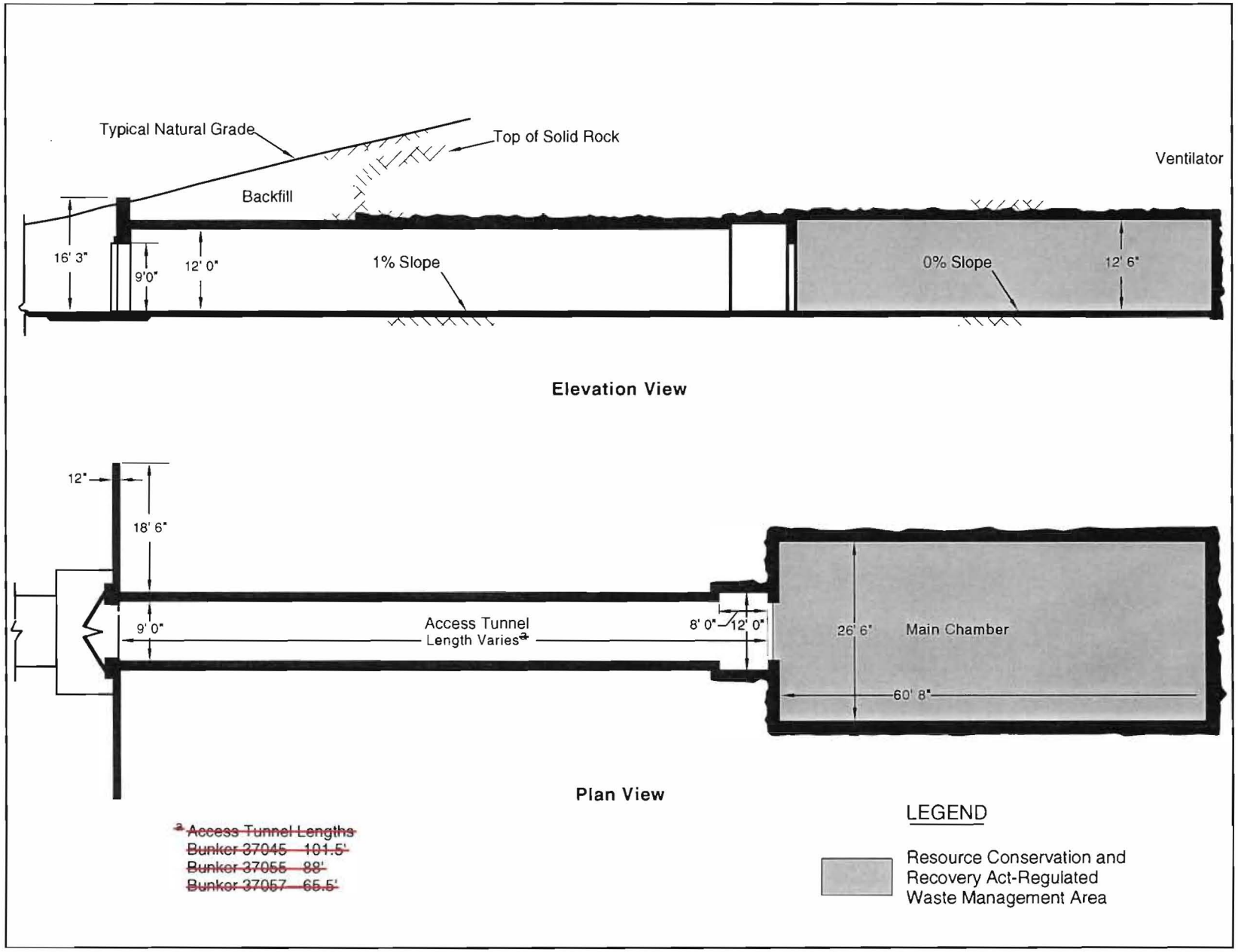


Figure B-20
Manzano Storage Bunkers, Type D
Bunkers 37045, 37055, and 37057

PHOTOGRAPHS

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Part 2 – General Part B for Waste Management Units

Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application

Revision 2.0

April ~~February~~ 2003

Prepared by
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185

Prepared for
The U.S. Department of Energy

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B	Site-Wide Waste Analysis Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units
C	Site-Wide Inspection Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units
D	Site-Wide Personnel Training Plan for Sandia National Laboratories/ New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units
E	Site-Wide Contingency Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units
F	Site-Wide Closure Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units
~~G~~	~~Site-Wide Treatment Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units~~

LIST OF MODULES

Module	Title
I	HWMF-Hazardous Waste Management Facility
II	TTF-Thermal Treatment Facility
III	RMWMF-Radioactive and Mixed Waste Management Facility
IV	Reserved~~HBWSF-High Bay Waste Storage Facility~~
V	AHCF-Auxiliary Hot Cell Facility
VI	MSB-Manzano Storage Bunkers

ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	microgram(s) per cubic meter
20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
A/BCAQCB	Albuquerque/Bernalillo County Air Quality Control Board
AHCF	Auxiliary Hot Cell Facility
ALARA	as low as reasonably achievable
ARPA	Archeological Resources Protection Act
ASTM	American Society for Testing and Materials
CMU	concrete masonry unit
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
DQO	data quality objective
DR	disposal request
EC	Emergency Coordinator
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
ER	Environment Restoration
ERO	Emergency Response Organization
^{o}F	degree(s) Fahrenheit
ft	foot/feet
ft^2	square foot/feet

ACRONYMS AND ABBREVIATIONS (Continued)

ft^3	cubic foot/feet
~~HBWSF~~	~~High Bay Waste Storage Facility~~
HEPA	high efficiency particulate air
HSWA	Hazardous and Solid Waste Amendments
HWMF	Hazardous Waste Management Facility
IC	Incident Commander
ICS	Incident Command System
ID	inner diameter
in.	inch(es)
KAFB	Kirtland Air Force Base
KOP	knowledge of process
lb/ft^2	pound(s) per square foot/feet
LDR	land disposal restriction
m^3	cubic meter(s)
mi	mile(s)
mph	mile(s) per hour
MSB	Manzano Storage Bunkers
MSDS	Material Safety Data Sheet
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NMED	New Mexico Environment Department
OKSO	Office of Kirtland Site Operations
ppmw	part(s) per million by weight

ACRONYMS AND ABBREVIATIONS (Concluded)

PPE	personal protective equipment
psi	pounds per square inch (pressure)
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
R&D	research and development
RMWMF	Radioactive and Mixed Waste Management Facility
Sandia	Sandia Corporation
SASN	silver acetylide/silver nitrate
SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TA	Technical Area
TSDF	treatment, storage, and disposal facility
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit
USC	United States Code
USFS	U.S. Forest Service
VOC	volatile organic compound
WAP	waste analysis plan
WMA	waste management area

DEFINITIONS

Characterization: The identification of hazardous characteristics or constituents of waste, using sampling and analysis, acceptable knowledge, or a combination of chemical analysis and acceptable knowledge.

Emergency: Any imminent or existing fire, explosion, or unplanned sudden or nonsudden release of Resource Conservation and Recovery Act (RCRA)-regulated waste or hazardous constituents to air, soil, or surface water that significantly threatens human health or the environment outside the Unit.

RCRA-Regulated Waste: For the purposes of this permit renewal request/application and Unit-specific modules, a waste that meets the regulatory definition of either hazardous waste or hazardous/radioactive mixed waste.

RCRA-Regulated Waste Management Area (WMA): For the purposes of this permit renewal request/application and Unit-specific modules, an area used for the treatment or storage of RCRA-regulated waste within a RCRA-regulated Waste Management Unit.

RCRA-Regulated Waste Management Unit (Unit): For the purposes of this permit renewal request/application and Unit-specific modules, a specific operational area subject to a RCRA permit that is used for the treatment and/or storage of RCRA-regulated waste. The Units that are the subjects of this permit renewal request/application are described in Unit-specific modules.

Regulated Unit: A surface impoundment, waste pile, land treatment unit, or landfill that received hazardous waste after July 26, 1982.

SANDIA NATIONAL LABORATORIES/NEW MEXICO GENERAL PART B PERMIT RENEWAL REQUEST/APPLICATION

This "Sandia National Laboratories/New Mexico (SNL/NM) General Part B Permit Renewal Request/Application," hereinafter referred to as the SNL/NM General Part B, is submitted by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, to address requirements applicable to Resource Conservation and Recovery Act (RCRA)-regulated waste storage and treatment operations at SNL/NM RCRA-regulated waste management units (Units) (Figure 1). The U.S. Environmental Protection Agency (EPA) Identification Number for SNL/NM is NM5890110518.

Sandia National Laboratories/New Mexico (SNL/NM) is located on Kirtland Air Force Base (KAFB) southeast of Albuquerque, New Mexico. SNL/NM consists of five technical areas (TAs) and several remote testing areas situated on the 80-square-mile KAFB. Sandia generates and manages wastes that are regulated under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act and implementing regulations, specifically the New Mexico Administrative Code (NMAC) Title 20, Chapter 4. In this comprehensive Part B permit request, these wastes are referred to as RCRA-regulated wastes (i.e., wastes that meet the regulatory definition of hazardous or mixed wastes). RCRA-regulated wastes are generated during SNL/NM operations and ongoing corrective actions for solid waste management units (SWMUs). The corrective actions are conducted under the SNL/NM Environmental Restoration (ER) Project.

There are 12~~5~~ RCRA-regulated waste management units (Units) included in this comprehensive Part B permit request. Nine~~Twelve~~ of the U~~u~~nits (listed in Table 1) are used for management of wastes from ongoing operations and from the ER project. These units are addressed in this part (Part 2) of the comprehensive Part B permit request. The remaining three units are corrective action units used exclusively for management of remediation wastes generated through the ER project. They are addressed in Part 5 of the comprehensive Part B permit request. Three additional units will be undergoing closure under interim status. They are not included in this Part (Part 2).

The information in Part 2 is separated into site-wide and Unit-specific information to minimize redundancy. Part 2 information for the Units listed in Table 1 includes:

- General information (the General Part B) that serves as an "umbrella" document addressing the general requirements of the New Mexico Hazardous Waste Act and implementing regulations, specifically the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00]~~.~~. 20 NMAC 4.1.500 and .900 adopt, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270). Information that is applicable to most or all of the Units is included in the SNL/NM General Part B.

  Appendices containing site-wide information addressing a specific topic (e.g., waste analysis, training, or closure).

Table 1
Resource Conservation and Recovery Act – Regulated Waste Management Units Included in Part 2 of Comprehensive Part B Permit Request

Name	Acronym	Location, Size	Types of Operations	Types of Waste	Operating Status	Permit Status
Hazardous Waste Management Facility	HWMF	South of TA-I, north of entrance to TA-II. 1.35 acres	Storage, Repackaging	All wastes listed in General Part A	Existing, operational	Permit expired August 6, 2002. Submitted renewal request February 6, 2002. Requesting that permit be updated and renewed for continued operation.
Thermal Treatment Facility	TTF	Northern part of TA-III. 196 square feet	Treatment	Ignitable, reactive, toxic, and listed wastes	Existing, on standby	Permit expires November 4, 2004. Requesting that permit be updated and renewed for continued operation.
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. 3.11 acres	Storage, Treatment, Repackaging	All wastes listed in General Part A	Existing, operational	Interim status. Requesting that permit be issued using updated information provided in this application.
~~High Bay Waste Storage Facility~~	~~HBWSF~~	~~TA-V. 5670 square feet~~	~~Storage~~	~~All wastes listed in General Part A~~	~~Existing, operational~~	~~Interim status. Requesting that permit be issued using updated information provided in this application.~~
Auxiliary Hot Cell Facility	AHCF	TA-V. 5578 square feet	Storage, Treatment, Repackaging	All wastes listed in General Part A	Existing, expected to start operations in 2003	Added under interim status. Requesting that permit be issued using information provided in this application.
Manzano Storage Bunkers (set of 5~~7~~ Units)	MSB	In Manzano Area on KAFB. 0.4 acres occupied by 5~~7~~ bunkers (approximately 1600 to 2100 square feet in each bunker)	Storage	All wastes listed in General Part A	Existing, operational	Interim status. Requesting that permit be issued using updated information provided in this application.

- Unit-specific Part B modules addressing Unit-specific requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [6-14-00]. There is one module for the set of five~~seven~~ Manzano Storage Bunkers, and one module for each of the other four~~five~~ Units listed in Table 1. For clarity and consistency, the information in each Unit-specific Part B module is arranged in the same general order as the information in the SNL/NM General Part B.

Together, the information in this General Part B, the appendices, and each Unit-specific Part B module address the applicable regulatory requirements for that Unit.

The information in this SNL/NM General Part B and in the Unit-specific modules is arranged as follows:

- General Unit description and operations, including preparedness and prevention – Section 1.0
- Site description, including features, security, and access control – Section 2.0 and Appendix A
- Waste analysis – Section 3.0 and Appendix B
- Inspections – Section 4.0 and Appendix C
- Training – Section 5.0 and Appendix D
- Emergency response and contingency plan – Section 6.0 and Appendix E
- Closure – Section 7.0 and Appendix F
- Treatment – Section 8.0 ~~and Appendix G~~
- Recordkeeping – Section 9.0

Sandia/DOE are also submitting a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" hereinafter referred to as the SNL/NM General Part A (SNL/NM, 2003~~2~~), with this ~~SNL/NM~~ General Part B. The ~~SNL/NM~~ General Part A ~~(SNL/NM, 2002)~~ is included as Part 1 of this comprehensive Part B permit request and serves as a companion document to this SNL/NM General Part B. The SNL/NM General Part A ~~consolidated information from previous SNL/NM Part A submittals into one comprehensive document, identifying all~~ identifies the RCRA-regulated waste management operating Units at SNL/NM as of March 31, 2003~~January 31, 2002~~, that are or will be subject to:

- 20 NMAC 4.1.500/40 CFR 264 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270 [6-14-00]. These nine Units are listed in Table 1.
- 20 NMAC 4.1.600/40 CFR 265 [6-14-00]. These three Units will be closed under interim status and are not included in this General Part B.

In ~~both~~ the ~~SNL/NM~~ General Part A, ~~(SNL/NM, 2002) and~~ this ~~SNL/NM~~ General Part B, the appendices, and the Unit-specific modules ~~submittal~~, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., the Hazardous Waste Management Facility). The term "facility," as it appears in this context, is used only to denote building or Unit names and does not imply

the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

In this WAP and in the rest of the General Part B, the personnel associated with a RCRA-regulated waste at a given point during management at SNL/NM may sometimes be referred to as the "generator" (e.g., the "generator" completes a disposal request). The term "generator," as it appears in this context, is used only to denote an individual person and does not imply the regulatory meaning of "generator" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], particularly with respect to RCRA-regulated waste determination as required in 20 NMAC 4.1.300/40 CFR 262.11 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], Sandia Corporation is a "generator" and a "person" responsible for determining whether a waste is subject to regulation in accordance with 20 NMAC 4.1.300/40 CFR 262.11 [6-14-00]. SNL/NM is a large research facility, and many individuals (including those employed through contract to Sandia Corporation) are involved with generation and subsequent management of RCRA-regulated wastes. These include personnel performing research and other waste-generating activities, and personnel performing environment, safety, and health activities (including waste management) to support Sandia operations and comply with regulatory requirements. RCRA-regulated waste determination at SNL/NM is a collaborative effort between the individuals involved with the generation of RCRA-regulated waste and the Unit personnel. This approach is consistent with the process described in EPA's clarifying memo (Cotsworth, 2002).

Table 2 provides a list of regulatory references and the corresponding section locations in this SNL/NM General Part B.

Table 2
Regulatory References and Corresponding Permit Renewal Request/Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Document
§270.14(b)(1)	General facility description	Appendix A[a]
§270.14(b)(2)	Chemical and physical analyses	Appendix B[a]
§270.14(b)(3)	Waste analysis plan	Appendix B[a]
§264.13(b)	Written waste analysis plan	Appendix B[a]
§264.13(c)	Off-site waste analysis requirements	Appendix B[a]
§270.14(b)(4)	Security procedures and equipment	Appendix A[a]
§264.14	Security	Appendix A[a]
§270.14(b)(5)	General inspection schedule	Appendix C[a]
§264.15(b)	Written inspection schedule	Appendix C[a]
§264.174	Containers	1.2, Appendix C[a]
§264.602	Miscellaneous units	Appendix C[a]
§264.1086	Standards: Containers	1.2, Appendix C
§264.1088	Inspection and monitoring requirements	4.0, Appendix C[a]
§270.14(b)(6)	Request for waiver from preparedness and prevention requirements of Part 264, Subpart C	NA
§270.14(b)(7)	Contingency plan	Appendix E[a]
§270.14(b)(8)	Preparedness and prevention requirements	1.1.3[a], 1.1.4[a]
§270.14(b)(8)(i)	Preventing hazards in unloading operations	1.1.4.1[a]
§270.14(b)(8)(ii)	Preventing runoff/flooding	1.1.4.2[a]
§270.14(b)(8)(iii)	Preventing contamination of water supplies	1.1.4.3[a]
§270.14(b)(8)(iv)	Mitigating effects of equipment failure and power outages	1.1.4.4[a]
§270.14(b)(8)(v)	Preventing undue exposure of personnel	1.1.4.5[a]
§270.14(b)(8)(vi)	Preventing releases to the atmosphere	1.1.4.6[a]
§270.14(b)(9)	Preventing accidental ignition or reaction	1.1.2.1[a]
§264.17	General requirements for ignitable, reactive, or incompatible wastes	1.1.2[a]
§270.14(b)(10)	Traffic pattern, volume, and controls	Appendix A[a]
§270.14(b)(11)	Facility/unit location information	Appendix A[a]
§270.14(b)(11)(i)	Seismic standard applicability [264.18(a)]	Appendix A[a]
§264.18(a)	Seismic considerations	Appendix A
§270.14(b)(11)(ii)	Seismic standard requirements	Appendix A[a]
§264 Appendix VI	Political jurisdictions requiring compliance with 264.18(a)	Appendix A
§270.14(b)(11)(ii)(A)	No fault within 3,000 feet (ft) with displacement in Holocene time	Appendix A[a]
§270.14(b)(11)(iii)	100-year floodplain standard	Appendix A
§270.14(b)(11)(iv)	Floodplain requirements	NA
§270.14(b)(11)(v)	Plan to show how the facility will be brought into compliance with 264.18(b)	NA
§270.14(b)(12)	Personnel training program	Appendix D[a]
§264.16	Personnel training	Appendix D[a]
§270.14(b)(13)	Closure and post-closure plans	Appendix F[a]

Refer to footnotes at end of table.

Table 2 (Continued)
Regulatory References and Corresponding Permit Renewal Request/Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Document
§264.112	Closure plan	Appendix F[a]
§264.118	Post-closure plan	Appendix F[a]
§264.178	Closure—containers	Appendix F[a]
§264.601	Environmental performance standards—miscellaneous units	Module II~~Appendix G~~[a]
§264.603	Post-closure care—miscellaneous units	Appendix F
§270.14(b)(14)	Post-closure notices (264.119)	Appendix F
§264.119	Post-closure notices	Appendix F
§270.14(b)(15)	Closure cost estimate (264.142)	Appendix F
	Financial assurance (264.143)	Appendix F
§264.142	Cost estimate for closure	Appendix F
§264.143	Financial assurance for closure	Appendix F
§270.14(b)(16)	Post-closure cost estimate (264.144)	Appendix F
	Post-closure care financial assurance (264.145)	Appendix F
§264.144	Cost estimate for post-closure care	Appendix F
§264.145	Financial assurance for post-closure care	Appendix F
§270.14(b)(17)	Liability insurance (264.147)	Appendix F
§264.147	Liability requirements	Appendix F
§270.14(b)(18)	Proof of financial coverage (264.149-150)	Appendix F
§270.14(b)(19)	Topographic map requirements	Appendix A[a]
§270.14(b)(19)(i)	Map scale and date	Appendix A[a]
§270.14(b)(19)(ii)	100-year floodplain area	Appendix A[a]
§270.14(b)(19)(iii)	Surface waters	Appendix A[a]
§270.14(b)(19)(iv)	Surrounding land uses	Appendix A[a]
§270.14(b)(19)(v)	Wind rose	Appendix A[a]
§270.14(b)(19)(vi)	Map orientation/north arrow	Appendix A[a]
§270.14(b)(19)(vii)	Legal boundaries	Appendix A[a]
§270.14(b)(19)(viii)	Access controls	Appendix A[a]
§270.14(b)(19)(ix)	Wells (injection and withdrawal)	Appendix A
§270.14(b)(19)(x)	Buildings or other structures	Appendix A
§270.14(b)(19)(xi)	Barriers—drainage or flood control	Appendix A[a]
§270.14(b)(19)(xii)	Location of operational units	Appendix A
§270.14(b)(20)	Other federal laws (270.3)	10.0
§270.14(b)(21)	Notice of extension approval for land disposal facilities	NA
§270.14(b)(22)	Summary of pre-application meeting	Overview~~NA~~
§270.14(c)	Groundwater monitoring requirements	Appendix A[b]
§264.90(b)	Exemptions from regulation of releases	NA
§270.14(d)	Information requirements for solid waste management units	11.0[c], Part 4
§270.15	Specific information requirements—containers	1.2[a]
§264.170	Subpart I applicability	1.1[a]
§264.175	Containment	1.1, 1.2[a]
§264.176	Special requirements for ignitable or reactive waste	1.1.2[a]

Refer to footnotes at end of table.

Table 2 (Concluded)
Regulatory References and Corresponding Permit Renewal Request/Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Document
§264.177	Special requirements for incompatible waste	1.1[a]
§264.17	General requirements for ignitable, reactive, or incompatible wastes	1.1[a]
§270.23	Specific information requirements—miscellaneous units	Module II~~8.0~~[a]
§264.600	Subpart X applicability	~~Appendix G~~[a], Module II
§264.601	Environmental performance standards	~~Appendix G~~[a]~~,~~ Module II
§264.602	Monitoring analysis, inspection, response, reporting, and corrective action	~~Appendix G~~[a]~~,~~ Module II
§270.27	Specific information requirements—air emission controls for tanks, surface impoundments, and containers	1.1, 1.2[a]
§264 Subpart AA	Air emission standards for process vents	1.1.4.6
§264 Subpart BB	Air emission standards for equipment leaks	1.1.4.6
§264 Subpart CC	Air emission standards for tanks, surface impoundments, and containers	1.1.4.6

[a] Unit-specific information is provided in Unit-specific modules.
[b] Groundwater monitoring for regulated units is addressed in Part 3 of this comprehensive Part B permit request package.
[c] Corrective action is addressed in Parts 4 and 5 of this comprehensive Part B permit request package. Solid waste management units are discussed in Part 4. Operation of the waste management units associated with corrective action is addressed in Part 5.
NA = not applicable

1.0 GENERAL SITE OPERATIONS

This section provides an overview of RCRA-regulated waste management operations at the Units addressed in this SNL/NM General Part B.

The SNL/NM Units are used to store and/or treat RCRA-regulated wastes bearing EPA Hazardous Waste Numbers listed in the SNL/NM General Part A ~~(SNL/NM, 2002)~~. Unless otherwise specified in a Unit-specific module, any of the wastes listed in the SNL/NM General Part A may be managed at any Unit.

The following general information applicable to the Units addressed in this SNL/NM General Part B is provided in this section~~:~~:

- General Unit operations; containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and
- Container storage practices, including air emission controls. Sandia/DOE do not manage RCRA-regulated wastes in tanks at any Unit.

The general information provided in this section, together with the Unit-specific information provided in Modules I through VI, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264 [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14, 270.15, and 270.23 [6-14-00].

1.1 General Unit Operations

The following sections provide an overview of the general Unit operations applicable to the Units addressed in this SNL/NM General Part B. General Unit operations include ~~;~~ containment systems; requirements for ignitable, reactive, and incompatible wastes; ~~;~~ preparedness and prevention; and hazards prevention.

1.1.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.15(a)(5); 20 NMAC 4.1.500/40 CFR 264.175[b][5])

20 NMAC 4.1.500/40 CFR 264.175(b)(1) [6-14-00] requires that containment systems be maintained in leak proof and fully operable conditions. 20 NMAC 4.1.500/40 CFR 264.175(b)(2) and (3) [6-14-00], respectively, require that secondary containment systems be designed to 1) contain at least 10 percent of the volume of potential liquid-bearing containers or the volume of the largest container, whichever is greater, and 2) prevent contact between containers and spilled material. 20 NMAC 4.1.500/40 CFR 264.175(b)(4) requires that run-on and run-off be prevented. These features of c~~C~~ontainment systems at each Unit are described in Section 1.0 of each Unit-specific module.

20 NMAC 4.1.500/40 CFR 264.175(b)(5) requires that secondary containment systems be managed to prevent overflow. Liquids that might accumulate at an SNL/NM Unit are contained

within a secondary containment system that is sufficiently impervious to contain leaks, spills, or accumulated precipitation until the liquid is removed, as described in each Unit-specific module.

Unit personnel begin taking action to evaluate and remove accumulated liquids upon discovery to prevent overflow. ~~(20 NMAC 4.1.500/40 CFR 264.175[b][5] [6-14-00]).~~ Personnel evaluate the liquids for two purposes: to determine the most appropriate method of removing the liquid from the containment; and to characterize the removed liquid for appropriate further management.

Personnel attempt to find the source of liquids that accumulate in secondary containment for stored containers of RCRA-regulated wastes. If the source can be clearly identified (e.g., a leaking container in a small secondary containment area) personnel characterize the liquid based on knowledge of the source, as described in Appendix B, Section B.1.3.12, remove it, and manage it appropriately. If the source(s) cannot be identified, personnel may sample the liquid and characterize it as needed to determine the most appropriate method of removing the liquid from the containment. The liquid is then pumped into containers or collected onto absorbent material, picked up, and placed in containers. The containerized liquid is sampled and analyzed for the parameters listed in Appendix B, Table B-2 to characterize it for further management.

Accumulated liquids or waters generated during fire suppression activities may be characterized as a newly-generated waste using acceptable knowledge or may be analyzed, as applicable, for RCRA-regulated waste constituents known to be components of the wastes involved in the fire~~source~~. In either case, the liquids will be characterized using the process described above. ~~If the accumulated liquids are from other than an identifiable source, the resulting material will be characterized as described in Appendix B of this SNL/NM General Part B.~~ Containers of collected liquids are also stored with adequate secondary containment. ~~This method of removal and analysis of accumulated liquids fulfills the requirements of 20 NMAC 4.1.900/40 CFR 270.15(a)(5) [6-14-00], for the prevention of overflow.~~

Accumulated liquids from precipitation or snowmelt, for which there is no evidence of a release, will be discharged to the ground or to the sanitary sewer after sampling (as needed) and approval, as needed.

1.1.2 Requirements for Ignitable, Reactive, and Incompatible Waste (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 270.15[d]; 20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177)

20 NMAC 4.1.900/40 CFR 270.14(b)(9) [6-14-00], requires a description of precautions taken to prevent accidental ignition or reaction of ignitable, reactive, or incompatible RCRA-regulated wastes as required to demonstrate compliance with 20 NMAC 4.1.500/40 CFR 264.17(c) [6-14-00]. 20 NMAC 4.1.900/40 CFR 270.15(d) [6-14-00], requires a description of procedures used to ensure compliance with 20 NMAC 4.1.500/40 CFR 264.17(b) and (c) [6-14-00], and 264.176 and 264.177.~~.~~

1.1.2.1 Measures to Prevent Accidental Ignition or Reaction (20 NMAC 4.1.500/ 40 CFR 264.17[a])

At SNL/NM, appropriate measures are taken to prevent accidental ignition or reaction of ignitable and reactive RCRA-regulated wastes, as described below.

All containers are kept closed unless wastes are being added, removed, inspected, sampled, repackaged, or treated as noted in Section 1.2.2.

Ignitable and reactive wastes are labeled and separated from other wastes. Such wastes may be stored in designated WMAs at each Unit, as described in the Unit-specific modules. Open flames and welding activities are prohibited in the vicinity of ignitable or reactive wastes at all Units. If the wastes cannot be removed from the area before such activities take place, the wastes are protected by a non-combustible barrier before and during work. Hot surfaces, frictional heat, sources of sparks, and radiant heat (e.g., heat-generating wastes) are also prohibited in the vicinity of ignitable and reactive wastes. Unit personnel are not allowed to operate forklifts or other motorized equipment in the vicinity of open containers of ignitable or reactive wastes unless such equipment is designed for use in flammable environments. Ignitable and reactive wastes are stored under controlled conditions to prevent spontaneous combustion.

Spark-proof tools may be used to open and close containers holding ignitable or reactive wastes. When large quantities of flammable or reactive liquids are transferred from one container to another, grounding procedures are typically used. During such operations, each container is connected to a grounding cable that remains in place during liquid transfer to dissipate static charge created by liquid flow.

Smoking is not allowed within any Unit. "No Smoking" signs are conspicuously placed at the entrance to each Unit, as required by 20 NMAC 4.1.500/40 CFR 264.17(a) [6-14-00].

Water-reactive wastes are not stored in WMAs equipped with automatic water sprinkler systems. When water-reactive wastes are present in such WMAs (e.g. for treatment or temporary staging), Unit personnel will keep water from coming into contact with the waste.

1.1.2.2 Precautions to Prevent Uncontrolled Reactions (20 NMAC 4.1.500/40 CFR 264.17[b~~,c~~, c], 40 CFR 264.176, 40 CFR 264.177 and 40 CFR 264.17[b])

Unit personnel rarely mix incompatible wastes together or with other materials. Personnel perform treatment of ignitable and reactive wastes at the TTF, RMWMF, and AHCF. As described in Section 8.0 of Modules II, III, and V~~B.5 (Appendix B of the General Part B)~~, Unit personnel plan such activities carefully to prevent reactions that could:

- Generate extreme heat or pressure, fire or explosions, or violent reaction;
- Produce uncontrolled toxic mists, fumes, dusts, or gases;
- Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

- Damage the structural integrity of the device or Unit;
- Through other like means, threaten human health or the environment.

In general, Unit personnel use characterization information for each waste (as described in Section B.3~~5~~) and published data regarding chemical properties of RCRA-regulated constituents in the wastes (e.g., material safety data sheets [MSDSs], "NIOSH Pocket Guide to Chemical Hazards" [DHHS, 1994], *Bretherick's Handbook of Handbook of Reactive Chemical Hazards*, Urben, 1995) to identify potential consequences of treatment or other mixing activities. Additional information is included in each Unit-specific module.

Incompatible wastes are kept separated from each other during storage to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.177(c) [6-14-00]. Incompatible wastes are not packed in the same container, and no waste is placed in a container that previously held an incompatible waste (i.e., only new and/or clean containers are used to hold RCRA-regulated wastes), as required by 20 NMAC 4.1.500/40 CFR 264.177(a) and (b) [6-14-00], 20 NMAC 4.1.500/40 CFR 264.17(b), and 20 NMAC 4.1.900/ 40 CFR 270.15(d) [6-14-00]. Additional information is included in the Unit-specific modules.

Compatibility is determined in accordance with 20 NMAC 4.1.500/40 CFR 264, Appendix V [6-14-00], or equivalent information (e.g., NIOSH Pocket Guide to Chemical Hazards).

Containers holding ignitable or reactive wastes are located at least 50 feet from the SNL/NM facility property line at all times and are protected from sources of ignition or reaction as required by 20 NMAC 4.1.500/40 CFR 264.176 [6-14-00].

1.1.3 Preparedness and Prevention (20 NMAC 4.1.900/40 CFR 270.14(b)(8) and 20 NMAC 4.1.500/40 CFR 264, Subpart C)

20 NMAC 4.1.900/40 CFR 270.14(b)(8) [6-14-00], and 20 NMAC 4.1.500/40 CFR 264, Subpart C [6-14-00], require a description of how Units will comply with preparedness and prevention requirements. The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems.

1.1.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

Sandia/DOE maintain required equipment, including internal communications or alarm systems; devices to summon emergency assistance; fire control, spill control, and decontamination equipment; and adequate water volume and pressure for fire suppression equipment at each Unit.

Each Unit (except the TTF~~Thermal Treatment Facility~~ and MSB~~anzano Storage Bunkers~~) is equipped with ~~fire hydrants and with~~ one or more automatic water sprinkler or dry chemical fire suppression systems. Building-specific fire suppression systems are described in Section 1.2 of each Unit-specific module.

Each Unit (except the MSB) is equipped with fire hydrants. The locations of the hydrants are shown in each Unit-specific module. Each fire hydrant meets the requirements of the Appendix B of the International Fire Code, and provides at least 1500 gallons per minute of water at 20 psi, which meets the requirements of 20 NMAC 4.1.500/40 CFR 264.32(d) [6-14-00].

A list of the required equipment, with the location and capabilities of the equipment, is provided in tables in each Unit-specific module.

1.1.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Sandia/DOE assure that communications and alarm systems and fire protection, spill control, and decontamination equipment are inspected and/or tested according to the inspection plans and schedules detailed in Appendix C of this SNL/NM General Part B and in Section 4.0 of each Unit-specific module. The frequency of inspection is sufficient to assure proper operation in the event of an emergency. Maintenance, repair, and replacement of emergency equipment are performed as needed.

Sandia personnel test fire suppression equipment on monthly, quarterly, and annual schedules, in accordance with the requirements of National Fire Protection Association (NFPA) 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems" (NFPA, 2002).

1.1.3.3 Access to Communications or Alarm System (20 NMAC 4.1.500/40 CFR 264.34)

Sandia/DOE assure that whenever waste is being handled at a Unit, personnel involved have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another individual. In the event of an emergency, this communication equipment allows personnel to contact the Unit Emergency Coordinator and/or the Emergency Operations Center (refer to Appendix E of this SNL/NM General Part B). In addition to the communications and alarm systems described in each Unit-specific module, on-site personnel may carry pagers, two-way radios, and/or cellular telephones so that they can contact or be contacted by on-site and SNL/NM emergency support personnel at all times.

Unit personnel typically work in pairs and maintain contact when handling wastes, further enhancing safety.

1.1.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

~~20 NMAC 4.1.900/40 CFR 270.14(b)(8) [6-14-00], requires that a Unit be designed and operated to prevent hazards.~~ SNL/NM Units are designed and operated to prevent hazards, i.e., to minimize the possibility of fire, explosion, or any unplanned or nonsudden releases of RCRA-regulated waste or constituents to the environment. Specific Unit design and construction information is presented in Section 1.1 of each Unit-specific Part B module. The following sections describe the general procedures, equipment, and structures that are

currently used at SNL/NM Units to prevent hazards. These include preventing hazards during unloading of waste containers, preventing runoff and flooding, preventing contamination of water supplies, mitigating the effects of power outages, preventing undue exposure to personnel, and preventing releases to the atmosphere. Any additional information about procedures is included in Section 1.2 of each Unit-specific module.

1.1.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

Only closed waste containers are accepted for transport by vehicle to SNL/NM Units. Prior to transport, containers are inspected to ensure that they are properly closed, labeled, and in suitable condition for transport.

Loading and unloading operations typically occur outdoors in the area immediately in front of a WMA at a Unit to minimize the distance that the waste must be moved. Spills that might occur during loading or unloading operations will be promptly cleaned up in accordance with spill response procedures contained in Appendix E of this SNL/NM General Part B.

Except where noted in Unit-specific modules, all loading and unloading areas are level, and the asphalt or concrete pavement is in good condition. Loading and unloading areas are also typically free of overhead and other obstructions to visibility and operations.

Appropriate vehicles, forklifts, drum dollies, pallet jacks, and other tools for the safe transport and handling of wastes are used during loading and unloading operations. Small containers may be loaded or unloaded manually from waste-transport vehicles. A forklift or hydraulic lift is typically used to load or unload larger containers. For loads that are moved with a forklift, the containers of waste are typically held together on a pallet with straps or shrink-wrap. Fasteners and clamps are typically used with drum dollies. Waste-handling equipment is maintained and operated in accordance with manufacturers' guidance.

Only qualified personnel trained in RCRA-regulated waste management procedures are allowed to handle RCRA-regulated waste at Units, and they typically work in pairs. Personnel are trained to be aware of weather conditions and other operations that could affect waste movement, and to exercise caution in operating equipment such as forklifts.

1.1.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

Run-on of surface water from surrounding areas and runoff of waste is prevented at Units by Unit design and operating practices. Unit-specific runon/runoff features and operating precautions are described in each Unit-specific Part B module.

1.1.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Due to the depth to groundwater at SNL/NM and Unit operating procedures, it is not anticipated that there will be any impact to groundwater or other water supplies as a result of RCRA-regulated waste-handling operations at any Unit. Contamination of surface water and

groundwater is prevented by Unit operating procedures as well as the spill containment features located within a specific WMA at a Unit. Spills are contained within the buildings or within secondary containment systems, and are cleaned up promptly. Spills occurring outside the buildings will be contained promptly and cleaned up so as not to come into contact with surface water or groundwater. Some units are supplied with potable water that is provided through pressurized underground water supply lines. These water supply lines are designed to withstand industrial activities that are typical of waste management operations, and they are not affected by Unit operations.

1.1.4.4 Mitigating Effects of Equipment Failure and Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

In the event of a power loss~~general~~, it is usually possible for Unit personnel to place the affected equipment in a safe state, close or cover open containers of RCRA-regulated wastes that are present, and stop operations until power is restored.

The general types of equipment, utilities, and systems that would be affected by a power or equipment failure are listed below, together with features and activities to mitigate effects of a failure.

- Lights: Fixed battery-operated lights operate in the buildings in each Unit where available.
- Alarms: Fire alarm devices in each Unit (except the MSB) are equipped with emergency power supply.
- Pumps and other equipment: Personnel use portable manually- or pneumatically-operated equipment or wait for power to be restored.
- Container-handling equipment: Unit personnel obtain forklifts and drum-handling equipment from Sandia's transportation department.
- Personal Protective Equipment: Unit personnel replace equipment with supplies in the Unit storage areas.
- Vehicles: Unit personnel obtain replacements for vehicles from Sandia's transportation department.
- Telephone: Unit personnel use cellular telephones or portable radios.
- Fire sprinklers: Unit personnel use portable fire extinguishers.

Additional Unit-specific procedures (where applicable) are included in each Unit-specific module.

1.1.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

Only qualified personnel trained in RCRA-regulated waste management procedures are allowed to handle RCRA-regulated waste at Units. The training that these personnel receive includes use of appropriate equipment and personal protective equipment (PPE) for the RCRA-regulated wastes managed at SNL/NM Units.

Personnel at SNL/NM Units are required to use appropriate PPE to protect themselves from the hazards that are or may be found in the work place under normal conditions. Such hazards may include handling heavy containers, operating waste-handling equipment, weather conditions, and contact with RCRA-regulated wastes and constituents.

Operations at SNL/NM Units typically require that personnel handling closed containers of RCRA-regulated wastes wear PPE that includes safety shoes and appropriate gloves (e.g., heavy abrasion-resistant gloves with or without chemical-resistant outer gloves. Depending on the work performed, they may also wear safety glasses or goggles, coveralls, and hard hats.

During treatment operations or other work that involves opening containers, personnel typically don additional PPE (e.g., safety glasses, face shields, chemical-resistant gloves, and coveralls) to protect themselves from hazards that may be present. Such hazards may include the potential for contact with liquids, particles, or corrosive materials.

Increased PPE (e.g., respiratory protection) may also be required during an emergency or unusually hazardous situation.

1.1.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

Subpart AA

Sandia/DOE do not use any of the processes identified in 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00] during storage ~~for the management~~ of RCRA-regulated wastes. Therefore, ~~Sandia/DOE are exempt from~~ the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00] do not apply to SNL/NM.

Subpart BB

Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥ 10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00] during storage. Equipment used in such service will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052-.1060 as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f). A list of such ~~The~~ equipment ~~use~~ will be maintained ~~noted~~ with other ~~in the~~ Unit records~~operating log~~, as described in Section 9.0. Further information is provided in Modules II, III, and V.

Subpart CC

RCRA-regulated ~~Hazardous~~ wastes stored in containers at SNL/NM may be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/40 CFR 264.1080 [6-14-00]. These standards are not applicable to:

~~1.~~1. Containers that held RCRA-regulated ~~hazardous~~ waste prior to December 6, 1996, and to which no RCRA-regulated~~hazardous~~ waste has been added on or after December 6, 1996;

~~2.~~2. Containers having a design capacity of less than or equal to 0.1 cubic meter (m^3) or approximately 26 gallons;

~~3.~~3. Containers used solely for on-site management of RCRA-regulated ~~hazardous~~ waste placed in the Unit as a result of implementing remedial activities under corrective action authorities;

~~4.~~4. Containers used solely for the management of radioactive mixed waste; or

~~5.~~5. Containers equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation (20 NMAC 4.1.500/40 CFR 264.1080[b] [6-14-00].

Furthermore, a container is exempt from the 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] container standards in 20 NMAC 4.1.500/40 CFR 264.1086 [6-14-00] if:

- The RCRA-regulated ~~hazardous~~ waste in a container has an average volatile organic concentration at the point of waste origin of less than 500 parts per million by weight (ppmw), or
- The organic content of all RCRA-regulated ~~hazardous~~ waste entering a container has been reduced by an organic destruction or removal process achieving any one of the conditions specified in 20 NMAC 4.1.500/40 CFR 264.1082(c)(2)(i)-(vi) [6-14-00] (20 NMAC 4.1.500/40 CFR 264.1082 [6-14-00]), or
- The RCRA-regulated waste in the container meets the treatment standards in 20 NMAC 4.1.800/40 CFR 268.40 for organic hazardous constituents present in the waste.

Sandia personnel assume that each container of RCRA-regulated wastes that meets the applicability criteria for Subpart CC (i.e., each container that is not included in any of items 1 through 5 above) is subject to the Subpart CC requirements, unless a waste determination is made in accordance with 20 NMAC 4.1.500/40 CFR 264.1083 to establish that one or more of the exemptions is applicable. The waste determination process is described in Appendix B of this General Part B, and the results are included in the operating record as described in Section 9.0.

~~To establish 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] applicability for a specific waste stream, a generator may follow the waste determination procedures specified in20 NMAC~~

~~4.1.500/40 CFR 264.1083 [6-14-00] to determine the concentration of volatile organics in the waste stream at the point of generation or assume the waste is subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]. If the generator elects to make the determination, the generator documents it for that waste stream, as described in Appendix B of this SNL/NM General Part B. Volatile organic-containing RCRA-regulated waste streams that are documented to contain volatile organic concentrations of less than 500 ppmw are exempt, by regulation, from the following Sandia/DOE container management requirements.~~

At SNL/NM, RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements ~~while in SNL/NM RCRA-regulated container storage or treatment Units~~ are managed in primary containers that ~~1) have a design capacity of less than or equal to 0.1 m^3 or 2)~~ are U.S. Department of Transportation-approved and have a design capacity of greater than 0.1 m^3 but less than 0.46 m^3 while in the container storage Units. Such containers are subject to Container Level 1 standards in 20 NMAC 4.1.500/40 CFR 264.1086(c).

Releases to the atmosphere are not anticipated at any of the container storage Units because containers are kept closed during storage. ~~Container~~ Ccovers of containers that are subject to the Container Level 1 standards are secured and maintained in closed and sealed conditions (i.e., no cracks, holes, gaps, or other open spaces) while the containers are in storage. Covers are ~~but may be~~ opened only for access for the purposes described in 20 NMAC 4.1.500/40 CFR 264.1086(c) (1)-(5) [6-14-00]: these include adding waste to or removing waste from the container; repackaging the contents; and inspecting or sampling the waste in the container. At each Unit where containers subject to Container Level 1 standards are stored, personnel take the following steps:

- Check containers and the condition and placement of their covers during inspections of stored containers.
- Take remedial actions if needed.
- Record container condition and remedial actions taken in the inspection reports.

These activities are described in Appendix C of this General Part B and in Section 4.0 of the Unit-specific module for each Unit where containers are stored.

Unit personnel maintain records of waste addition to containers as part of the operating record described in Section 9.0. Thus, primary containers that become subject to the Container Level 1 standards are identified at the time they first become subject to the standards, and are subsequently managed in accordance with the standards. If Unit personnel discover that a container should have been managed in accordance with the Container Level 1 standards but was not, Sandia/DOE will file a written report to NMED within 15 days as required in 20 NMAC 4.1.500/40 CFR 264.1090(a).

~~WMAs used "solely" for the storage and/or treatment of "radioactive mixed waste" or "remediation waste" are not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements. If hazardous waste and radioactive mixed waste/remediation waste are managed in the same Unit, the wastes are segregated into separate WMAs or process areas, if possible. WMA(s) and process areas used solely for "radioactive mixed waste" or "remediation waste" management are not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]~~

~~requirements while the WMA(s) and process area(s) used for hazardous waste management are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements. If waste types cannot be segregated into separate WMAs or process areas, all of the waste containers within a WMA or process area are managed as though they are subject to 20 NMAC 4.1.500/ 40 CFR 264, Subpart CC [6-14-00] requirements.~~

~~Releases to the atmosphere are not anticipated at any of the container storage Units because containers are kept closed during storage. The only exceptions to this practice are when, upon inspection, it is determined that a container currently in storage needs to be overpacked or repackaged in a new container, or during waste characterization activities. Overpacking or repackaging may be performed within a storage structure or in a modular containment system. A modular containment system can be equipped with an air filtration system to prevent the release of particulates. During normal RCRA-regulated waste storage operations at SNL/NM, there are no sources of air emissions.~~

Sandia/DOE do not store RCRA-regulated wastes in containers that are subject to Container Level 2 or Level 3 standards. Additional Unit-specific information is provided in Section 1.0 of each Unit-specific Part B module ~~.~~ for container storage areas (if applicable).

Air emissions control requirements for treatment are addressed in Section 8.0.

1.2 Container Storage

The information provided in this section is submitted to address the applicable container storage requirements of 20 NMAC 4.1.900/40 CFR 270.15 [6-14-00], and 20 NMAC 4.1.500/ 40 CFR 264, Subpart I (6-14-00). The following sections provide brief descriptions of waste management practices applicable to all Units used for container storage of RCRA-regulated wastes at SNL/NM.

Additional Unit-specific information is provided in Section 1.3~~0~~ of each Unit-specific Part B module.

1.2.1 Container Types and Labeling

Containers that may be used to store RCRA-regulated waste stored at Units qualify as "containers" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. That is, they are "portable devices in which a material is stored, transported, disposed of, or otherwise handled."

A number of container types are used for RCRA-regulated waste storage, depending on the type of waste and the ultimate disposition of the waste. Waste containers that may be stored at the SNL/NM Units include, but are not limited to, 30-, 55-, 83-, 85-, and 110-gallon steel, polyethylene, and fiber drums; fiberglass-reinforced plastic or plywood boxes; various steel boxes; metal overpack boxes; cardboard shipping containers; gas cylinders; roll-off bins; labpack containers; various small containers (e.g., 1-, 2-, 5-, 10-, and 20-gallon drums or pails); bags; and some oversized, irregularly-shaped containers.

RCRA-regulated waste containers are clearly labeled with the words "hazardous waste" and a description of container contents (i.e., hazardous constituents). The accumulation start date is clearly marked on each container holding RCRA-regulated waste at a SNL/NM Unit.

1.2.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

As required by 20 NMAC 4.1.500/40 CFR 264.173(b) [6-14-00], RCRA-regulated waste containers at SNL/NM are handled in a manner that will not cause them to rupture or leak. As required by 20 NMAC 4.1.500/40 CFR 264.173(a) [6-14-00], stored containers at SNL/NM are kept closed during storage except when waste is added to or removed from a container, the contents of a container need to be repackaged, or waste is being inspected or sampled.

Waste-handling equipment is maintained and operated in accordance with manufacturers' guidance.

1.2.2.1 Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)

Prior to transportation or storage, additional containment is provided for each container that is not in good condition (e.g., severe rusting, apparent structural defects). The container may be overpacked or the waste may be repackaged in containers that are in good condition (20 NMAC 4.1.500/40 CFR 264.171 [6-14-00]).

Containers are handled with care, maintained in good condition, and inspected according to the schedule outlined in Appendix C and Section 4.0 of each Unit-specific module. During storage, if a container holding RCRA-regulated waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, Unit personnel begin taking action to remediate the situation upon discovery. Remedial actions include transferring the RCRA-regulated waste from that container to a container that is in good condition or overpacking the container. ~~Unit personnel begin taking action to remediate containers not in good condition upon discovery.~~

1.2.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

Storage configuration of containers depends upon the type of container, its size, and its weight restrictions as well as the load-bearing and/or secondary containment capacity of the specific Unit. Aisle space is maintained to enable the unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency (20 NMAC 4.1.500/40 CFR 264.35 [6-14-00]). Additional information is provided in Unit-specific modules.

1.2.2.3 Compatibility of Waste with Containers (20 NMAC 4.1.500/40 CFR 264.172)

As required by 20 NMAC 4.1.500/40 CFR 264.172 [6-14-00], only containers made of or lined with materials that will not react with and are otherwise compatible with the RCRA-regulated waste stored in them are managed at SNL/NM Units. Unit personnel will evaluate the

compatibility of the waste to the container by considering one or more of the following as appropriate:

- Physical properties of the waste.
- Chemical properties of the original raw material(s) or commercial chemical product(s) used in the activity that generated the waste (obtained through material safety data sheets or other published information)
- Physical and chemical similarities between the waste and the original material.
- Features of the container(s) used for the original material(s), and compatibility of those features with the physical and chemical properties of the waste.
- Chemical properties of the waste (obtained through knowledge of generating processes, material safety data sheets, and/or published information)
- Data from waste characterization activities as described in Appendix B of the General Part B.
- Information about the containers being considered (supplied by manufacturers of containers).
- US DOT hazardous materials information and packaging specifications (49 CFR 172.101).

Any additional Unit-specific information is included in Section 1.3 of each Unit-specific module.

1.2.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

Containers that do not contain free liquids are not required to be stored in areas equipped with secondary containment. Before storing containers in areas without secondary containment, Unit personnel will verify that the containers do not contain free liquids by reviewing the information provided by the initial waste generator (described in Section B.3.1 of the Waste Analysis Plan [Appendix B]). Any additional Unit-specific information is included in Section 1.3 of each Unit-specific module.

2.0 SITE DESCRIPTION

SNL/NM is located on Kirtland Air Force Base immediately southeast of Albuquerque, New Mexico. General information about the SNL/NM site is included "Site-Wide Description for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix A of this SNL/NM General Part B. Additional Unit-specific information is included in Section 2.0 of each Unit-specific module.

The information in Appendix A includes~~:~~ site description, security procedures, traffic patterns, location information for compliance with seismic and floodplain standards, a topographic map, and groundwater protection information.

3.0 WASTE ANALYSIS PLAN

RCRA-regulated wastes are stored and/or treated at Sandia waste management Units. Information about waste analysis at SNL/NM is included in "Site-Wide Waste Analysis Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix B of this SNL/NM General Part B.

The information in Appendix B includes~~:~~ descriptions of waste streams, waste analysis parameters, characterization procedures, waste acceptance procedures, and special requirements.

4.0 INSPECTION PLAN

Sandia personnel inspect Unit waste management areas and associated systems on a regular basis to assure their integrity, maintenance, and safe operation. The inspection program is described in "Site-Wide Inspection Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix C to this SNL/NM General Part B.

The information in Appendix C includes~~:~~ daily inspection forms, weekly/monthly inspection forms, and requirements for inspection of various types of units. Unit-specific inspection plans are included in Section 4.0 of each module.

5.0 PERSONNEL TRAINING PLAN

Sandia Unit personnel receive training relevant to their positions. The training program is described in "Site-Wide Personnel Training Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix D to this SNL/NM General Part B. Any additional Unit-specific information is included in Section 5.0 of each Unit-specific module.

The information in Appendix D includes~~:~~ training content, frequency, techniques, and requirements for various waste management and Unit personnel.

6.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

Sandia/DOE have developed emergency response and contingency measures in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart D. The plan is described in "Site-Wide Contingency Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix E to this SNL/NM General Part B. Unit-specific information is included in Section 6.0 of each Unit-specific module.

The information in Appendix E includes:– description of Sandia/DOE emergency response system, general procedures to be followed by Unit personnel in the event of an emergency, and post-emergency actions. Unit-specific information that is included in Section 6.0 of each module includes: description of the Unit, description and location of emergency equipment, and emergency coordinators.

7.0 CLOSURE PLAN

Sandia/DOE have developed closure information and plans in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart G. The closure plan is described in "Site-Wide Closure Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix F to this SNL/NM General Part B. Additional Unit-specific information is included in Section 7.0 of each Unit-specific module.

Closure information provided in Appendix F is applicable to partial closure and/or~~rather than~~ final closure of the entire SNL/NM facility. Partial closure is defined as closure of one or more Units while leaving other Units in operation. Partial closure will include removal of RCRA-regulated waste from the Unit to be closed, and decontamination or removal of structures and equipment that have been contaminated by waste materials. Such Unit closures will minimize the need for further maintenance, preclude the release of RCRA-regulated waste or constituents to environmental media, and be protective of human health.

Final closure will occur when all SNL/NM Units are closed either by waste removal and decontamination or by disposal of contaminated structures and equipment.

8.0 TREATMENT

Sandia/DOE perform and plan to perform limited RCRA-regulated waste treatment at some SNL/NM Units (i.e., TTF, RMWMF, AHCF). Treatment will be performed to render RCRA-regulated wastes nonhazardous and/or safer to manage on site and/or dispose of off site. Treatment operations requiring a permit are described in ~~Appendix G of this SNL/NM General Part B. Additional Unit-specific information is included in~~ Section 8.0 of the Unit-specific module for each Unit where treatment is performed.

8.1 Handling and Treatment of Unstable Wastes

Because of the nature of Sandia/DOE activities, there are a number of chemicals that are used in various laboratories that, with age or improper storage, may become explosive, unstable, or dangerous to handle. Examples of such chemicals include unknown or damaged compressed gas or liquid cylinders; or expired, sensitized chemicals, such as picric acid, crystallized ether, tetrahydrofuran, heavy metal azides, or organic peroxides. Unit personnel may be required to handle and dispose of unstable chemicals.

If the material has deteriorated such that handling the chemical would pose an imminent and substantial threat of a release that could be harmful to human health or the environment, on-site stabilization may be performed to render the material nonhazardous. Treatment may include venting of known, nonhazardous gas cylinders or stabilizing (e.g., rehydrating) the chemical. Unknown gas cylinders are not vented to the atmosphere; however, a sample of the gas may be taken and analyzed to characterize the gas. According to 20 NMAC 4.1.500/ 40 CFR 264.1(g)(8) [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.1(c)(3)(i) [6-14-00], treatment of this type is exempt from permitting requirements and from 20 NMAC 4.1.500/40 CFR 264. Once the material has been stabilized and is safe to handle, it will be disposed of according to normal procedures through the appropriate Unit.

8.2 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

Subpart AA

Sandia/DOE do not use any of the processes identified in 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00] for the treatment of RCRA-regulated wastes. Therefore, the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00] do not apply to SNL/NM.

Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations > 10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40

CFR 264, Subpart BB [6-14-00] except during treatment at the TTF. Sandia/DOE occasionally manage such waste using process equipment identified above at the RMWMF and AHCF.

Equipment at the Units is used less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052-.1060 as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f). A list of the equipment will be maintained in the Unit records, as described in Section 9.0.

Subpart CC

RCRA-regulated wastes are treated in containers at the RMWMF and AHCF. Such wastes and treatment processes may be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/40 CFR 264.1080 [6-14-00]. These standards are not applicable to:

1. Containers that held RCRA-regulated waste prior to December 6, 1996, and to which no RCRA-regulated waste has been added on or after December 6, 1996;

2. Containers having a design capacity of less than or equal to 0.1 cubic meter (m^3) or approximately 26 gallons;

3. Containers used solely for on-site management of RCRA-regulated waste placed in the Unit as a result of implementing remedial activities under corrective action authorities;

4. Containers used solely for the management of radioactive mixed waste; or

5. Containers equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation (20 NMAC 4.1.500/40 CFR 264.1080[b] [6-14-00].

Furthermore, a container is exempt from the 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] container standards in 20 NMAC 4.1.500/40 CFR 264.1086 [6-14-00] if:

- The RCRA-regulated waste in a container has an average volatile organic concentration at the point of waste origin of less than 500 parts per million by weight (ppmw), or

- The organic content of all RCRA-regulated waste entering a container has been reduced by an organic destruction or removal process achieving any one of the conditions specified in 20 NMAC 4.1.500/40 CFR 264.1082(c)(2)(i)-(vi) [6-14-00] (20 NMAC 4.1.500/40 CFR 264.1082 [6-14-00]), or

- The RCRA-regulated waste in the container meets the treatment standards in 20 NMAC 4.1.800/40 CFR 268.40 for organic hazardous constituents present in the waste.

Sandia personnel assume that each container of RCRA-regulated wastes undergoing treatment that meets the applicability criteria for Subpart CC (i.e., each container that is not included in any of items 1 through 5 above) is subject to the Subpart CC requirements, unless a waste

determination is made in accordance with 20 NMAC 4.1.500/40 CFR 264.1083 to establish that one or more of the exemptions is applicable. The waste determination process is described in Section B.5.3 in Appendix B of this General Part B, and the results are included in the operating record as described in Section 9.0.

At SNL/NM, RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements are treated in primary containers that have a design capacity of less than 0.1 m^3. These treatment activities are exempt from Subpart CC standards, as noted above. Sandia/DOE do not perform treatment activities that are subject to Container Level 3 standards.

Management of releases to the atmosphere from containers during storage is addressed in Section 1.1.4.6.

Additional Unit-specific information is provided in Section 8.0 of each Unit-specific Part B module for Units where treatment is performed.

9.0 RECORDKEEPING

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart E, [6-14-00]. The following Unit-specific records are maintained by Sandia/DOE at each Unit unless specified otherwise in each Unit-specific Part B module.

- A current copy of sections of SNL/NM General Part B permit renewal request/application (or permit upon issuance) that govern Unit operations, including the site-wide waste analysis (Appendix B), inspection (Appendix C), training (Appendix D), contingency (Appendix E), closure (Appendix F), and treatment ~~(Appendix G)~~ plans (where applicable);

- A current copy of the Unit-specific module sections in the current SNL/NM General Part B that provide additional information, including inspection (Section 4.0), contingency (Section 6.0), and closure (Section 7.0).

- A written or electronic operating record that describes:

  - the type and quantity of each RCRA-regulated waste received

  - the location of RCRA-regulated wastes and the quantity at each location

  - the method(s) and dates of storage and/or treatment of the RCRA-regulated waste

  - records and results of RCRA-regulated waste analyses and determinations

  - determinations that RCRA-regulated wastes are subject to the Federal Facilities Compliance Order between DOE, Sandia, and NMED (1995, as amended)

  - reports of any incidents that required activation of the Contingency Plan

  - inspection forms for the last three years

  - monitoring, testing, or analytical data and records of corrective actions taken (in the previous or current calendar year) to prevent or mitigate releases of RCRA-regulated waste to the environment

  - treatment notice and certification (as specified in 20 NMAC 4.1.800/40 CFR 268.7(b), (d), and (e) or 268.9(d) [6-14-00])

- Training records for current personnel;

- Written inspection schedule; and

- Air emissions records (as specified in 20 NMAC 4.1.500/40 CFR 264.1064 and 264.1089 [6-14-00]). These include a list of process equipment at the Unit that is identified in 20 NMAC 4.1.500/40 CFR 264 Subpart BB and is used for less than

300 hours per year for management of RCRA-regulated wastes with organic concentrations ≥ 10 percent by weight.

The following records are maintained at the SNL/NM Records Center, currently located in Building 869:

- A copy of the SNL/NM General Part B permit renewal request/application (or permit upon issuance);
- Correspondence and other documents from government agencies;
- Notices to off-site generators (as specified in 20 NMAC 4.1.500/40 CFR 264.12[b] [6-14-00]);
- Waste minimization certification;
- Training records for former employees (maintained for a minimum of three years from the date the employee last worked at a Unit);
- Manifest documents for RCRA-regulated waste shipped off site;
- A copy of the Hazardous Waste Report (Biennial Report);
- Copies of unmanifested waste reports;
- Certification and documentation that the Unit and any associated closed-vent system, control system, and containers meet the specifications of 20 NMAC 4.1.500/40 CFR 264.1084 and 1089 [6-14-00]; and
- Superseded versions of the SNL/NM General Part B permit renewal request/application, the permit, Contingency Plan, Inspection Plan, Waste Analysis Plan, Treatment Plans, and Training Plan.

9.1 Hazardous Waste Report (Biennial Report; 20 NMAC 4.1.500/40 CFR 264.75 and 20 NMAC 4.1.300/40 CFR 262.41)

Sandia/DOE will prepare and submit a hazardous waste report (biennial report) to the New Mexico Environment Department (NMED) by March 1 of each even-numbered year as required by 20 NMAC 4.1.500/40 CFR 264.75 and 20 NMAC 4.1.300/40 CFR 262.41 [6-14-00]. The ~~hazardous waste report (~~biennial report~~)~~ will be submitted to the NMED on U.S. Environmental Protection Agency (EPA) Form 8700-13A/B (~~revised~~ June 2000 or update) unless directed otherwise. The report will cover SNL/NM Unit activities during the previous calendar year and will include the information requested on the form and in the accompanying instructions, such as:

- The EPA identification number, name, and address of the facility;
- The calendar year(s) covered by the report;

- A description and the quantity of each RCRA-regulated waste received at each unit during the year;
- The method of treatment, storage, or disposal for each RCRA-regulated waste;
- For generators who treat, store, or dispose of RCRA-regulated waste on site, a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated;
- For generators who treat, store, or dispose of RCRA-regulated waste on site, a description in the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent such information is available for the years prior to 1984; and
- The certification signed by Sandia/DOE or an authorized representative.

9.2 Unmanifested Waste Report (20 NMAC 4.1.500/40 CFR 264.76)

Waste from off-site sources may be accepted at SNL/NM, provided that such waste is properly characterized and transported,~~manifested~~ and meets the requirements listed in Section B.4~~5~~ of Appendix B.~~ of this permit renewal request/application.~~ If Sandia/DOE accepts any wastes for treatment or storage from an off-site large quantity generator~~facility~~ without an accompanying manifest, or without an accompanying shipping paper as described in 20 NMAC 4.1.500/ 40 CFR 264.76 [6-14-00], Sandia/DOE will prepare and submit an Unmanifested Waste Report (EPA Form 8700-13B) to the NMED within fifteen days after receiving the waste. The report will include the following:

- The EPA identification number, name, and address of the facility;
- The date the Unit received the waste;
- The EPA identification number, name, and address of the generator and transporter, if available;
- A description and the quantity of each unmanifested RCRA-regulated waste and facility received;
- The method of treatment, storage, or disposal for each RCRA-regulated waste;
- The certification signed by Sandia/DOE or an authorized representative; and
- A brief explanation of why the waste was unmanifested, if known.

9.3 Additional Reports (20 NMAC 4.1.500/40 CFR 264.77)

In accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264.77 [6-14-00], Sandia/DOE~~SNL/NM~~ will also report the following to the NMED:

- Releases, fires, and explosions as specified in 20 NMAC 4.1.500/40 CFR 264.56(j) [6-14-00];
- Unit closures specified in 20 NMAC 4.1.500/40 CFR 264.115 [6-14-00];
- Manifest discrepancies that cannot be resolved within 15 days after receiving the waste as required by 20 NMAC 4.1.500/40 CFR 264.72(b) [6-14-00];
- Occurrence(s), if any, when RCRA-regulated waste is placed in a container in noncompliance with conditions specified in 20 NMAC 4.1.500/40 CFR 264.1090[a] [6-14-00] (20 NMAC 4.1.500/40 CFR 264.1082[c][1] or [2] [6-14-00]); and
- As otherwise required by 20 NMAC 4.1.500/40 CFR 264, Subparts F, BB, and CC [6-14-00].

10.0 OTHER FEDERAL LAWS

The following federal laws are required under 20 NMAC 4.1.900/40 CFR 270.3 and 270.14(b)(20) [6-14-00], to be given consideration when applying for a hazardous waste facility permit. When any of these laws is applicable, its procedures must be followed. Requirements and applicability of each law are briefly summarized.

1. *The Wild and Scenic Rivers Act (16 United States Code [USC] 1273 et seq.).* This act provides for a national wild and scenic rivers system and prohibits construction of water resources projects that would have a direct adverse impact on wild and scenic river values. The Rio Grande, the closest river to SNL/NM Units at a distance of approximately 7 miles, is designated as a wild and scenic river. SNL/NM Unit operations do not involve any water resources project construction or development. Therefore, the Wild and Scenic Rivers Act does not apply.

2. *The National Historic Preservation Act (NHPA) of 1966 (16 USC 470 et seq.).* This act establishes a program for the preservation of the nation's cultural resources including historic properties. Cultural resources at KAFB include prehistoric archaeological sites, which in the Albuquerque area date to before AD 1540 (the initiation of Spanish exploration of the area), and historic archaeological sites (sites, buildings, and structures from AD 1540 to 1948). Within the boundaries of KAFB and DOE buffer zones are 284 recorded prehistoric and historic archaeological sites. No traditional cultural properties have been identified at KAFB.

   Cultural resource investigations have recorded approximately 37 eligible and potentially eligible cultural properties in areas used by Sandia/DOE on Kirtland Air Force Base (KAFB) (Table 3). In addition, some Sandia/DOE structures on KAFB land could have Cold War significance or are approaching 50 years of age; these are in the process of being evaluated for potential inclusion in the National Register.

Table 3
Cultural Properties Used by Sandia/DOE on Kirtland Air Force Base

Land Jurisdiction	Cultural Properties		
	Eligible	Potentially Eligible	Total
USAF/USFS withdrawn: Sandia/DOE joint use	8	9	17
USAF: Sandia/DOE/Others joint use	15	5	20
Total	23	14	37

DOE = U.S. Department of Energy
Sandia = Sandia Corporation
USAF = U.S. Air Force
USFS = U.S. Forest Service

The NHPA has been amended by the Archeological and Historic Preservation Act *(16 USC 469a et seq.)*, which directs federal agencies to recover and preserve historic and archeological data that would otherwise be lost as a result of federal construction or other activities. It has also been amended by the Archeological Resources Protection Act (ARPA) (*16 USC 470aa et seq.*), which requires a permit from the

U.S. Department of the Interior (DOI) for excavation or removal of archeological resources from public or pueblo lands. Both of these statutes apply to known or future cultural properties recorded on KAFB land used by Sandia/DOE. Any excavations conducted on, or removal of archaeological resources from, KAFB land used by Sandia/DOE require an ARPA permit obtained through the DOI, National Park Service.

3. *The Endangered Species Act of 1973 (16 USC 1531 et seq.).* This act provides for the protection of endangered and threatened species of flora and fauna. The act prohibits any action that would jeopardize the continued existence of any endangered or threatened species or its critical habitat. There are no federally-listed threatened or endangered species in the vicinity of SNL/NM Units. Consequently, neither formal consultation nor biological opinion processes have been required for SNL/NM Unit operations by the U.S. Fish and Wildlife Service under Section 7 of the Act.

4. *The Coastal Zone Management Act of 1972 (16 USC 1451 et seq.).* This act establishes national policy for the management, use, protection, and development of land and water resources of the nation's coastal zones. Section 307(c) of the act and implementing regulations prohibit the EPA from issuing a permit for activity affecting coastal zone land or water without the certification from the applicant that the activity is in compliance with the state Coastal Zone Management Program. As an inland state, New Mexico does not have a State Coastal Zone Management Program with which Sandia/DOE must comply. None of the SNL/NM Units are located in an affected area (i.e., a coastal zone); therefore, the act does not apply.

5. *The Fish and Wildlife Coordination Act of 1934, as amended (16 USC 661-666c).* This act provides for the protection of fish and wildlife resources potentially affected by development projects that modify any stream or other body of water 10 acres or greater in size. Because there are no natural bodies of surface water proposed for modification by SNL/NM Unit activities, the Fish and Wildlife Coordination Act does not apply.

Consideration will be given to Executive Orders, issued by the President, that are relevant to RCRA-regulated waste management activities at SNL/NM.

11.0 CORRECTIVE ACTION

In accordance with 20 NMAC 4.1.900/40 CFR 270.14(d) [6-14-00], information on solid waste management units is presented in Part 4 of this comprehensive Part B permit request. Solid waste management units are shown on Figure 1 in Part 4.

12.0 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.

_____ _____

Donald H. Blanton
Vice President, Human Resources and Protection Services
Sandia Corporation
Albuquerque, New Mexico
Co-Operator

Date Signed

_____ _____

Karen L. Boardman
Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Albuquerque, New Mexico
Owner and Co-Operator

Date Signed

13.0 REFERENCES

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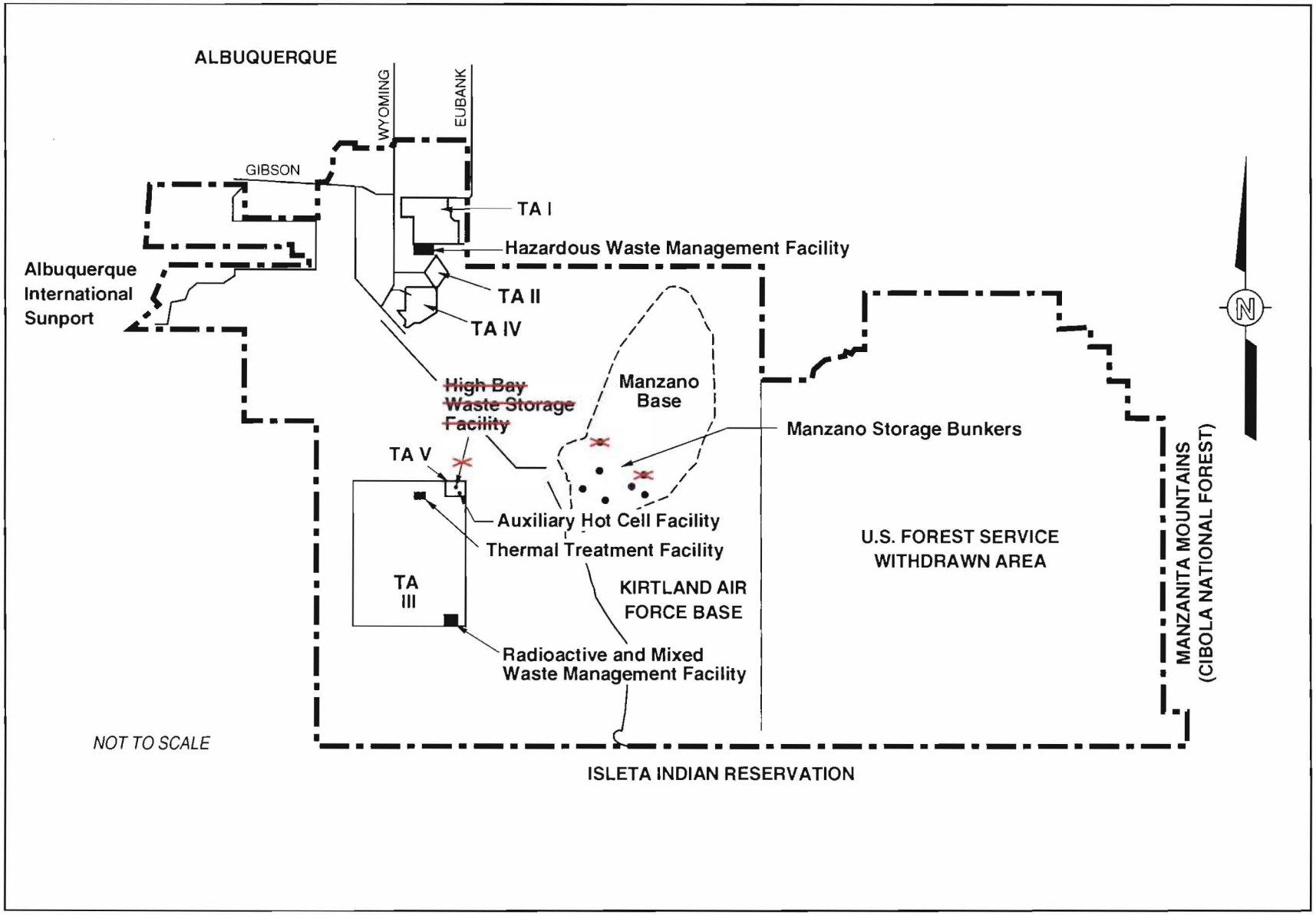

Figure 1

Sandia National Laboratories/New Mexico
Technical Areas (TAs) and Resource Conservation and Recovery Act-Regulated Waste Management Units in Relation to Kirtland Air Force Base

General Part B – Appendix A

APPENDIX A

SITE-WIDE DESCRIPTION FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
AHCF	Auxiliary Hot Cell Facility
DOE	U.S. Department of Energy
ft	foot/feet
~~HBWSF~~	~~High Bay Waste Storage Facility~~
HWMF	Hazardous Waste Management Facility
KAFB	Kirtland Air Force Base
MSB	Manzano Storage Bunkers
RCRA	Resource Conservation and Recovery Act
RMWMF	Radioactive and Mixed Waste Management Facility
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TA	Technical Area
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit
USFS	U.S. Forest Service

SITE-WIDE DESCRIPTION FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

The information provided in this appendix is submitted in accordance with the applicable requirements of New Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.~~1~~500– and .900), Revised June 14, 2000 [6-14-00]. / ~~[6-14-00] 40 CFR 260–266, 268, and 270 [6-14-00].~~ 20 NMAC 4.1.500 and .900 adopt, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270). The following subject areas are addressed in this appendix or in Section 2.0 of each Unit-specific module.

- A general description of the Sandia National Laboratories/New Mexico (SNL/NM) site (20 NMAC 4.1.900/40 CFR 270.14[b][1] [6-14-00]);
- Site-wide security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Site-wide traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Site location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/ 40 CFR 264.18[a] and [b] [6-14-00]);
- Site-wide topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]);
- Site-wide groundwater monitoring and protection information (20 NMAC 4.1.900/40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]); and
- Other permit activities.

Together, the information in this appendix, in the General Part B, and in each Unit-specific Part B module meets the applicable regulatory requirements. Individual Units are listed in Table A-1.

For the purposes of this permit renewal request/application, SNL/NM (the facility) is owned by DOE and co-operated by Sandia and DOE.

A.1 GENERAL SITE DESCRIPTION (20 NMAC 4.1.900/40 CFR 270.14[b][1])

SNL/NM is located on Kirtland Air Force Base (KAFB) immediately southeast of the Albuquerque city limits in Bernalillo County, New Mexico. SNL/NM occupies an area of approximately 2,842 acres within the 80-square-mile KAFB (Figure A-1).

SNL/NM (U.S. Environmental Protection Agency Identification Number NM5890110518) is a multidisciplinary laboratory engaged in research and development of weapons and alternative energy sources. SNL/NM is managed by Sandia, a wholly-owned subsidiary of Lockheed Martin, for the DOE, with work also performed for others. Activities at SNL/NM fall under North American Industry Classification System Numbers 92811 (National Security) and 54171 (Research and Development in the Physical, Engineering, and Life Sciences).

Table A-1
~~Location of~~ RCRA-Regulated Waste Management Units

Unit Name	Acronym	Location, size	Types of operations	Operating Status
Hazardous Waste Management Facility	HWMF	South of TA-I, north of entrance to TA-II. 1.35 acres	Storage, Repackaging	Existing, operational
Thermal Treatment Facility	TTF	Northern part of TA-III. 196 square feet	Treatment	Existing, on standby
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. 3.11 acres	Storage, Treatment, Repackaging	Existing, operational
~~High Bay Waste Storage Facility~~	~~HBWSF~~	~~TA-V. 5670 square feet~~	~~Storage~~	~~Existing, operational~~
Auxiliary Hot Cell Facility	AHCF	TA-V. 5578 square feet	Storage, Treatment, Repackaging	Existing, expected to start operations in 2003
Manzano Storage Bunkers (Set of five~~seven~~ Units)	MSB	In Manzano Area on KAFB. 0.4 acres occupied by bunkers (approximately 1600 to 2100 square feet in each bunker)	Storage	Existing, operational

The major Sandia/DOE research and administration functions are located at five Technical Areas (TAs), designated I through V. TAs I, II, and IV are located north of Tijeras Arroyo and Arroyo del Coyote (Figures A-2 and A-3). TAs III and V occupy contiguous tracts of land south of Tijeras Arroyo and west of Arroyo del Coyote.

A.2 SECURITY PROCEDURES AND EQUIPMENT (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

In accordance with 20 NMAC 4.1.500/40 CFR 264.14(a) [6-14-00], an owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of a facility. The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of Units.

A.2.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

20 NMAC 4.1.500/40 CFR 264.14 [6-14-00] and 270.14[b][19][viii] [6-14-00], require that security be provided by 24-hour surveillance which is continuously monitored and controls access to the facility (20 NMAC 4.1.500/40 CFR 264.14[b][1] [6-14-00]), or if that requirement cannot be met, a natural or artificial barrier and means to control entry must be provided (20 NMAC 4.1.500/40 CFR 264.14[b][2] [6-14-00]). The design and operation of the SNL/NM facility fully meet the security requirements of 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The five TAs, Manzano Base, and Units outside TAs are surrounded by fences that prohibit access except through gated entrances. Only personnel with appropriate Sandia-issued access badges

and identification, or escorted visitors, are allowed access to the TAs and all Units. The gates and/or doors to all Units are closed and locked during non-operating hours.

Sandia/DOE security personnel periodically monitor the gates of all SNL/NM technical areas and RCRA-regulated waste management Units during non-operational hours. Any additional Unit-specific information on security procedures and access control is provided in each Unit-specific module.

The SNL/NM Units are located within the fenced boundaries of KAFB. Access to KAFB is controlled 24 hours per day, 7 days per week. Entrance is possible only though five gates, staffed by armed military police, upon recognition of identification stickers or passes issued to each vehicle. Visitors must have a base sponsor and sign an entry log prior to entering the base. The gates are shown in Figure A-4.

A.2.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

20 NMAC 4.1.500/40 CFR 264.14(c) [6-14-00], requires that signs meeting the requirements of that section be posted. Each SNL/NM Unit is posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs in English and Spanish. The signs are legible from a distance of 25 feet and can be seen from any approach to any Unit. The signs and their placement meet the requirements of 20 NMAC 4.1.500/40 CFR 264.14(c) [6-14-00]. Any additional Unit-specific information on warning signs is provided in each Unit-specific module.

A.3 TRAFFIC PATTERNS, VOLUMES, AND CONTROLS (20 NMAC 4.1.900/ 40 CFR 270.14[b][10])

The traffic pattern information presented below is general in nature. More detailed information is provided in Section 2.2 of each Unit-specific module.

RCRA-regulated waste is generated during operations at sites throughout SNL/NM. Because RCRA-regulated waste may be generated throughout SNL/NM, waste transport may occur on nearly all roads within KAFB. Off-site wastes may be received at SNL/NM (see Appendix B of this SNL/NM General Part B). The Units included in this permit application can be reached from the KAFB entrance gates at Wyoming Boulevard, Truman Avenue, Gibson Boulevard, or Eubank Boulevard (Figure A-4). KAFB may restrict hazardous material traffic to one or more gates.

A system of interior roads, as shown in Figures A-4, A-5, A-6, and A-7, is maintained at SNL/NM. About 78 total miles of roadway exist; 33 of those miles are paved. The paved roads present at SNL/NM are generally built in conformance to the New Mexico State Highway Standards or the "City of Albuquerque Development Process Manual, Standards for Residential Streets" (City of Albuquerque, 1983 and amendments). These standards conform to specifications prepared by the American Association of State Highway Transportation Officials. Paved roads at SNL/NM are generally designed and constructed to accommodate light to moderate volumes of truck traffic, including 30- to 40-ton vehicles. The roads typically consist of a 1.5 - to 4-inch layer of asphaltic pavement over a 4- to-6 inch base course (not always present) and 8- to 12-inch compacted subgrade.

A.3.1 Traffic Patterns

Information addressing current Unit-specific travel routes is presented in Section 2.2 of each Unit-specific module. Traffic patterns are subject to change in response to KAFB security requirements.

A.3.2 Traffic Volumes

During the last official traffic study conducted at KAFB in 1984, the average number of vehicles passing through the continuously guarded KAFB gates during normal workday hours from Monday through Friday was estimated to be (Meyers, 1991):

- Carlisle-Gibson gate—5,200 vehicles
- Truman-Gibson gate—10,200 vehicles
- Louisiana-Gibson gate—18,000 vehicles
- Wyoming gate—21,600 vehicles
- Eubank gate—12,200 vehicles.

The majority of the 67,200 total vehicles consisted of commuting employees in personal automobiles and light-duty trucks. At the time of the traffic study, about 8,400 people were employed at SNL/NM (including Sandia personnel and contractors) and an estimated additional 21,000 people were employed at adjoining KAFB and DOE facilities (Jackson, 1991). Sandia personnel and contractors ~~NL/NM~~ currently number ~~employs~~ about 6,450 people and an additional 17,000 are employed at KAFB and DOE facilities (Francis, 2001). The KAFB Security Forces squadron estimates that 40,000 to 50,000 vehicles currently pass through KAFB gates daily (Francis, 2001).

Therefore, Sandia/DOE believes the 1984 traffic data slightly overestimate the traffic volume for 2001.

A.3.3 Traffic Control Signals

Site wide traffic flow on KAFB is controlled by traffic lights, stop signs, yield signs, and one-way streets. Traffic lights are in place at major intersections on KAFB. Traffic signs are used at "T" intersections throughout KAFB, including SNL/NM. Any additional Unit-specific information addressing traffic control is presented in Section 2.2 of each Unit-specific module.

A.4 SITE LOCATION INFORMATION (20 NMAC 4.1.900/40 CFR 270.14[b][11])

A.4.1 Geologic Setting (20 NMAC 4.1.500/40 CFR 264.18[a] and 20 NMAC 4.1.900/40 CFR 270.14[b][11])

SNL/NM is located along the east-central edge of the Albuquerque Basin, one of a north-south-trending series of basins that make up the Rio Grande Rift. The Sandia, Manzanita, and Manzano Mountains, which are uplifted fault blocks, form the eastern boundary of the basin. The Lucero uplift bounds the west side of the basin, the Ladron Mountains bound the south side, and there is limited topographic relief on the northwest side of the basin. The basin is approximately 100 miles long and 20 to 40 miles wide (Figure A-9).

The eastern section of the Albuquerque Basin shows major faulting (Figures A-2 and A-9). The Hubbell Springs, Sandia, and Tijeras faults form a series of down-dropped blocks to the west (SAIC, 1985; Machette, 1982; Grant, 1981; Kelley, 1977).

The Tijeras Fault zone trends northeast from SNL/NM through Tijeras Canyon. The fault zone consists of several subparallel faults with near-vertical dips and show normal and left lateral displacement (Maynard et al., 1991; Lisenbee et al., 1979).

Within the boundaries of KAFB, the Albuquerque Basin rocks are Precambrian to Holocene in age. The upper part of the basin fill within KAFB is comprised of the Ceja Member of the Tertiary Santa Fe Group, which is a complex sequence of gravel, sand, silt, clay, and caliche deposits. Quaternary and Holocene deposits, which include alluvium, landslide deposits, eolian deposits, caliche, and gravel pediments, also comprise Albuquerque Basin sediments within KAFB (Kelley, 1977).

A.4.2 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i and ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

SNL/NM is located in Bernalillo County, New Mexico, which is listed in Appendix VI of 20 NMAC 4.1.500/40 CFR 264 [6-14-00]. None of the SNL/NM Units are located within 3,000 feet (ft) of any fault with Holocene displacements (Machette, 1982). Therefore, all SNL/NM Units are compliant with the seismic standards in 20 NMAC 4.1.500/40 CFR 264.18(a) [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(11)(ii) [6-14-00].

A.4.3 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii through v]; 20 NMAC 4.1.500/40 CFR 264.18[b])

SNL/NM is located near the middle of the upper Rio Grande basin that originates in southern Colorado. SNL/NM occupies generally flat, gently west-sloping mesa land located between the Rio Grande Valley to the west and the Manzano and Manzanita Mountains to the east. The nearest surface water body is the Rio Grande, located about 7 miles west of SNL/NM.

The locations of the 100-year floodplains of Tijeras Arroyo and Arroyo del Coyote are shown in Figure A-2. The floodplain portion of Figure A-2 was derived from a U.S. Army Corps of Engineers map (COE, 1979), prepared using Federal Emergency Management Administration guidelines that are equivalent to the mapping techniques used to prepare Federal Insurance

Administration floodplain maps. None of the SNL/NM Units are located within a 100-year floodplain, as defined in 20 NMAC 4.1.500/40 CFR 264.18(b)(2)(i) [6-14-00], and as regulated under 20 NMAC 4.1.500/40 CFR 264.18(b)(1) [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(11)(iv) [6-14-00]. Therefore, all SNL/NM Units are compliant with the floodplain standards.

A.5 TOPOGRAPHIC MAPS (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Figure A-2 is provided to meet the requirements of the 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Figure A-2 is a topographic map of KAFB that shows the SNL/NM TAs and includes the following:

- Map scale and date
- The 100-year floodplain area
- Surface water bodies, including intermittent streams
- Wind roses
- Map orientation (north arrow)
- Legal boundaries of the SNL/NM facility
- Access control features (i.e., fences and gates)
- Groundwater monitoring, withdrawal, and water supply wells both on site and off site at KAFB and SNL/NM in the vicinity of the Units
- Buildings and other structures (e.g., access and internal roads)
- Locations of the HWMF, TTF, RMWMF, ~~HBWSF,~~ AHCF, and MSB.
- Areas of residential land use within KAFB.

These items are also shown on topographic maps in the Unit-specific modules. The Unit-specific maps show Unit features and the area surrounding each Unit in greater detail.

A.5.1 Wells (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix])

There are no injection wells at SNL/NM. Groundwater monitoring wells and withdrawal wells located at SNL/NM are shown in Figure A-2. None of the wells shown in Figure A-2 are expected to be influenced by activities at any SNL/NM RCRA-regulated waste management Unit because waste management activities occur in contained areas. KAFB water-supply wells, City of Albuquerque wells, and other wells located within 1,000 ft of the KAFB boundaries are shown on Figure A-2.

A.5.2 Wind Rose (20 NMAC 4.1.900/40 CFR 270.14[b][19][v])

A network of meteorological towers is used to monitor weather conditions at SNL/NM. Data indicate that the overall prevailing winds at SNL/NM are from the east, except that winter winds at the 100-ft elevation are from the north. Rapid night time ground cooling after sunset on cloudless or near-cloudless nights produces strong temperature inversions in which temperature increases with elevation (an atmospheric condition resulting from a reversal of the normal temperature lapse rate). This rapid cooling effect generates nighttime drainage winds ~~(i.e., katabatic winds)~~ out of the mountains, which are strongest at the mouths of the larger canyons. Nighttime winds in these areas are typically from the east and southeast, while daytime winds are typically from the southwest, west, and northwest. It also appears that Tijeras Arroyo diverts surface air flow between TAs III and V on the south and TAs I, II, and IV, and Albuquerque on the north. The channeling of wind through Tijeras Canyon can be seen by comparing the wind roses from these two areas (SNL/NM, 2002). Figure A-2 shows wind roses that summarize wind speeds and directions for TA-II (near the HWMF), the southeast corner of TA-III (near the RMWMF), and the northeast corner of TA-III (near the ~~HBWSF,~~ AHCF~~,~~ and TTF). Wind roses are also shown on the Unit-specific topographic maps.

A.5.3 Surrounding Land Use (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv])

Albuquerque is the largest population center in Bernalillo County and also the closest population center to KAFB and SNL/NM. According to Census 2000 data, the total population of the Albuquerque metropolitan area is 448,607 (U.S. Census Bureau, 2000). This population includes permanent residents of KAFB living in the KAFB housing areas. An additional 108,071 people live outside the Albuquerque metropolitan area but within Bernalillo County (U.S. Census Bureau, 2000).

SNL/NM is essentially surrounded by KAFB, with co-use agreements on some portions of KAFB. An additional 22,500-acre area to the east of KAFB has been withdrawn from the U.S. Forest Service (USFS) for the exclusive use of KAFB. High explosive tests, explosives storage, and other operations are buffered and barricaded by the mountainous terrain toward the eastern edge of this withdrawal area. Areas to the west and south, by agreements with the State of New Mexico and Isleta Pueblo, serve as buffer zones for other test operations.

Land use in the vicinity of SNL/NM and KAFB is urban to the northwest, north, and northeast. Undeveloped grazing land of Isleta Pueblo is located to the south. Undeveloped public grazing land lies to the west and southwest of KAFB and the buffer zones.

The urbanized area immediately northeast, north, and northwest of SNL/NM is predominantly residential, with commercial development along more heavily-traveled streets. Military (i.e., KAFB) housing is located north of F Street (adjacent to the northern edge of SNL/NM TA-I). Additional military housing is located west of Pennsylvania Avenue, north of Hardin Blvd (west of SNL/NM TA-1), as shown on Figure A-2. Albuquerque International Sunport is located west of the northern part of KAFB. Figure A-8 shows land uses for the areas adjacent to and within KAFB boundaries.

The SNL/NM facility is comprised of five TAs and several additional test areas spread over 17,845 acres, which are under diverse land ownership. SNL/NM occupies 2,842 acres owned by the DOE and an additional 15,003 acres that have been made available through a series of land-use agreements or permits among DOE-Albuquerque Operations, DOE Transportation Safeguards Division, KAFB, USFS, Bureau of Land Management, State of New Mexico, Phillips Laboratory (a private contractor), DOE Central Training Academy, and Isleta Pueblo.

The HWMF is approximately 2 miles south of Interstate 40 and 6 miles east of Interstate 25 and downtown Albuquerque. At their nearest points, ~~the HBWSF,~~ the AHCF~~,~~ and the TTF are approximately 3 miles south of Interstate 40 and 6.5 miles east of Interstate 25 and downtown Albuquerque. The MSB are approximately 5 miles south of Interstate 40 and 7.5 miles east of Interstate 25 and downtown Albuquerque. The RMWMF is approximately 5.5 miles south of Interstate 40 and 6.5 miles east of Interstate 25 and downtown Albuquerque. Land use in the vicinity of each RCRA-regulated Unit is predominantly or completely industrial. There are no residential areas within 1 mile of any of the SNL/NM Units. The closest residences are in Zia Park, a KAFB residential area located approximately 1 mile west of TA-I and approximately 3.9 miles north-northwest of TA-V.

A.5.4 Drainage Control Features (20 NMAC 4.1.900/40 CFR 270.14(b)(8)(ii)

Drainage control features (e.g., run-on/runoff, drainage barriers, storm water discharge) are shown on figures provided in each Unit-specific module.

A.5.5 Waste Management Areas

Locations of the waste management areas at each SNL/NM Unit are shown on figures provided in each Unit-specific module.

A.6 GROUNDWATER MONITORING (20 NMAC 4.1.900/40 CFR 270.14[c] and 20 NMAC 4.1.500/40 CFR 264.90[a])

The nine~~12~~ SNL/NM Units included in Part 2 of this Sandia/DOE comprehensive Part B permit request are storage and/or treatment Units that are subject to 20 NMAC 4.1.500/40 CFR 264.101 [6-14-00] which requires that operators of treatment, storage, or disposal facilities develop and implement corrective actions as necessary to protect human health and the environment from past, present, or future releases of RCRA-regulated wastes. None of the nine~~12~~ storage and/or treatment Units addressed in Part 2 have released RCRA-regulated wastes in the past.

The nine ~~12~~ Units are not subject to the groundwater protection and monitoring requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart F [6-14-00] because they are not regulated units or solid waste management units.

SNL/NM currently has one regulated unit (the Chemical Waste Landfill) that is subject to the groundwater protection and monitoring requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart F

[6-14-00]. Chemical Waste Landfill groundwater monitoring is addressed in Part 3 of this Sandia/DOE comprehensive Part B permit request.

A.7 OTHER PERMIT ACTIVITIES

Sandia/DOE hold numerous environmental permits issued by various agencies. Current permits, including RCRA permits, are listed in Appendix A of the General Part A included in Part 1 of this comprehensive Part B renewal request.

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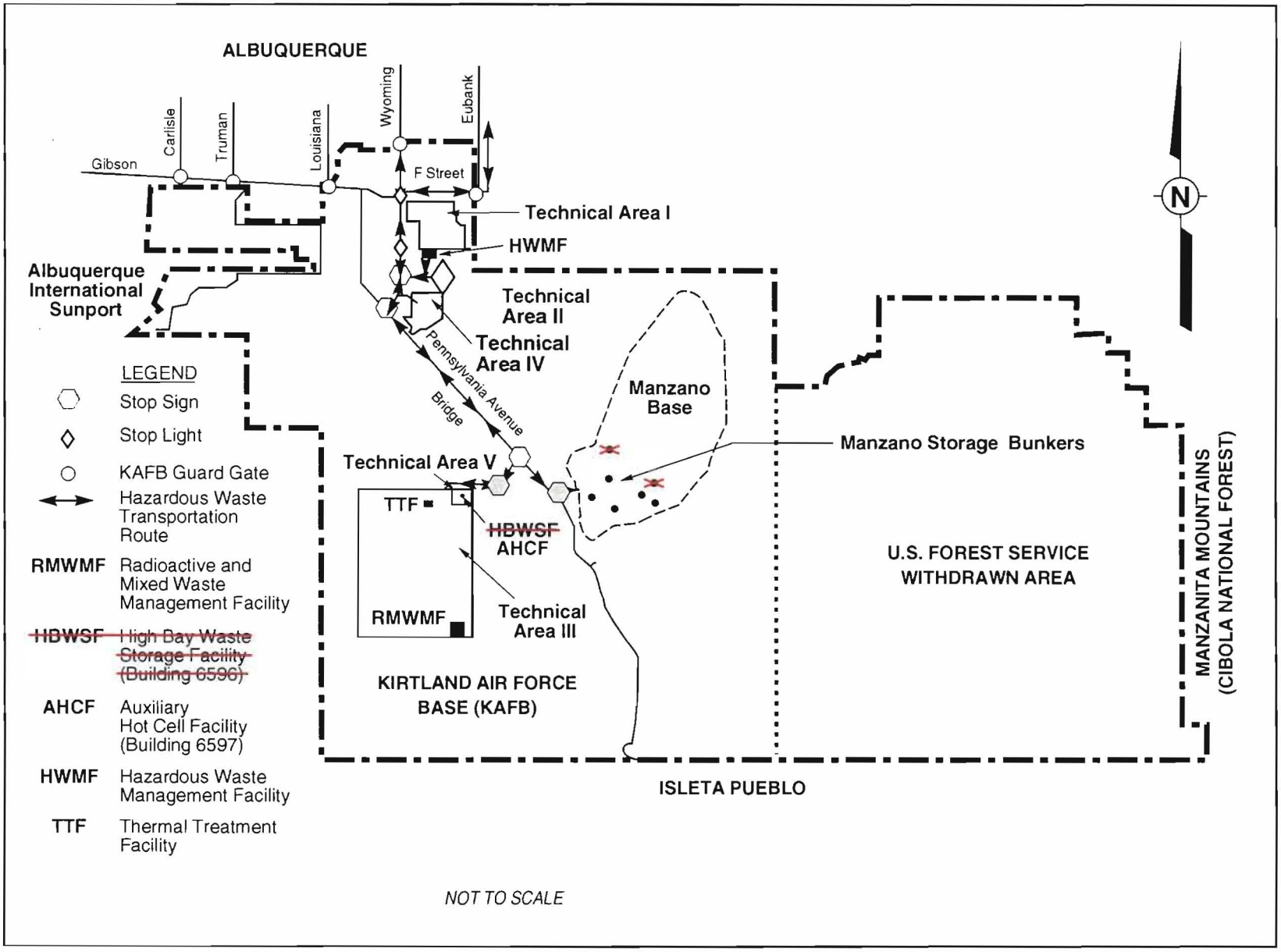

Figure A-4
Resource Conservation and Recovery Act-Regulated Waste Transportation Routes, Sandia National Laboratories/New Mexico

774470.14000000 A97

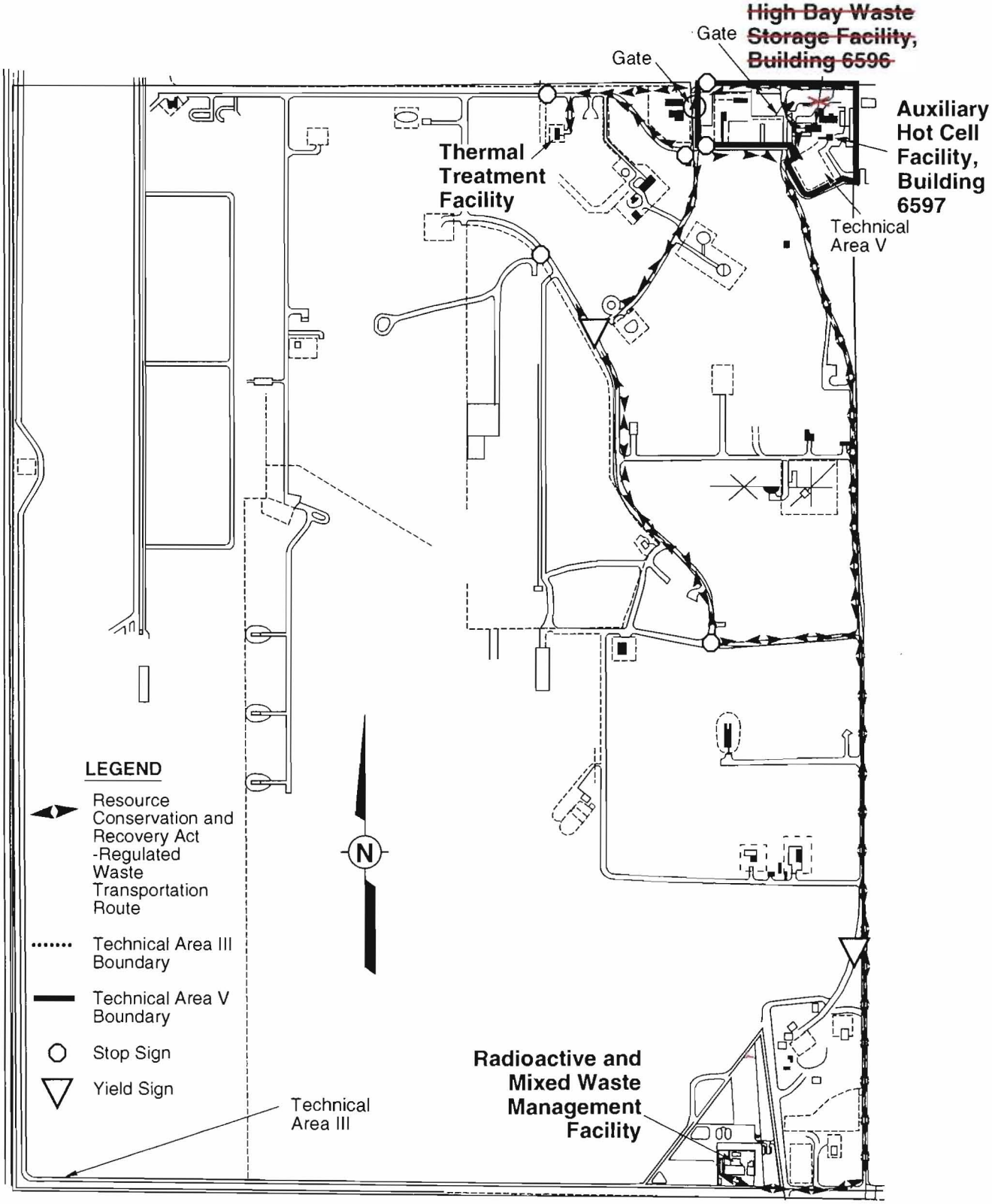

Figure A-6
Resource Conservation and Recovery Act-Regulated Waste Transportation Routes in Technical Areas III and V

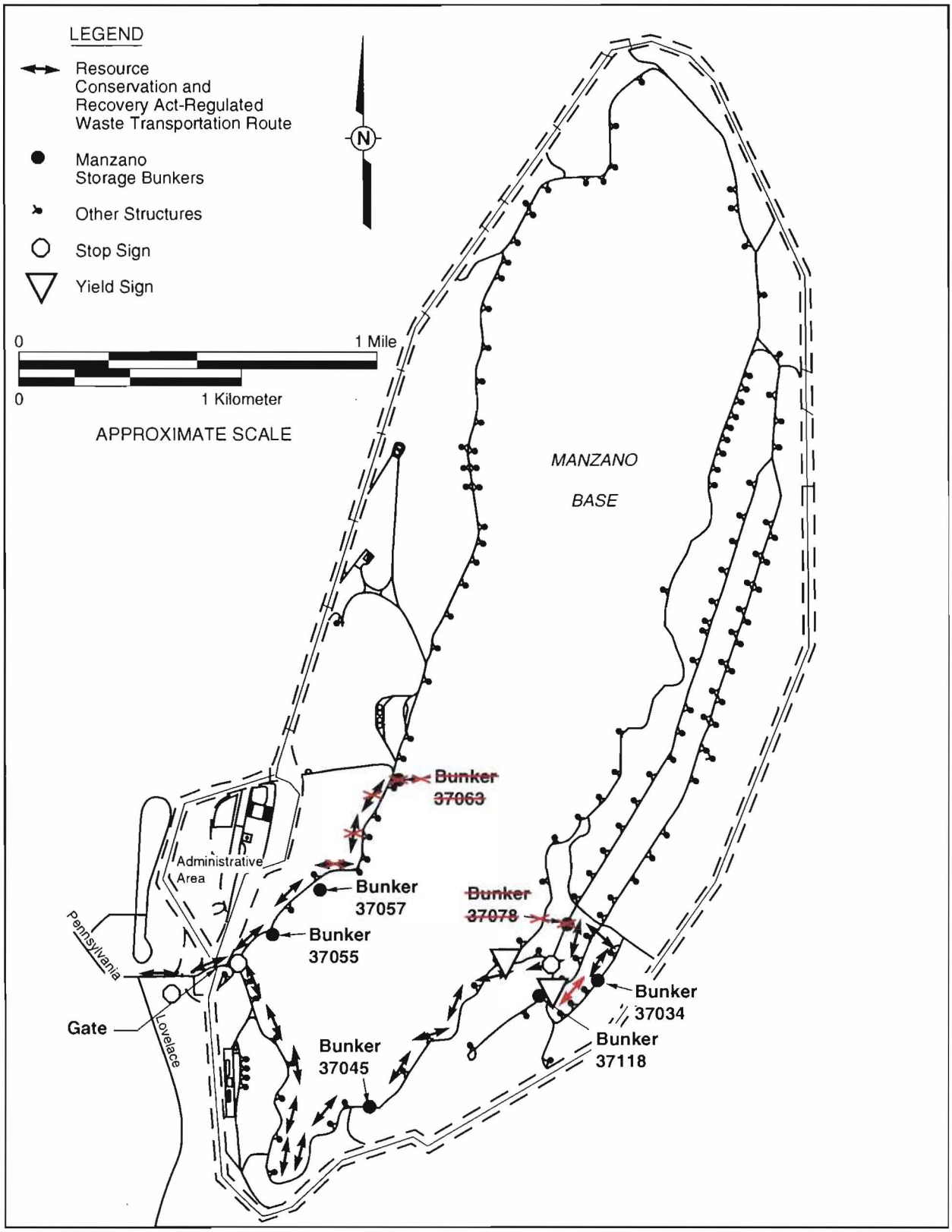

Figure A-7

Resource Conservation and Recovery Act-Regulated Waste Transportation Routes at Manzano Base

General Part B – Appendix B

APPENDIX B

SITE-WIDE WASTE ANALYSIS PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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~~LIST OF~~ ABBREVIATIONS/ AND ACRONYMS

20 NMAC 4.1.*XX*	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *XX*
40 CFR *XXX.XX*	Code of Federal Regulations, Title 40, Part *XXX*, Section *XXX.XX*
AHCF	Auxiliary Hot Cell Facility
ASTM	American Society for Testing and Materials
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DR	disposal request
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
~~HE~~	~~high explosive(s)~~
KAFB	Kirtland Air Force Base
LDR	land disposal restriction
~~m^3~~	~~cubic meter~~
MSDS	Material Safety Data Sheet
PETN	pentaerythritol tetranitrate
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
R&D	research and development
RMWMF	Radioactive and Mixed Waste Management Facility
RTL	regulatory threshold limit
Sandia	Sandia Corporation
SASN	silver acetylide/silver nitrate

LIST OF ABBREVIATIONS/ACRONYMS (Concluded)

SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semivolatile organic compound
TC	toxicity characteristic
TCLP	toxicity characteristic leaching procedure
TSDF	treatment, storage, ~~and~~or disposal facility
TTF	Thermal Treatment Facility
UHC	underlying hazardous constituent
Unit	RCRA-regulated waste management unit
VOC	volatile organic compound
WAP	waste analysis plan

SITE-WIDE WASTE ANALYSIS PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

This waste analysis plan (WAP) presents information on the chemical and physical nature of Resource Conservation and Recovery Act (RCRA)-regulated waste stored and/or treated at the Sandia National Laboratories/New Mexico (SNL/NM)~~. RCRA-regulated wastes are stored and/or treated at the~~ RCRA-regulated waste management units (Units) described in Section 1.0 of this Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application, hereinafter referred to as the SNL/NM General Part B, and listed in Section B.1.1 of this WAP. The Units are co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE).

Sandia/DOE perform storage and treatment of the RCRA-regulated wastes listed in the General Part A Permit Renewal Request/Application," Revision 5.0, (SNL/NM, 2003) at the Units listed in Section B.1.1. This WAP applies to those wastes only. It addresses the waste characterization necessary to perform waste storage and treatment as described in the General Part B and Unit-specific modules. Sandia/DOE do not perform disposal of RCRA-regulated wastes under the terms of the existing or requested permit. Therefore, this WAP does not address waste characterization necessary for disposal.

This WAP has been prepared to meet the requirements set forth in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), incorporating by reference the Code of Federal Regulations, Title 40, Part 264, including Section 264.13 (40 CFR 264.13), revised June 14, 2000 [6-14-00]. It has also been prepared to meet ~~A~~additional waste analysis requirements ~~are~~ specified in 20 NMAC 4.1.900/40 CFR 270.14(b) [6-14-00]~~,~~ and 20 NMAC 4.1.800/40 CFR 268.7(b) and 268.9(d) [6-14-00] applicable to wastes treated at SNL/NM Units.~~, "Waste Analysis and Record Keeping."~~ Together, the information in this appendix, in the General Part B, and in each Unit-specific module meets the applicable regulatory requirements. The waste analysis information contained in this WAP ~~is specific~~applies to the SNL/NM Units where RCRA-regulated wastes are ~~storage~~ stored in containers and/or treated~~ment~~ in containers ~~and treatment in~~or miscellaneous units.

The content of this WAP follows the guidance ~~and treatment~~ provided in "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual" (U.S. Environmental Protection Agency [EPA], 1994). The general information provided in this WAP is applicable to all SNL/NM Units; Unit-specific information is also provided herein as necessary to address Unit-specific waste characterization and analysis requirements. This WAP ~~Content~~ is organized as follows:

Section B.1 Site Description: Includes a general description of SNL/NM; a list of SNL/NM Units; and general descriptions of the RCRA-regulated waste ~~stream~~ types stored and/or treated and the activities that generate RCRA-regulated wastes managed at the Units. ~~and a list of SNL/NM Units.~~

Section B.2 Waste Analysis Parameters: Includes a discussion of the proposed analytical parameters and methods used at SNL/NM and the criteria/rationale for the parameter selection.

Section B.3 Characterization Procedures: Includes the characterization approach (e.g., acceptable knowledge supplemented by sampling and analysis) for RCRA-regulated

~~each~~ waste ~~classification~~ stored and/or treated at SNL/NM Units, and a discussion of the data quality objective (DQO) process used to ensure that the characterization data are suitable for their intended purposes.

Section B.4 Off-Site Waste Acceptance Procedures: Includes a discussion of procedures in place for acceptance of RCRA-regulated waste from off-site facilities.

Section B.5 Special Procedural Requirements: Includes a discussion of the procedures in place for ignitable, reactive, and incompatible wastes; procedures to ensure compliance with land disposal restrictions (LDRs); and procedures to ensure compliance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC [6-14-00].

In this WAP and in the rest of the General Part B, the personnel associated with a RCRA-regulated waste at a given point during management at SNL/NM are sometimes referred to as the "generator" (e.g., the "generator" completes a disposal request). The term "generator," as it appears in this context, is used only to denote an individual person and does not imply the regulatory meaning of "generator" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], particularly with respect to RCRA-regulated waste determination as required in 20 NMAC 4.1.300/40 CFR 262.11 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], Sandia Corporation is a "generator" and a "person" responsible for determining whether a waste is subject to regulation in accordance with 20 NMAC 4.1.300/40 CFR 262.11 [6-14-00]. SNL/NM is a large research facility, and many individuals (including those employed through contract to Sandia Corporation) are involved with generation and subsequent management of RCRA-regulated wastes. These include personnel performing research and other waste-generating activities, and personnel performing environment, safety, and health activities (including waste management) to support Sandia operations and comply with regulatory requirements. RCRA-regulated waste determination at SNL/NM is a collaborative effort between the individuals involved with the generation of RCRA-regulated waste and the Unit personnel. This approach is consistent with the process described in EPA's clarifying memo (Cotsworth, 2002).
~~Unit-specific waste analysis requirements, if any, are provided in Attachment B of each Unit-specific module. Together, information in this appendix and in each Unit-specific Part B module meets the applicable regulatory requirements.~~

B.1 ~~SITE~~ FACILITY DESCRIPTION [20 NMAC 4.1.9~~5~~00/40 CFR 270.14(b)(1)]

SNL/NM is a multidisciplinary laboratory engaged in the research and development (R&D) of weapons and alternative energy sources. SNL/NM is managed by Sandia, a wholly-owned subsidiary of Lockheed Martin, for the DOE, with work also performed for others.

SNL/NM is located in Bernalillo County, New Mexico, adjacent to the southeastern boundary of Albuquerque. SNL/NM occupies an area of about 2,842 acres located in the eastern portion of the 52,233-acre Kirtland Air Force Base (KAFB). SNL/NM consists of five technical areas, designated Technical Areas I through V, as well as remote test areas. A detailed description of the SNL/NM facility is included in Appendix A of this permit renewal request/application.

B.1.1 Description of Waste Management Units

SNL/NM RCRA-regulated waste management Units are described in detail in the General Part B and Unit-specific modules. The Units and associated waste management activities are:

- The Hazardous Waste Management Facility: Container storage and repackaging of RCRA-regulated wastes;
- The Thermal Treatment Facility (TTF): Thermal treatment of a specific RCRA-regulated waste stream by open burning in a miscellaneous unit;
- The Radioactive and Mixed Waste Management Facility (RMWMF): Container storage and repackaging of RCRA-regulated wastes and treatment of RCRA-regulated wastes in containers;
- Auxiliary Hot Cell Facility (AHCF): Container storage and repackaging of RCRA-regulated wastes and treatment of RCRA-regulated wastes in containers; and
- Manzano Storage Bunkers: Container storage of RCRA-regulated wastes.

The General Part A lists the EPA Hazardous Waste Numbers that may* be assigned to the wastes stored in containers at SNL/NM Units. The General Part A also lists the EPA Hazardous Waste Numbers that may* be assigned to the wastes that will be treated in containers or the miscellaneous unit at SNL/NM.

In this WAP, the term "may" when marked with an asterisk, denotes a statement where the uncertainty implied by "may" instead of "will" is technically accurate and appropriate.

B.1.~~1~~2SNL/NM~~Facility~~ Waste-Generating Processes and Activities

RCRA-regulated waste is generated at SNL/NM from design, development, and testing of weapon systems and components; material research; pulsed power research; reactor safety research; support activities; ~~and~~ RCRA corrective action activities (through the Sandia/DOE Environmental Restoration [~~(~~ER]~~)~~ project); ~~Project~~ and decontamination and decommissioning ~~-~~(D&D) activities. Sandia/DOE also accept small volumes of RCRA-regulated waste for storage and/or treatment from off-site facilities. Some of the RCRA-regulated waste generated at SNL/NM ~~may~~ also meets the definition of low-level or transuranic waste as these terms are defined in DOE Order 435.1-1 (DOE, 1999).

It is not feasible to provide detailed descriptions of all possible wastes that could be managed at one or more of the SNL/NM Units. The following sections contain general descriptions of the typical waste types generated at SNL/NM that are and/or will be stored and/or treated at the Units, the processes and/or activities that generate the waste type, and the waste forms associated with each type. For the purposes of this WAP, a waste type is a general category used to describe one or more wastes or waste streams that share key features (e.g., type of waste-generating process, waste form). For the purposes of this WAP, a waste stream is defined as waste that is routinely generated as part of a well-defined waste-generating process and is distinguishable from other waste by some unique combination of one or more of the following: specific waste source or generating process; EPA Hazardous Waste Numbers; SNL/NM Unit-specific handling requirements; off-site treatment, storage, and disposal facility (TSDF) handling requirements; LDR status; waste compatibility issues; or waste characterization requirements. Individual containers of waste packed into a single lab pack container do not constitute a waste stream.

RCRA-regulated waste types may* be of uniform composition (i.e., homogeneous) or of dissimilar/diverse composition (i.e., heterogeneous). Table B-1 summarizes information on RCRA-regulated waste types typically generated at SNL/NM. This table includes brief waste type descriptions, the associated waste-generating process or activity, and the characterization basis for RCRA-regulated waste designation. Table B-1 also addresses the variability of each waste type by listing the potential EPA Hazardous Waste Numbers and potential RCRA-regulated constituents and/or characteristics associated with each waste type.

Table B-1
Descriptions of Types of Resource Conservation and Recovery Act-Regulated Waste Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste TypeDescription	Principal Waste Generating Activity	Basis for RCRA-regulated ~~Hazardous~~ Waste Designation	Potential[a] EPA Hazardous Waste Numbers	Potential[a] RCRA-regulated ~~Hazardous~~ Constituents and/or Characteristics in the Waste
Laboratory Chemical Waste	Weapon systems and components design, development, and testing and material research	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-D043 All P- and U-EPA Hazardous Waste Numbers~~listed waste codes~~	Ignitability Corrosivity Reactivity Toxicity~~Characteristic Leaching Procedure (TCLP) Waste~~[c] Discarded commercial chemical products and off-specification species
Contaminated Used Oil	Weapon systems and components design, development, and testing, material research, pulsed-power research, reactor safety research, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis (off-site waste)	D001 D002 D003 D004-D0043 F001-F005	Ignitability Corrosivity Reactivity T~~CLP Waste~~oxicity[c] Spent solvents
Process Wastes	Weapon systems and components design, development, and testing, material research, ER Project activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis (off-site waste)	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity T~~CLP Waste~~oxicity[c] Spent ~~F-listed~~ solvents
Explosive Waste	Weapon systems and components design, development, and testing	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D003 D011 F003	Ignitability Reactivity Silver ~~F-listed solvents~~Acetone
Used Batteries	Weapon systems and components design, development, and testing	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D002 D003 D006 D007 D008 D009 D011	Corrosivity Reactivity Cadmium Chromium Lead Mercury Silver
Elemental Lead	Pulsed-power research, reactor safety research, ER Project and D&D Activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis (Off-site waste)	D008	Lead
Unknown Liquids and Solids	Legacy wastes from historical weapons system design, development and testing, materials research, ER Project, and D&D activities	Acceptable Knowledge[b] supplemented by Sampling and Analysis	D001 D002 D003 D004-D043	Ignitability Corrosivity Reactivity T~~CLP Waste~~oxicity[c]

Table B-1 (Concluded)
Descriptions of Resource Conservation and Recovery Act-Regulated Waste Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Description	Waste Generating Activity	Basis for RCRA-regulated ~~Hazardous~~ Waste Designation	Potential[a] EPA Hazardous Waste Numbers	Potential[a] RCRA-regulated ~~Hazardous~~ Constituents and/or Characteristics in the Waste
Contaminated Soil ~~and Sludges~~	ER Project and D&D activities	Acceptable Knowledge[b] supplemented by Sampling and Analysis	D001 D002 D003 D004-D043 F001-F005 F039	Ignitability Corrosivity Reactivity T~~CLP Waste~~oxicity[c] Spent ~~F-listed~~ solvents Leachate
Debris	Weapon systems and components design, development, and testing, material research, pulsed-power research, reactor safety research, support activities, ER Project and D&D activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis (Off-site waste)	D001 D002 D003 D004-D043 F001-F005 F039	Ignitability Corrosivity Reactivity T~~CLP Waste~~oxicity[c] Spent ~~F-listed~~ solvents Leachate
Decontamination, Purge, and Treatment Waters	ER Project and D&D activities	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D002 D004-D043 F001-F005 F039	Corrosivity Toxicity~~CLP Waste~~[c] Spent ~~F-listed~~ solvents Leachate
Treated Waste and Treatment Residuals	Support activities (radiation protection and waste management)	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-D043 F001-F005 F039	Ignitability Corrosivity Reactivity T~~CLP Waste~~oxicity[c] Spent ~~F-listed~~ solvents Leachate
Containment System Liquids	Support- activities (waste management)	Acceptable Knowledge[b] Supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents

a "Potential" is defined as possibly present~~.~~

b "Acceptable knowledge" is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (~~U.S. Environmental Protection Agency~~ EPA, 1994, ~~"Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.).~~

c A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986 and all approved updates), the sample or the extract from a representative sample of the waste contains any of the constitue~~amin~~ants listed (D004-D043) at a concentration equal to or greater than the respective value given in ~~the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II (~~20 NMAC 4.1.200/40 CFR 261 Subpart C (6-14-00)~~) , adopting by reference the Code of Federal Regulations, Title 40, Part 261, Subpart C, revised June 14, 2000.~~

~~D & D = decontamination and decommissioning.~~
~~EPA = U.S. Environmental Protection Agency.~~
~~ER = Environmental Restoration.~~
~~TCLP = tToxicity cCharacteristic lLeaching pProcedure.~~

B.1.~~2~~3 Types of Stored Waste

RCRA-regulated wastes are stored in containers at various SNL/NM Units. Typical RCRA-regulated waste streams are described in the following subsections. ~~RCRA regulated waste streams may be of uniform composition (i.e., homogeneous) or of dissimilar/diverse composition (i.e., heterogeneous). Table B-1 provides information on RCRA-regulated waste potentially generated at SNL/NM. This table includes brief waste descriptions, the waste-generating process or activity, and the characterization basis for waste designation.~~ Section 1.2 in the SNL/NM General Part B provides more specific information on waste types that are considered to be acceptable at each Unit, and describes waste-handling practices, including Unit-specific container requirements.

B.1.~~2~~3.1 Laboratory Chemical Waste

Laboratory chemical waste includes commercial chemical products or manufacturing chemical intermediates (in~~cluding~~ solid~~s~~, liquid~~s~~, ~~and~~ or contained gas~~es~~ forms) such as reagents, metal powders, oxidizers, reactive metals, elemental mercury, elemental sodium, and other materials that have Material Safety Data Sheets (MSDSs) or other product documentation. It also includes excess commercial chemical products; solid ~~waste~~ laboratory material (such as laboratory wipes contaminated with solvent or lead solder); or manufacturing chemical intermediates that have exceeded their shelf life, are excess to SNL/NM needs, are off-specification, or are no longer usable for their intended purpose. SNL/NM initial generators generally produce this type of waste during various R&D and testing operations. Some of these also exhibit the RCRA-regulated characteristics of ignitability, corrosivity, reactivity, and/or toxicity.

B.1.~~2~~3.2 Contaminated Used Oil

Used oils, a liquid waste form, from vacuum pumps and other machinery may* be contaminated with listed ~~or characteristic~~ RCRA-regulated wastes or exhibit RCRA-regulated characteristics of ignitability or toxicity. Specific constitue~~amina~~nts depend on the processes that generated the contaminated used oil.

B.1.~~2~~3.3 Process Wastes

Process wastes, which can be ~~consists of~~ liquid or solid chemicals, solutions, or mixtures, ~~that were used in~~are generated as a result of various activities, including ~~an~~ experiments and ~~or~~ routine operational processes. Typical RCRA-regulated process wastes ~~may~~ include, but are not limited to, acidic solutions, alkaline solutions, oxidizers, and wastewaters. The ~~U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers associated with the~~se wastes may* exhibit ~~are typically for~~ RCRA-regulated ~~hazardous~~ characteristics (e.g. corrosivity, reactivity, toxicity) or be RCRA-regulated ~~for~~ listed waste from nonspecific sources (e.g., ~~i.e.,~~ spent solvents).

B.1.~~2~~3.4 Explosive Waste

An explosive material is defined as a chemical compound or ~~mechanical~~ mixture containing any oxidizing and combustible units, or other ingredients in such proportions, quantities, or packing that ignition by fire, friction, concussion, percussion or detonation of any part thereof may* (and is

intended to) decompose with the production of a considerable quantity of heat and gas. Therefore, explosive waste and explosive-contaminated waste ~~may~~ exhibit the characteristic of reactivity described in 20 NMAC 4.1.200/40 CFR 261.23 [6-14-00], if they are capable of detonation or explosive reaction ~~if~~ when subjected to a strong initiating source or if heated under confinement. Examples of explosive waste include ~~weapons~~ components and test units that contain an explosive, or explosive fragments, powders, and residues. Some of t~~T~~hese wastes ~~may~~ also exhibit RCRA-regulated ~~hazardous toxicity~~ characteristics of ignitability and/or toxicity.

Explosive waste and explosive-contaminated waste are generated at SNL/NM primarily from R&D activities. Explosive waste generally consists of discrete pieces of solid explosive material, whereas explosive-contaminated waste typically consists of solid or liquid wastes that have been contaminated with explosive material. A specific type~~s~~ of explosive waste~~s are~~ is managed at the ~~Thermal Treatment Facility~~TTF and ~~are~~ is described in greater detail in ~~Attachment B of Module II~~Section B.1.4.1.

B.1.~~2~~3.5 Used Batteries

Batteries, a solid form, are used in numerous SNL/NM activities, and may* contain heavy metals (e.g., cadmium, mercury, and lead), lithium, or acidic compounds. Information about the battery content, hazards, and EPA Hazardous Waste Numbers is determined using manufacturer's data. For example, unfired thermal batteries contain metals and exhibit the RCRA-regulated ~~hazardous~~ characteristics of reactivity and toxicity; lithium batteries exhibit the ~~hazardous~~ characteristic of reactivity; and mercury batteries, silver batteries, and rechargeable or nickel-cadmium batteries exhibit the ~~hazardous~~ characteristic of toxicity.

B.1.~~2~~3.6 Elemental Lead

Solid elemental l~~L~~ead items that cannot be reused (e.g., for radiation shielding or containment) or is in a form that is unsuitable for recycling directly ~~(e.g., radioactive)~~ may* be declared waste. These wastes exhibit the ~~hazardous~~ RCRA-regulated characteristic of toxicity ~~for lead~~.

B.1.~~2~~3.7 Unknown Liquids and Solids

Unknown liquids and solids consist largely of legacy wastes from historical weapons systems design, development and testing, material research, ER Project, and D&D activities. Typical RCRA-regulated unknown wastes ~~may~~ include, but are not limited to, unlabeled laboratory chemicals, residues in equipment and containers, and solid items that are smaller than debris (as defined in 20 NMAC 4.1.800/40 CFR 268.2). These wastes may* exhibit RCRA-regulated characteristics (e.g., ignitability, corrosivity, reactivity, and/or toxicity).

B.1.~~2~~3.8 Contaminated Soil

This waste type~~stream~~ includes soil, a solid form, from ~~both~~ the ER Project ~~and~~ or other cleanup or~~,~~ excavation~~, or installation~~ operations. Characterization of contaminated soil depends upon the documented historical activities that occurred at the site and the results of site investigation and sampling and analysis activities. ~~Appropriate EPA Hazardous Waste Numbers are assigned on the basis of sampling and analysis results or acceptable knowledge.~~

B.1.~~2~~3.9 Debris

This waste type~~stream~~ includes ~~solid~~ material generated~~used~~ during cleaning operations, D&D operations, emergency response, waste management, ~~building debris,~~ and personal protective procedures. These wastes are solid, usually heterogeneous, compactable and non-compactable materials that meet the definition of RCRA-regulated debris in 20 NMAC 4.1.800/40 CFR 268.2). Compactable materials include items such as personal protective equipment, rags, wipes, swipes, paper, and filters. ~~and n~~Non-compactable materials include equipment, ~~weapons~~ components, electronic hardware, experimental remnants, cables, tools, machining parts or debris, building materials, and glassware. Debris may* be contaminated with or contain RCRA-regulated ~~characteristic or~~ listed waste(s) and/or exhibit one or more RCRA-regulated waste characteristics (i.e., reactivity, corrosivity, ignitability, and/or toxicity). ~~Appropriate EPA Hazardous Waste Numbers are assigned on the basis of sampling and analysis results or acceptable knowledge.~~

B.1.~~2~~3.10 Decontamination, Purge, and Treatment Waters

This waste type~~stream~~ includes decontamination, purge, and treatment water (i.e., wastewater) from ER Project and D&D activities. The RCRA-regulated ~~hazardous~~ characteristics depend upon the documented historical activities that occurred at the site, ~~and~~ the results of site investigation(s), and sampling and analysis if needed. ~~results.~~ Decontamination, purge, or treatment waters may* be contaminated with or contain RCRA-regulated listed waste(s) and/or exhibit a RCRA-regulated waste characteristic (i.e., corrosivity and/or toxicity). ~~Appropriate EPA Hazardous Waste Numbers are assigned on the basis of sampling and analysis results and acceptable knowledge.~~

B.1.~~2~~3.11 Treated Waste and Treatment Residuals

Secondary waste types~~streams~~ (i.e., solids, liquids, or contained gases) generated by treatment operations at SNL/NM Units ~~may~~will be stored on site~~, undergo~~ pending determination of success in meeting treatment goals, subsequent treatment, and/or ~~be~~ transportation ~~ed off-site~~ to appropriate off-site ~~treatment, storage, and disposal facilities~~ (TSDFs), as described in Section B.1.4.

~~Any of the RCRA-regulated wastes at SNL/NM may be treated on site using suitable treatment processes described in Appendix G of this SNL/NM General Part B. Analysis of treated waste and treatment residuals will be sufficient to determine whether the waste meets LDR treatment standards. Analytes vary and are selected for each waste according to the composition of the untreated waste and the treatment process(es) used. Analytes include RCRA-regulated characteristic and listed constituents in the untreated waste, and the characteristics of ignitability, corrosivity, and reactivity and those that were potentially introduced by the treatment process.~~

B.1.3.12 Containment System Liquids

This waste type includes liquids that accumulate in containment system structures (e.g., spill pallets, trenches). Containment system liquids may* be contaminated with or contain RCRA-regulated listed waste(s) or exhibit a RCRA-regulated waste characteristic (i.e., reactivity, corrosivity, ignitability, and/or toxicity), depending on the source of the accumulated liquid.

B.1.4 Treated Waste

RCRA-regulated waste is treated at the TTF, which is a miscellaneous unit. RCRA-regulated wastes are treated in containers at the RMWMF and AHCF. Typical RCRA-regulated wastes and waste streams that are treated at SNL/NM Units are described in the following sections. Sandia/DOE personnel use the waste characterization procedures described in this WAP (Section B.3) to determine whether treated wastes and treatment residues are RCRA-regulated wastes, to determine whether they meet the treatment standards in 20 NMAC 4.1 800/40 CFR 268, and to assign appropriate EPA Hazardous Waste Numbers.

~~ATTACHMENT B~~

~~WASTE ANALYSIS PLAN FOR THE THERMAL TREATMENT FACILITY~~

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~~ACRONYMS AND ABBREVIATIONS~~

~~20 NMAC 4.1.*X*~~	~~New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*~~
~~40 CFR 2*XX.XX*~~	~~Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*~~
~~DOE~~	~~U.S. Department of Energy~~
~~DOT~~	~~U.S. Department of Transportation~~
~~HWMF~~	~~Hazardous Mixed Management Facility~~
~~in.~~	~~inches~~
~~KOP~~	~~knowledge of process~~
~~QA~~	~~quality assurance~~
~~QC~~	~~quality control~~
~~RCRA~~	~~Resource Conservation and Recovery Act~~
~~Sandia~~	~~Sandia Corporation~~
~~SASN~~	~~silver acetylide/silver nitrate~~
~~SNL/NM~~	~~Sandia National Laboratories/New Mexico~~
~~TTF~~	~~Thermal Treatment Facility~~
~~WAP~~	~~waste analysis plan~~

~~WASTE ANALYSIS PLAN FOR THE THERMAL TREATMENT FACILITY~~

~~In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart IX (20 NMAC 4.1.900), incorporating by reference the Code of Federal Regulations, Title 40, Part 270, including Section 270.14(b)(2) (40 CFR 270.14[b][2]; 20 NMAC 4.1.500/ 40 CFR 264.13, "General Waste Analysis"; and 20 NMAC 4.1.800/ 40 CFR 268.7, "Waste Analysis and Record-Keeping," revised June 14, 2000 [6-14-00], waste analysis requirements for Resource Conservation and Recovery Act (RCRA) regulated wastes managed at the Sandia National Laboratories/New Mexico (SNL/NM) Thermal Treatment Facility (TTF) are addressed in this section.~~

~~This waste analysis plan (WAP) has been specifically prepared for thermal treatment at the TTF co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE). This section includes information on the waste to be managed; waste characterization; boundary conditions and process tolerance limits; parameters, rationales, and test methods; waste screening and verification processes; and the quality assurance (QA)/quality control (QC) program.~~

~~This plan describes the measures that will be taken to assure that the RCRA-regulated wastes treated at the TTF comply with requirements of 20 NMAC 4.1.500/ 40 CFR 264.13 [6-14-00], and the unit specific requirements of 20 NMAC 4.1.500/ 40 CFR Part 264, Subpart X [6-14-00]. The information collected under this WAP assures that SNL/NM has sufficient information to safely manage the hazardous constituents of the RCRA-regulated waste to be treated at the TTF.~~

~~B.1 IDENTIFICATION OF WASTE TO BE MANAGED~~

~~The TTF is used to treat explosive substances and explosive-contaminated wastes. The RCRA-regulated wastes to be treated at the TTF are limited to small quantities of explosive waste (D003) potentially contaminated with wastes bearing the following U.S. Environmental Protection Agency Hazardous Waste Numbers: F003, F005, D001, and D011. The Hazardous Waste Numbers for RCRA-regulated waste to be treated at the TTF are known as a result of very complete acceptable knowledge/knowledge of process (KOP) records. This section provides an overview of acceptable waste categories, chemical and physical properties of the waste, a description of the operations that generate explosive wastes, treatment-derived wastes, and container requirements.~~

B.1.4.1 Explosive Waste Treated at the TTF

The explosive (D003) waste treated at the TTF is a silver acetylide/silver nitrate (SASN) mixture ~~tht~~that is generated as a result of a specific process that is well defined and well controlled, enabling Sandia/DOE to characterize the waste stream on the basis of knowledge of the process and the raw materials used. SASN is present in the solid and liquid wastes treated at the TTF. The waste also meets the definition of ignitable waste (D001), and may* bear EPA Hazardous Waste Numbers D011 and F003, depending on the presence of silver and spent solvents. The treatment is performed to eliminate the characteristics of reactivity and ignitability.

The waste is composed of:

- A liquid or slurry containing varying amounts of acetone, acetonitrile, nitric acid, water, and typically some SASN crystals. The liquid or slurry may* also contain pentaerythritol tetranitrate (PETN), another explosive.

- Solid items that may* contain small quantities of SASN, including paper wipes, cotton rags and swabs, filter elements, incidental silver nitrate that did not react to form SASN, and traces of Viton™ fluoroelastomer. Small quantities of PETN may* also be present on the solids.

Specific information about the treatment process is included in Section 8.0 of Module II.

~~B.1.1 Description of Acceptable Waste Categories~~

~~Categories of explosive waste that may be accepted for treatment at the TTF include high explosives, propellants, and pyrotechnics in the form of pure substances and contaminated solid and liquid wastes. Waste generators provide written documentation that accurately describes the waste to document that it is an acceptable waste category.~~

~~Solid wastes contaminated with explosives that may be treated at the TTF include, but are not limited to, paper towels, rags, wipes, tissues, swabs, cloth or paper filters, and filter elements. It may be necessary to saturate the solid wastes with water before they are placed inside the TTF burn pan.~~

~~Liquid wastes contaminated with explosives that may be treated in the TTF include water, alcohols, and solvents. Recovery/recycling of the liquids would present a serious hazard if any explosive contaminant were present. Substitution of nonhazardous solvents (e.g., water) for hazardous solvents (e.g., acetone) has been practiced whenever possible; however, the use of hazardous solvents is necessary for some applications (e.g., the formulation of silver acetylide-silver nitrate [SASN]).~~

~~B.1.2 Chemical and Physical Properties~~

~~This section includes a description of the chemical and physical characteristics of the explosive RCRA-regulated wastes to be treated at the TTF. The RCRA-regulated constituents in the explosive wastes to be treated at the TTF largely consist of the following:~~

- ~~nonhalogenated organic compounds~~
- ~~ignitable liquids~~
- ~~toxicity characteristic metal (i.e., silver)~~
- ~~reactive compounds (i.e., high explosives, propellants, pyrotechnics).~~

~~B.1.3 Operations Generating Explosive Hazardous Waste~~

~~The wastes that are treated at the TTF are generated as a result of specific processes and activities that are well defined and well controlled, enabling Sandia/DOE to characterize waste streams on the basis of their KOP and the raw materials used. To ensure that detailed and accurate waste characterization exists, the process outlined in Sections B.2 (Waste Characterization) and B.5 (Waste Screening and Verification) are used.~~

B.1.4.2 Wastes Treated in Containers at the RMWMF and AHCF

RCRA-regulated wastes that are treated at the RMWMF may* be generated from specific R&D

processes and activities. Other wastes may* be manufactured items that are not amenable to sampling and analysis. Consequently, Sandia/DOE characterize RCRA-regulated wastes and waste streams treated at the RMWMF using process knowledge, supplemented by sampling and analysis as needed. The process knowledge often includes knowledge of the item or a full accounting of the raw materials used in generating the waste. To ensure that detailed and accurate waste characterization exists, the process outlined in Section B.3.1 is used.

Wastes that are treated in containers at the RMWMF and AHCF are any of the following:

- Solid items exhibiting the RCRA-regulated characteristics of ignitability and/or reactivity,
- Solid items (including debris) exhibiting the characteristic of toxicity (excluding the high mercury subcategory) or containing spent solvents or commercial chemical products,
- Liquid waste exhibiting the characteristics of ignitability, corrosivity, or reactivity, and
- Liquid waste containing toxicity characteristic (TC) metals (excluding the elemental mercury and high mercury subcategories).

Treatment processes and the associated treatment goals at the RMWMF and AHCF include:

- Chemical deactivation to eliminate the RCRA-regulated waste characteristics of ignitability, corrosivity, and/or reactivity,
- Macroencapsulation to immobilize chemical constituents,
- Physical treatment to change the physical character of the waste to make it more amenable to subsequent treatment and/or storage, or to reduce waste volume,
- Stabilization to immobilize RCRA-regulated metals and/or eliminate free liquids, and
- Amalgamation to immobilize elemental mercury into a solid, leach-resistant form.
- Thermal deactivation to eliminate the RCRA-regulated ~~waste~~ characteristic of reactivity in explosive wastes (excluding primary explosives).

Specific information on the treatment processes used at the RMWMF and AHCF is presented in Section 8.0 of Modules III and V, respectively.

The RCRA-regulated wastes to be treated at the RMWMF and AHCF typically have the following EPA Hazardous Waste Numbers: D001-D011, D018-D043, and F001-F005. Other RCRA-regulated wastes listed in the Part A may* also be treated if the treatment methods are appropriate. The EPA Hazardous Waste Numbers for RCRA-regulated waste to be treated at the RMWMF and AHCF are known as a result of acceptable knowledge records produced by the initial generator and verified by Unit personnel in accordance with the procedures described in Section B.3.1. Acceptable knowledge is supplemented by sampling and analysis, as described in Section B.3.1.

B.1.4.2.1 Waste Treated by Chemical Deactivation

RCRA-regulated wastes are treated by chemical deactivation at the RMWMF and AHCF to remove the RCRA-regulated characteristics of ignitability, corrosivity, and/or reactivity. RCRA-regulated wastes that are chemically deactivated at the RMWMF and AHCF generally consist of solids or liquids generated during R&D activities.

Laboratory Chemical Waste

This waste type consists of commercial chemical products, manufacturing chemical intermediates, solid laboratory materials (such as laboratory wipes), or excess, off-specification, or no longer usable chemical products that may* contain water-reactive metals (such as elemental sodium or lithium), pyrophoric metal powders and particulates, or acidic or alkaline liquids.

Process Waste

This waste type consists of liquid or solid chemicals, solutions, or mixtures that are acidic, alkaline, or oxidizers.

Explosive Waste

This waste type consists of explosive residues and powders.

B.1.4.2.2 Waste Treated by Macroencapsulation

RCRA-regulated solid items are treated by macroencapsulation at the RMWMF and AHCF to immobilize RCRA-regulated constituents.

Debris

This waste type consists of solid, heterogeneous, compactable and non-compactable solids that contain or are contaminated with RCRA-regulated constituents. This waste is generated primarily by R&D, D&D, and ER Project activities.

B.1.4.2.3 Waste Treated by Physical Treatment

RCRA-regulated wastes are treated physically at the RMWMF and AHCF to reduce waste volume and change the physical character of the waste to make it more amenable to subsequent treatment and/or storage. RCRA-regulated wastes that are physically treated at the RMWMF and AHCF generally consist of solid items that exhibit the characteristics of ignitability, reactivity, and/or toxicity.

Process Waste

This waste type consists of solid items such as laboratory equipment that can be dismantled and other laboratory items that were used in experiments or other processes. This waste is generated primarily from R&D activities.

Unknown Solids

This waste type consists of legacy wastes from historical laboratory activities that can be dismantled. Waste items with RCRA-regulated constituents vary in size. The wastes typically exhibit the characteristics of ignitability, reactivity, and/or toxicity.

Debris

This waste type consists of solid, heterogeneous, compactable and non-compactable materials that contain or are contaminated with RCRA-regulated constituents. This waste is generated primarily by R&D, D&D, and ER Project activities.

Commercial Products

This waste type consists of aerosol cans of commercial products that often exhibit the RCRA-regulated characteristics of ignitability and/or toxicity. They may also be discarded commercial chemical products. This waste is generated by R&D and other activities.

B.1.4.2.4 Waste Treated by Stabilization

RCRA-regulated wastes are treated by stabilization at the RMWMF and AHCF to immobilize toxicity characteristic constituents (metals) and/or eliminate free liquids. RCRA-regulated wastes that are stabilized at the RMWMF and AHCF generally consist of liquids, soils, and particulate-type wastes.

Laboratory Chemical Waste

This waste type consists of commercial chemical products, manufacturing chemical intermediates, small pieces of solid laboratory materials such as laboratory wipes, or excess, off-specification, or no longer usable chemical products in particulate or liquid forms that contain or are contaminated with RCRA-regulated constituents. This waste is generated primarily by R&D activities.

Process Waste

This waste type consists of liquid or solid chemicals, solutions, or mixtures that contain or are contaminated with RCRA-regulated constituents. This waste is generated primarily from R&D activities. The liquids are typically aqueous or oils.

Contaminated Soil

This waste type consists of soils that are contaminated with RCRA-regulated constituents. This waste is generated primarily from ER Project and other cleanup and excavation operations.

B.1.4.2.5 Waste Treated by Thermal Deactivation

RCRA-regulated wastes are treated by thermal deactivation at the RMWMF to remove the characteristic of reactivity. These wastes generally consist of solid items and are generated primarily from R&D activities and the ER project.

Explosive Waste

This waste type consists of static-sensitive explosives and explosive components, and solid items (e.g., paper towels, rags, ~~wipes~~and wipes) contaminated with static-sensitive explosives. The quantity of explosive waste that is thermally treated at the RMWMF at any one time will be equivalent to 25 grams of trinitrotoluene or less. Furthermore, the explosive waste thermally treated at the RMWMF will not be:

- Primary explosives,
- Potentially fragment-producing when treated,
- Explosives that are confined,
- Explosives packaged with items that could become projectiles (e.g., wood, metal, or plastic) when treated, or
- Unknown or uncharacterized explosives.

B.1.4.2.6 Waste Treated by Amalgamation

RCRA-regulated wastes are treated by amalgamation at the RMWMF to immobilize elemental mercury into a solid, leach-resistant form that has minimal potential for emission of mercury vapor. The RCRA-regulated waste that is treated by amalgamation is liquid elemental mercury.

B.2 WASTE ANALYSIS PARAMETERS [20 NMAC 4.1.500/40 CFR 264.13(a)(1)]

Chemical and physical characterization and/or acceptable knowledge ~~will be~~ is applicable to all RCRA-regulated waste for management purposes, as required by 20 NMAC 4.1.500/40 CFR 264.13 [6-14-00]. Initial w~~W~~aste generators and Unit personnel select analytical ~~analysis~~ parameters ~~will be selected~~ to ensure that the characterization documentation will contain the information necessary to properly treat~~,~~ and/or store ~~or dispose of~~ waste in accordance with RCRA general facility standards and LDR requirements. ~~If necessary,~~ Sandia/DOE ~~may~~will also obtain characterization information to meet the requirements of the off-site TSDFs that accept RCRA-regulated wastes that have been treated at SNL/NM Units. ~~ship the waste off-site for treatment, storage, and/or disposal with notification that the waste either does or does not currently meet LDRs. Waste characterization information is used to ensure that the waste is appropriately defined to meet TSDF requirements, and the waste can be transported safely and in compliance with U.S. Department of Transportation (DOT) regulations.~~

B.2.1 Proposed Analytical Parameters and Methods [20 NMAC 4.1.500/40 CFR 264.13(b)(1); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

Analytical parameters and characterization methods that ~~may be~~ are used for RCRA-regulated waste ~~generated at SNL/NM~~ stored and/or treated at SNL/NM Units are summarized in Table B-2~~.~~. The following parameters/methods ~~may~~will be used to determine the RCRA regulatory status of these wastes.

- Acceptable knowledge,
- Sampling and analysis to determine the presence (and concentrations) of:
  - RCRA-regulated metals (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.100/40 CFR 261.24)
  - RCRA-regulated volatile organic compounds (VOCs) (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.100/40 CFR 261.24)
  - RCRA-regulated semivolatile organic compounds (SVOCs) (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.100/40 CFR 261.24)
  - Other RCRA-regulated characteristics (i.e., ignitability, reactivity, corrosivity)
- Fingerprint analysis, or~~and~~
- HazCat™ or other field tests.

B.2.2. Criteria and Rationale for Parameter Selection [20 NMAC 4.1.500/40 CFR 264.13(b)(1)]

As described in Section B.2, w~~W~~aste analysis parameters are selected to characterize RCRA-regulated waste in conformance with 20 NMAC 4.1.500/40 CFR 264.13(b)(1) [6-14-00], to obtain information necessary to properly store and/or treat waste in accordance with 20 NMAC 4.1.500/40 CFR 264 and 20 NMAC 4.1.500/40 CFR 268. The analytical parameters selected to supplement and confirm knowledge-based waste characterization for RCRA-regulated waste and the rationale for the selected parameters are identified in Table B-2.

B.3 CHARACTERIZATION PROCEDURES [20 NMAC 4.1.500/40 CFR 264.13(a)(1) and 264.13(b)(2); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

~~Preliminary characterization information for RCRA-regulated waste is typically provided by the waste generator before the waste is stored or treated. Preliminary characterization information is reviewed by Unit personnel and supplemented as necessary by the generator and Unit personnel to adequately characterize the waste. Final waste characterization is determined by Unit personnel.~~

The approach to the characterization of wastes is based on the existing information and the chemical and physical nature of the waste or waste stream. Characterization procedures require that each initial waste generator provide documented information on the waste or waste stream. This is accomplished by using acceptable knowledge and/or sampling and analysis, which are described in the following sections. The completion of characterization documentation allows for the

Table B-2
Parameters, Characterization Methods, and Rationale for Parameter Selection for Types of Wastes to be Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units ~~or Disposed~~

Waste Type Description	Parameter[a]	Characterization Method	Rationale
Laboratory Chemical Waste	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b] • Flash point (for liquid waste) • pH (for liquid waste)	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine presence of U-listed and P-listed chemicals • Determine presence of spent solvents • Determine ignitability and reactivity characteristics ~~for ignitability and reactivity~~ • Determine toxicity characteristic • Determine corrosivity characteristic ~~Determine presence of U-listed and P-listed codes~~ ~~Determine presence of F-listed solvents~~ • Determine waste compatibility information
Contaminated Used Oil	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b] • Flashpoint	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine toxicity characteristic • Determine ignitability characteristic ~~for ignitability~~ • Determine presence of spent ~~F-listed~~ solvents • Determine waste compatibility information
Process Wastes	• Flash point (for liquid waste) • pH (for liquid waste) • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability, corrosivity, and reactivity characteristics ~~for ignitability, corrosivity, and toxicity~~ • Determine presence of spent ~~F-listed~~ solvents • Determine waste compatibility information
Explosive Waste	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b] • Ignitability • Reactivity	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine toxicity characteristic • Determine ignitability and reactivity characteristics ~~for reactivity and ignitability~~ • Determine presence of spent ~~F-listed~~ solvents • Determine waste compatibility information

Table B-2 (Continued)
Parameters, Characterization Methods, and Rationale for Parameter Selection for Types of Wastes to be Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units ~~or Disposed~~

Waste Type Description	Parameter[a]	Characterization Method	Rationale
Elemental Lead	• RCRA-regulated metals[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine toxicity characteristic
Unknown Liquids and Solids	• Flash point (for liquid waste) • ~~P~~pH (for liquid waste) • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Physical Examination • Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability and reactivity characteristics • Determine corrosivity characteristic • Determine toxicity characteristic • Determine presence of spent solvents • Determine waste compatibility information
Contaminated Soil ~~and Sludges~~	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability, reactivity, and corrosivity characteristics • Determine toxicity characteristic • Determine presence of spent ~~F-listed~~ solvents • Determine waste compatibility information
Debris	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability, reactivity, and corrosivity characteristics ~~for ignitability, corrosivity, reactivity, and toxicity~~ • Determine toxicity characteristic • Determine presence of spent ~~F-listed~~ solvents • Determine waste compatibility information
Decontamination, Purge, and Treatment Waters	• ~~PH~~pH • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability, reactivity, and corrosivity characteristics ~~for corrosivity and toxicity~~ • Determine toxicity characteristic • Determine presence of spent ~~F-listed~~ solvents • Determine waste compatibility information
~~Ash generated from the treatment of explosive waste or explosive contaminated waste~~	~~• RCRA-regulated metals~~	~~• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed~~	~~• Determine characteristic for toxicity~~

Table B-2 (Concluded)
Parameters, Characterization Methods, and Rationale for Parameter Selection for Types of Wastes to be Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units ~~*or Disposed*~~

Waste Type Description	Parameter[a]	Characterization Method	Rationale
Treated Waste and Treatment Residuals (e.g., ash generated from the treatment of explosive or explosive contaminated waste)	• ~~H~~pH • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] • Sampling and analysis	• Determine ignitability and reactivity characteristics • Determine corrosivity characteristic • Determine toxicity characteristics • Determine presence of spent solvents • Determine waste compatibility information
Containment System Liquids	• ~~H~~pH • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine corrosivity characteristic • Determine toxicity characteristics • Determine presence of spent solvents • Determine waste compatibility information

~~**Table B-2 (Concluded)**~~
~~**Parameters, Characterization Methods, and Rationale for Parameter Selection for Wastes to be Treated**~~

~~Waste Description~~	~~Parameter[a]~~	~~Characterization Method~~	~~Rationale~~
~~Treated Waste and Treatment Residuals~~	~~pH~~ ~~RCRA-regulated metals[b]~~ ~~RCRA-regulated VOCs~~ ~~RCRA-regulated SVOCs~~	~~Acceptable Knowledge[c]~~ ~~Sampling and analysis~~	~~Determine characteristic for ignitability, corrosivity, and toxicity~~ ~~Determine presence of F-listed solvents~~

[a] Parameter selection is based on acceptable knowledge for each waste type~~stream~~. Additional parameters ~~may~~will be selected for each waste type~~stream~~ as necessary.

[b] Use of the terms "RCRA-regulated metals," RCRA-regulated VOCs," and "RCRA-regulated SVOCs" refers to RCRA-regulated ~~hazardous~~ waste as defined in 20 NMAC 4.1.100/40 CFR 261.24 (6-14-00)~~the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, adopting by reference the Code of Federal Regulations, Title 40, Part 261 including Section 261.24 , revised June 14, 2000.~~

[c] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994)~~(U.S. Environmental Protection Agency, 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.)~~.

~~RCRA = Resource Conservation and Recovery Act.~~
~~SVOC = RCRA-regulated semivolatile organic compound.~~
~~VOC = RCRA-regulated volatile organic compound.~~

assignment of EPA Hazardous Waste Numbers, the proper management of the waste, and the identification of underlying hazardous constituents (UHCs) and LDR compliance status for wastes that are to be treated at SNL/NM Units. All initial waste generators must certify, based on their knowledge of the waste, that the information included in the characterization documentation is complete and accurate.

The following sections describe in detail the characterization procedures that apply to RCRA-regulated waste managed at SNL/NM Units.

B.3.1 Waste Characterization

~~B.6 QUALITY ASSURANCE/QUALITY CONTROL PROGRAM~~

~~Waste characterization QA/QC ensures that the characterization data obtained from waste generators is suitable for regulatory compliance purposes. QA/QC practices are employed for the management of all records associated with waste screening and verification.~~

Sandia/DOE have established a DQO process to ensure that waste is adequately characterized and to assist Sandia in making required waste determinations and managing RCRA-regulated waste in compliance with applicable regulatory requirements at SNL/NM Units. ~~for management by Unit personnel.~~ The process is described below and includes the following key elements:

- ~~Waste is initially characterized using~~ Initial waste ~~SNL/NM~~ generators supply~~ied~~ waste characterization information ~~about the waste and~~based on the activity generating the waste.~~,~~
- The information provided by the initial ~~SNL/NM~~ generator is an important ~~critical~~ element of the total characterization process and is used by Unit personnel to determine what, if any, additional characterization is required.~~; and~~
- The initial generator and Unit personnel collaborate as needed to gather required information and make waste determinations.
- Unit ~~waste management~~ personnel assume responsibility for proper waste management (including additional waste characterization if necessary) when the waste is accepted ~~for management~~ at one of the SNL/NM Units.

~~Because important decisions regarding the treatment and disposal of RCRA-regulated waste generated at SNL/NM are based on the results of waste characterization, a program to ensure the reliability of KOP data is essential. The two major facets of the Sandia/DOE program ensuring data reliability are (1) documentation to ensure that information is traceable to the contents of specific waste containers and (2) a QA program that mandates documentation of the generator's KOP. Documentation consists of the documentation completed by the generator to identify knowledge of the waste and/or process that generated the waste. The documentation is checked by TTF personnel.~~

The initial generator submits w~~W~~aste characterization information to Unit personnel ~~is submitted on~~using a disposal request (DR) or equivalent form that is completed and certified by the ~~SNL/NM~~ initial waste generators. The completed DR form ~~provides~~ includes information necessary for waste determinations, ~~the~~ accurate assignment of EPA Hazardous Waste Numbers, ~~status;~~ and safe handling, storage, ~~sampling, analysis,~~ and transport of the waste by Unit ~~waste management~~ personnel. Initial generator-supplied waste description information used to characterize waste

includes the physical form of the waste (e.g., solid, liquid, gas, wastewater), origin and source (e.g., R&D, ER Project, unused commercial product, activity that generated the waste), and waste characteristics and components (e.g., ignitability, corrosivity, chemicals or RCRA-regulated constituents contained in the waste as well as their concentrations and proportions, materials in contact with the waste such as paper or plastic).

Initial-generator-supplied information also includes information regarding the presence of free liquids in containers of RCRA-regulated waste. Such information is typically obtained through initial-generator waste-characterization knowledge, visual examinations, and/or the Paint Filter Liquids Test, as appropriate.

Unit personnel review the ~~SNL/NM~~ initial-generator-supplied DR forms and any associated documentation (e.g., waste process documentation, analytical results) for adequacy and acceptability, and determine if additional waste characterization (e.g., initial generator information, sampling and analysis) is required~~.~~. Unit personnel use a DQO process to determine the adequacy of acceptable knowledge for waste characterization and determine sampling and analysis activities that are sufficient to characterize waste if acceptable knowledge is not adequate.

The application of a DQO process ensures that the type, quantity, and quality of acceptable knowledge or sampling and analysis documentation and data submitted to Unit personnel are suitable for accurate waste characterization. DQOs are qualitative and quantitative statements derived from a series of seven planning steps based on the scientific method. DQO statements applicable to waste characterization activities at SNL/NM are summarized below.

Define the Problem. A RCRA-regulated waste will be accepted at an SNL/NM Unit for storage and/or treatment. RCRA regulations require that such wastes be adequately characterized for management at the Unit in accordance with 20 NMAC 4.1.500/40 CFR 264.13 [6-14-00].

Identify the Decision(s). Is acceptable knowledge adequate for waste characterization without additional information (e.g., data from sampling and analysis)? Are sampling and analysis data adequate for waste characterization without additional information?

Identify Inputs to the Decision. Unit personnel review applicable initial-generator-supplied waste characterization documentation (e.g., DRs, waste-generating process description, ~~analytical~~and analytical results) for completeness and data reliability. Initial-generator-supplied waste characterization documentation includes, at a minimum:

- Initial waste generator information (e.g., name, organization),
- Waste location information,
- Waste generation frequency,
- Waste information (e.g., waste constituents; waste weight, volume, and description; container type; physical form; time the waste was generated)
- A certification signed by the initial generator regarding the accuracy of the information
- Technical information used to justify the application of acceptable knowledge as a substitute for sampling and analysis (e.g., MSDSs).

If Unit personnel determine that documentation provided by the initial generator is incomplete or inadequate for waste characterization, or determine or suspect changes in the waste-generating process, Unit personnel return the documentation. If additional characterization information is required, Unit personnel work with the initial generator to obtain the necessary information. Once the waste is adequately characterized, waste information is typically entered into a waste tracking database.

Define the Study Boundaries. The document review is limited to those records relevant to the specific waste or waste stream~~.~~. If sampling and analysis is required, the applicable methods listed in Table B-3 will be used.

Develop the Decision Rule. If, based on the review of initial-generator-supplied documentation, Unit personnel determine that acceptable knowledge is adequate for waste characterization, Unit personnel will schedule a waste pickup from the initial generator. Unit personnel use the criteria listed in Section B.3.1.1 to determine the adequacy of acceptable knowledge information for waste characterization.

Alternatively, if there is not sufficient information for adequate characterization of the waste based on a review of the documentation, Unit personnel will work with the initial generator to obtain the additional documentation or identify the additional characterization information that is necessary to adequately characterize the waste.

Specify Limits on Decision Errors. There is always a possibility that decisions will be in error. Precautions taken to minimize decision errors include a second review of initial-generator-supplied information and a visual inspection of the waste prior to pickup and transport to an SNL/NM Unit. After waste characterization information is entered into a waste tracking database, ~~and~~ the information is again reviewed by Unit personnel to ensure consistency and confirm that ~~determine if~~ the waste can be transported, stored, and/or treated at one of the SNL/NM Units. ~~Prior to~~Before transporting the waste to the appropriate SNL/NM Unit, Unit personnel ~~will~~ visually check to verify that the waste matches the information on the DR form. If Unit personnel detect discrepancies between the shipping documentation and the waste at pickup, Unit personnel can choose to amend the documentation or have the initial generator correct and resubmit characterization documentation to Unit personnel for approval. If the waste matches the information on the DR form, the waste is transported to the appropriate Unit. ~~If the waste does not match the DR form, Unit waste management personnel will not accept the waste and will work with the generator to obtain additional information.~~ Upon receipt of the waste at a Unit, the characterization documentation becomes part of the Unit operating record. These records will be made available at reasonable times to the NMED, upon request.

Analytical Data Assessment. Chemical analysis data (if any are generated) used to document waste characterization are assessed using SNL/NM data verification and validation procedures or equivalent methods.

Quality assurance/quality control (QA/QC) for sampling and analysis will be implemented to ensure that measurement data collected meets the information objectives for waste characterization. QA/QC will be implemented by adhering to the sampling protocol specified in Table B-4 and analytical procedures specified in Table B-3; documenting sampling activities and sample custody; using controlled and standard equipment and materials; and collecting, analyzing, and evaluating field and laboratory QA/QC samples.

Table B-3
Summary of Analytical Characterization Methods Used for Resource Conservation and Recovery Act-Regulated Waste

Parameter	Method Numbers	Rationale
VOC in waste matrix		
Spent halogenated solvents	ASTM Method D4547-91[a] or equivalent method EPA/540/4-91/001[b] or equivalent methods[c]	
Spent nonhalogenated solvents	EPA Methods SW-846 (1311, 8260B, 8275A)[d] or equivalent methods[c] Methods included in 20 NMAC 4.1.600/40 CFR 265.1084(a)(2), (a)(3), and (a)(4)	Determine total and/or TCLP and SVOC/VOC concentration in samples of solids or liquids
SVOCs in waste	EPA Methods SW-846 (1311 and 8270C)[c,e] or equivalent methods[c]	Determine total and/or TCLP and SVOC concentration in samples of solids or liquids
Metals in waste	EPA Methods SW-846:	Determine total and/or TCLP concentration in samples of solids or liquids
Arsenic	(1311, 6010B, 7060A[f], 7061A)[c]	
Barium	(1311, 6010B, 7080A[g], 7081[f])[c]	
Cadmium	(1311, 6010B, 7130[g], 7131A[f])[c]	
Chromium	(1311, 6010B, 7190[g], 7191[f])[c]	
Lead	(1311, 6010B, 7420[g], 7421[f])[c]	
Mercury	(1311, 7470B, 7471A)[c]	
Selenium	(1311, 6010B, 7740[f], 7741A, 7742)[c]	
Silver	(1311, 6010B, 7760A[g], 7761[f])[c] or equivalent methods[c]	
Reactive Sulfide	EPA Methods SW-846, Test Method to Determine Hydrogen Sulfide Released from Wastes[~~e~~h] or equivalent methods[c] EPA Methods SW-846 (9030B, 9031, 9034)[c] or equivalent methods[c]	Determine concentration of reactive sulfides
~~Ignitability~~ Flash Point	EPA Methods SW-846 (1010, 1020, 1030)[c] or equivalent methods[c]	Determine ignitability
~~P~~pH	EPA Methods SW-846 (9040B, 9041A, 9045C)[c] or equivalent methods[c]	Determine corrosivity
Explosives in waste	EPA Methods SW-846 (Appropriate analytical method from the Method 8300 series 8330)[a]	Determine reactivity

[a] American Society for Testing and Materials, 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," ASTM D4547-91, *Annual Book of ASTM Standards*, Philadelphia, Pennsylvania, American Society for Testing and Materials. (ASTM, 1991)

[b] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 1/540/4-91/001, Office of Research and Development. (EPA, 1991)

[c] Equivalent methods subject to EPA approval may be substituted.

[d] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

~~[e] Method being revised per the January 1998 SW-846 Draft Update IVA.~~

~~[f] Method being integrated into Method 7000B, per the January 1998 SW-846 Draft Update IVA.~~

~~[g] Method being integrated into Method 7010, per the January 1998 SW-846 Draft Update IVA.~~

[h~~e~~] SW-846, Section 7.3.4.2 contains specialized methods to determine if a sulfide-containing waste exhibits the reactivity characteristic.

~~ASTM = American Society for Testing and Materials.~~
~~EPA = U.S. Environmental Protection Agency.~~
~~RCRA = Resource Conservation and Recovery Act.~~
~~SVOC = RCRA-regulated semivolatile organic compound.~~
~~TCLP = toxicity characteristic leaching procedure.~~
~~VOC = RCRA-regulated volatile organic compound.~~

Table B-4
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples:	Method 5035[b]: 40-milliliter (~~mL~~mL) vials with stirring bar. Method 5021: See method. Methods 5031 & 5032: 125-mL WM[c]-G[d]. Use Teflon-lined lids for all procedures.	Cool to 4º degrees Celsius (ºC)[e]	14 days
Aqueous Samples:			
No Residual Chlorine Present	Methods 5030, 5031, & 5032: 2 x 40-mL vials with Teflon-lined septum caps.	Cool to 4ºC and adjust pH[f] to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Residual Chlorine Present	Methods 5030, 5031, & 5032: 2 x 40-mL vials with Teflon-lined septum caps.	Collect sample in a 125-mL container which has been pre-preserved with 4 drops of 10% sodium thiosulfate solution. Gently swirl to mix sample and transfer to a 40-mL volatile organic analysis (VOA) vial. Cool to 4ºC and adjust pH to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Acrolein and Acrylonitrile	Methods 5030, 5031, & 5032: 2 x 40-mL vials with Teflon-lined septum caps.	Adjust to pH of 4-5. Cool to 4ºC	14 days
Soil/Sediments and Sludges:	Method 5035: 40-mL vials with stirring bar. Method 5021: See method. Methods 5031 & 5032: 125-mL WM[c]-G[d]. Use Teflon-lined lids for all procedures.	See the individual method	14 days
Semivolatile Organics/Organochlorine Pesticides and Herbicides			
Concentrated Waste Samples:	125 mL WM[c]-G[d] with Teflon®-lined lid	None	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Soil/Sediments and Sludges:	250 mL WM[c]-G[d] with Teflon®-lined lid	Cool to 4ºC	Samples must be extracted within 14 days and analyzed within 40 days following extraction.

Table B-4 (Concluded)
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Liquid Samples:			
No Residual Chlorine Present	1-gallon (gal.), 2 x 0.5 gal., or 4 x 1 liter (L) AG[g] container with Teflon -lined lid	Cool to 4ºC	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction
Residual Chlorine Present	1-gal., 2 x 0.5 gal., or 4 x 1-L AG[g] with Teflon-lined lid	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Addition of sodium thiosulfate solution to sample container may be performed in the laboratory prior to field use. Cool to 4ºC.	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction
Metals			
Aqueous Samples:			
Metals (except hexavalent chromium and mercury)	1-L P[h] or G[d]	Add nitric acid to adjust pH to less than 2.	180 days
Hexavalent chromium	500-mL P[h] or G[d]	Cool to 4ºC	24 hours
Mercury	500-mL P[h] or G[d]	Add nitric acid to adjust pH to less than 2.	28 days
Soil/Sediments and Sludges:			
Metals (except hexavalent chromium and mercury)	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC	180 days
Hexavalent chromium	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC	Not established - analyze as soon as possible.
Mercury	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC	28 days

All information on test methods from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, 1986 and all approved updates.

[a] Smaller sample containers may* be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information primarily from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, 1986 and all approved updates.

[c] WM = Wide-mouth

[d] G = Glass

[e] Adjust to pH of less than 2 with sulfuric acid, hydrochloric acid, or solid sodium bisulfate.

[f] A term used to describe the hydrogen-ion activity of a system.

[g] AG = Amber glass

[h] P = Polyethylene

Occasionally, wastes of an unknown nature require storage or treatment. For example, unknown wastes may* be generated as a result of a container label becoming detached or illegible. Most unknowns are contained in small containers (less than 1 gallon or 1 pound) and are related to R&D projects. These wastes are handled on a case-by-case basis. The individual waste ~~may~~will be tentatively characterized by knowledge of the operations and activities that were performed in the specific area in which the waste was generated. ~~Unknown wastes may be generated as a result of a container label becoming detached or illegible. The majority of unknowns are small quantity containers (less than 1 gallon or 1 pound) and relate to research projects.~~

An on-site visual investigation of an unknown waste is one method utilized to characterize the waste. ~~A team of individuals will perform analyses to examine~~The visual investigation includes the assessment of the unknown for various properties, such as:

- Physical state,
- Color,
- Age,
- Storage and container conditions,
- Changes in substance,
- Phase separations,
- Quantity of waste,
- Any labeling, and
- Type of operations in the nearby area.

~~Sometimes the team can identify the~~The material and its proper handling are sometimes positively identified through this investigation. If a positive identification is made, a DR form is submitted and the waste is processed ~~under normal~~according to Unit waste acceptance procedures. If the unknown cannot be identified after this investigation, ~~the team may conduct~~a HazCat™ or comparable test~~s~~ is performed to determine the hazard class. Once the hazard class is determined and the material is safe to transport to the appropriate SNL/NM Unit, the information is recorded on a DR form, submitted to Unit personnel, and processed according to the procedures described above~~under normal procedures~~. Additional RCRA waste characterization ~~may~~will typically occur after the decision has been made to accept the waste at a SNL/NM Unit.

Unit personnel combine RCRA-regulated liquid wastes and non-RCRA-regulated wastes together in a single container on a limited basis. These mixing/blending activities are generally limited to process wastes, such as photographic fixers (RCRA-regulated) and photographic developers (non-RCRA-regulated). The resulting mixture is characteristic for silver (D011) and may be corrosive (D002). Unit personnel may also combine compatible liquids drained from aerosol cans (commercial chemical products) into a single container. The resulting mixture is typically ignitable. In each case, the combined liquids are characterized as needed for on-site management by acceptable knowledge using information about the component liquids supplemented as needed by data from sampling and analysis.

~~Additional sampling and analysis may~~* ~~be required to meet off-site TSDF requirements. Unit waste management personnel may perform additional HazCat™ tests (or other field tests) or analytical testing (see Table B-3) to satisfy these requirements.~~

B.3.1.1 Acceptable Knowledge [20 NMAC 4.1.500/40 CFR 264.13(a)(2) and 264.13(b)(5); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

The physical and chemical nature of some waste forms at SNL/NM makes the collection of representative samples for characterization difficult. This difficulty arises from several factors, some of which include: waste types~~streams~~ containing disparate elements; disparate elements that may* need to be segregated into similar forms; large objects that cannot fit within standard size sample containers; and laboratories that do not have the capability to sample large objects (EPA, 1992). Other difficulties arise from health and safety risks to personnel due to potential exposure to explosive material, radiation, or other hazards. Acceptable knowledge is a method used to characterize the waste forms utilizing process knowledge and additional ~~supplemental forms of~~ waste analysis data. Acceptable knowledge will be used to meet all or part of the waste analysis requirements and to direct subsequent sampling and analysis if needed.

According to EPA guidance, acceptable knowledge is broadly defined to include process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994). Process knowledge is described in ~~20 NMAC~~20 NMAC 4.1.500/40 CFR 264.13(a)(2) [6-14-00], as data developed under 20 NMAC 4.1.200/40 CFR 261 [6-14-00] and existing published or documented data on a specific RCRA-regulated waste or a waste generated from similar processes. Supplemental waste analysis data include concentration(s) of RCRA-regulated constituents and/or results of tests for RCRA-regulated ~~hazardous~~ characteristics~~. These data are used~~ to determine whether ~~if~~ wastes are RCRA regulated~~ and to identify UHCs and determine LDR status~~. Records for some unknown liquids and solids may include~~consist of~~ waste analysis and/or physical characterization performed prior to the effective date of RCRA regulations. In order to be acceptable, such analytical results must be accurate and applicable to the specified waste and are typically supplemented with other existing information (e.g., published data).

Examples presented in the EPA guidance (EPA, 1994) as to when the application of acceptable knowledge ~~may be~~ is appropriate include:

- Wastes containing RCRA-regulated ~~hazardous~~ constituents from specific processes that are well documented;
- Wastes consisting of discarded unused commercial chemical products, reagents, or chemicals containing known physical and chemical constituents;
- Waste containing levels of radioactivity such that health and safety risks to personnel do not justify sampling and analysis due to quantified and documented radiological concerns; and
- Wastes containing heterogeneous materials, where the physical nature of the waste does not lend itself to taking a representative sample (e.g., laboratory trash and construction debris with surface contamination).

Waste characterization documentation based solely on acceptable knowledge is approved by Unit personnel if one or more of the above criteria have been met. The criteria are provided or available for review by Unit personnel to ensure that a valid and accurate RCRA-regulated waste characterization can be made. Acceptable knowledge documentation will be maintained at the Unit (unless otherwise designated in the Unit operating record) for at least three years.

B.3.1.1.1 Process Knowledge

Process knowledge, a subset of acceptable knowledge, consists of one or more of the following:

- Detailed information on a waste or waste stream obtained from existing published or documented waste analysis data;
- Studies conducted on RCRA-regulated wastes generated by processes similar to that which generated the waste; and
- Knowledge of the materials and operations that generated the waste and that demonstrates the potential for RCRA-regulated ~~hazardous~~ constituents in the waste. For example, metals present in debris waste are often associated with specific materials (e.g., lead in leaded rubber or lead shielding).

Process knowledge documentation for each RCRA-regulated waste or waste stream is kept in a ~~separate auditable~~ file or a waste/waste stream reference file that includes the documents or identifies them ~~documents~~ and their locations. The documentation is explicitly relevant and traceable to a given waste or waste stream, and is not merely a list of information sources for a particular operation and waste. There are many sources of applicable documentation at SNL/NM that ~~may be~~ are used to substantiate process knowledge for a specific waste or waste stream. Examples of documentation that ~~may be~~ are used for waste characterization include the following:

- Process design documents ~~(e.g., Title II Design)~~;
- Preliminary and final ~~safety analysis~~ reports~~, unreviewed safety question determinations,~~ and ~~technical safety requirements~~;analyses of the operations generating the waste
- ~~Standard~~ Information from operating procedures, ~~and detailed operating procedures,~~ which can include a list of the raw materials or reagents, a description of the process/experiment that uses the materials, and a description of the wastes generated and how the wastes are handled;
- Waste packaging logs;
- Test plans or research project reports that describe the reagents and other raw materials used in an experiment;
- Laboratory notebooks that detail the research processes and raw materials used in an experiment;
- Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements);
- Information from ~~site~~ personnel (e.g., documented interviews);
- Standard industry practice documents (e.g., vendor information);

- Industry reports on a similar process when there is a clear connection between the SNL/NM process/experiment and the industry's similar process/experiment;
- Previous analytical data relevant to the waste or waste stream, including results from fingerprint analyses, spot checks, or routine waste verification sampling;
- Analytical data from studies of common industry processes that are similar to SNL/NM processes. These data can be used to identify the constituents in a specific "similar" process waste ~~stream~~ and to determine the regulatory status of the waste;
- MSDSs, product labels, and other product package information;
- Sampling and analysis data from comparable wastes or waste streams;
- Documented visual inspections to confirm or identify the physical characteristics and packaging of a waste; and
- ER site and waste characterization data.~~, waste characterization data, and waste characterization strategy documentation~~.

B.3.1.1.2 Additional Characterization ~~Supplemental Waste AnalysisData~~

~~Supplemental~~ Additional waste ~~analysis~~ characterization data used ~~for~~ to support acceptable knowledge includes information provided by the initial generator of the waste or waste stream on the source, the concentrations of RCRA-regulated constituents in the waste, and/or the results of tests for RCRA-regulated ~~hazardous~~ characteristics. This information can be the result of a recent analysis of the waste, a well-documented historical analysis of the waste, and/or the analysis of a surrogate waste or waste stream. ~~For example, data from the analysis of a nonradioactive waste may* be used to evaluate the characteristics of a similar waste.~~

B.3.1.2 Sampling and Analysis [20 NMAC 4.1.500/40 CFR 264.13(a)(3), 264.13(b)(2), (3), and (4); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

This section discusses proposed sampling and analytical procedures and sampling frequencies that are applicable to RCRA-regulated waste. Sampling and analysis is generally performed to provide supplemental information when a waste lacks sufficient process information to adequately characterize the waste based on acceptable knowledge. ~~This section discusses proposed sampling and analytical procedures.~~ The approach described for characterizing these waste types is based on the physical, chemical, and hazardous properties of the waste; and on the amount and type of knowledge/information available. Personnel involved in sampling and analysis comply with relevant and applicable protocol that is consistent with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846" (EPA, 1986 and all approved updates), hereinafter referred to as SW-846, or other equivalent methods. Detailed sampling recommendations and guidance are provided in Chapter 9 of SW-846. Table B-4 lists the applicable requirements specified in SW-846 regarding sample containers, preservation techniques, and holding times associated with sample collection. Table B-3 identifies the applicable analytical testing requirements including specific test methods for parameters of interest used to characterize waste for management at SNL/NM Units.

~~Solid and liquid waste sampling techniques are typically used to obtain the chemical data necessary for waste characterization.~~

B.3.1.2.1 Waste Sampling

The objective of waste sampling is to obtain a sample or samples representative of the waste or waste stream. An understanding of the waste-generating and -handling processes is considered to ensure that samples are representative. Some wastes separate into distinct layers with time, and representative samples must include aliquots from each layer. In some cases, it may* be important to use a statistical or random sampling scheme that provides for the collection of representative samples.

A number of criteria are considered in determining how many samples are required, how sampling locations are selected, and how frequently sampling should be repeated. If the waste is a highly uniform waste stream from a single process location, one grab sample collected periodically is sufficient. However, if a single waste type is a mixture of materials generated in several locations under varying conditions through time, more samples will be required, and composite sampling may* be appropriate. At a minimum, the sampling is repeated if the waste-generating process changes in a material way, or if inspection of the waste reveals it has changed.

Appendix I of 20 NMAC 4.1.200/40 CFR 261 lists specific guidance documents that detail sampling protocols for different waste types. Waste samples collected in accordance with these protocols are considered representative by EPA. The protocols include standards developed by the American Society for Testing and Materials (ASTM) and portions of SW-846.

A representative sample of the waste is collected and handled by means that preserve its original physical form and composition and prevent contamination or changes in the concentration(s) of the constituent(s) to be analyzed.

~~Analytical methods for the determination of RCRA-regulated metals, VOCs, and SVOCs are conducted to meet with certain technical performance criteria and to be consistent with regulatory guidelines. Personnel involved in sampling and analysis comply with protocol consistent with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846" (EPA, 1986 and all approved updates) or other equivalent methods.~~

The following sampling strategies are used for waste sampling at SNL/NM unless an alternative sampling strategy is more appropriate for a specific waste item based on specific historical, process, or waste information:

- Sampling activities are conducted in a manner that minimizes the generation of waste;
- If the sampling or analysis of the waste would pose a serious threat to human health, Sandia/DOE ~~may~~will forego sampling and analysis;
- For heterogeneous solid ~~waste~~items, such as contaminated debris, samples ~~may~~will be obtained from areas that are most likely to be contaminated, based on visual inspection of the waste or knowledge of the activity that generated the waste;
- For solid items~~waste~~ whose surface is suspected to be contaminated with RCRA-regulated waste, such as contaminated equipment, surface wipe samples ~~may~~will be taken;

- For solid items~~waste~~ with compositions that may* exhibit RCRA-regulated ~~hazardous toxicity~~ characteristics, such as equipment, a sample ~~may~~will be taken and analyzed from the waste or from a nonwaste item similar to the waste item;

- Samples ~~may~~will be collected from each phase of wastes that exist in multiple solid, liquid, and/or gas phases;

- For liquid waste items in multiple containers, one sample ~~may~~will be taken for each container or each 55 gallons of waste, whichever is larger;

- For solid ~~waste~~ items in multiple containers, one sample ~~may~~will be taken for each container or each 3 cubic yards of waste, whichever is larger; and

- Handling and collection techniques are consistent with SW-846 ~~(EPA, 1986 and all approved updates)~~ and conducted to preserve the nature of the waste sample.

The sampling protocol for solid RCRA-regulated waste at SNL/NM is based on sampling methods approved by EPA for solids and soils in SW-846, as well as methods approved by the ASTM. These methods are designed to ensure that representative waste samples are consistently collected and transferred to the responsible laboratory in a manner that maintains sample integrity.

B.3.1.2.2 Waste Analysis

Analytical methods for the determination of RCRA-regulated metals, VOCs, SVOCs, and the RCRA-regulated characteristics of ignitability, reactivity, and corrosivity are implemented to meet certain technical performance criteria and to be consistent with regulatory guidelines.

Solid items may* be heterogeneous or homogeneous. If necessary for waste characterization purposes, these solids will be analyzed for total concentrations of RCRA-regulated metals, VOCs, and SVOCs (see Table B-3 for specific analytical methods). If necessary for waste characterization purposes, homogeneous wastes will be sampled and analyzed for the toxicity characteristic (TC) constituents listed in 20 NMAC 4.1.200/40 CFR 261.24 [6-14-00]. If analysis for total concentration of TC constituents will be performed on samples, it will be done as a screening step, as described in Section 1.2 of Method 1311, Toxicity Characteristic Leaching Procedure (TCLP). If total concentrations are used in the waste characterization process, analytical data will be compared to the TC regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL) values for the determination of whether a particular waste exhibits a TC. RTL values are obtained by calculating the weight/weight concentration (in the solid) of a TC constituent that would give the regulatory weight/volume concentration in the TCLP extract. If the total concentrations are less than the RTL value, the waste cannot exhibit the toxicity characteristic and the TCLP does not need to be completed for the screened TC constituents.

Liquid wastes typically consist of aqueous solutions, slurries, and organic liquids. If necessary for waste characterization purposes, these wastes will be sampled and analyzed for total concentrations of RCRA-regulated metals, VOCs, SVOCs, and for the RCRA-regulated characteristics of ignitability, reactivity, corrosivity, and toxicity (see Table B-3 for specific analytical methods). In accordance with Method 1311 (TCLP), liquid wastes (i.e., those wastes that contain less than 0.5 percent dry solids) do not require extraction. The liquid waste, after filtration, is defined as the TCLP extract. Liquid waste, therefore, will be characterized by filtering the waste, measuring

total constituent concentrations in the resulting filtrate, and comparing these concentrations to the TC regulatory levels in 20 NMAC 4.1.200/40 CFR 261.24 [6-14-00].

B.3.1.2.~~1~~3 Sample Handling, Preservation, and Storage

~~Sandia/DOE will follow the requirements specified in SW-846 (EPA, 1986 and all approved updates) or equivalent methods regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements will ensure that sampling and analysis meet quality objectives for data.~~
Table B-4 lists QA/QC requirements specified in SW-846 regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements will ensure that sampling and analysis meet quality objectives for data. In the event that the specified criteria are not met, Sandia/DOE will evaluate the data for usability.

Many analytical laboratories provide sample containers and specify required minimum volumes for individual waste types or physical states. The most important determinants of sampling method and volume are the physical state of the waste (liquid, solid, sludge), the waste container, accessibility, waste variability, and safety concerns. Detailed sampling recommendations and guidance are provided in Chapter 9 of SW-846. For solids, 500 grams in a glass container is usually adequate. Liquid sample volumes vary from one liter to approximately eight liters, depending on the number of analysis parameters and solids content. Sample jars for samples to be analyzed for VOCs must be completely filled to minimize volatilization of constituents from the liquid into the "head space."

Sampling is performed with a device appropriate for the waste being sampled. Weighted bottles, bailers, or composite liquid waste samplers are appropriate for sampling liquids in drums. Augers, triers, scoops, and shovels are useful for sampling solid items in containers or other locations.

B.3.1.2.~~2~~4 Analytical Laboratory Selection and Analytical Methods [20 NMAC 4.1.500/40 CFR 264.13(b)(2)]

~~Approved~~ Analytical laboratories will perform the detailed qualitative and quantitative chemical analyses specified in SW-846 ~~(EPA, 1986 and all approved updates)~~ or equivalent methods that are listed in Table B-3 and applicable to the constituent(s) of concern associated with a particular waste type. These laboratories must have:

- A documented comprehensive QA/QC~~quality assurance/quality control~~ program,
- Technical analytical expertise,
- A document control/records management plan, and
- The capability to perform data reduction, validation, and reporting.

The selection and development of analytical testing methods for SNL/NM waste types~~streams~~ were based on the following considerations:

- The physical form of the waste,
- Constituents of interest,

- Required detection limits (e.g., regulatory thresholds), and
- Information requirements (e.g., waste characterization, verifying compliance with LDR treatment standards for wastes treated at an SNL/NM Unit~~, waste classification~~).

Collectively, these factors contributed to the selection of the analytical methods specified in Table B-3. Approved laboratories that meet the above criteria will analyze waste samples for RCRA-regulated constituents (e.g., VOCs, SVOCs, and metals) and characteristics (i.e., ignitability, reactivity, corrosivity, toxicity), according to the specifications in Table B-3~~SW-846 (EPA, 1986 and all approved updates), or documented equivalent methods~~.

B.3.1.3 Verification and Reevaluation Frequencies [20 NMAC 4.1.500/40 CFR 264.13(a)(3)(i) and 264.13(b)(4); 20 NMAC 4.1.800/40 CFR 268.7(b)]

Sandia/DOE will review air emissions data and status at least once every 12 months for RCRA-regulated wastes subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00].

As described in previous sections, initial generators and Unit personnel obtain and evaluate information to characterize RCRA-regulated wastes managed at the SNL/NM Units. The evaluation needed for a single waste item depends on the item. A waste item that is part of a routinely-generated waste stream for which the generating process has not changed typically requires only a relatively brief review of information (either AK or analytical data). In contrast, a one-time waste item that is unknown will require more extensive evaluation before it is adequately characterized. This may* include review of AK information and/or data obtained by sampling and analysis.

The Sandia/DOE waste verification process is designed to provide additional assurance that wastes are adequately characterized for management at the Units. The process applies to the verification of wastes and waste streams received at a Unit and designated for treatment and/or storage prior to off-site disposal. Unit personnel involved in verification activities are trained and qualified for the activities they perform.

B.3.1.3.1 Verification of Wastes

Wastes are selected for further evaluation as part of the verification program using one or more of the following criteria:

- Random selection;
- Adequacy of information previously provided the initial waste generators;
- Recommendations from Unit personnel;
- Incomplete or inconsistent documentation; and
- Other waste-specific criteria.

During each calendar year, Sandia/DOE will verify the characterization for one percent of the SNL/NM RCRA-regulated waste items that meet all of the following conditions:

- The waste is received at a SNL/NM Unit for storage or treatment,
- The waste is not part of a waste stream,
- The waste was initially characterized through acceptable knowledge,
- The waste is not a commercial chemical product, off-specification species, container residue, or spill residue identified in 20 NMAC 4.1.200/40 CFR 261.33,
- The waste is not material in a factory-sealed container or original container, and
- The information that would be obtained during the verification is needed for further management of the waste at the SNL/NM Unit (i.e., the verification will be limited to necessary information).

Once the waste is selected for verification, Unit personnel will be notified of its pending arrival at a Unit. Some wastes may* only require a visual verification of the container's contents. If the visual verification of a container's contents is found to be inconsistent with the initial generator's waste characterization documentation, further verification is required, and Unit personnel will decide whether to accept the waste for management pending resolution of the discrepancy. Depending on the severity of the discrepancy, the initial waste generator may* be subject to increased review.

For wastes that were initially characterized using acceptable knowledge, Unit personnel will review applicable waste characterization documentation to verify that it adequately describes the wastes. Verification analyses, if needed, will be conducted at SNL/NM or an approved laboratory, in conformance with appropriate methods (see Table B-3).

~~Reevaluation of initial characterization information may be performed to verify the accuracy of the initial waste characterization; to verify that applicable treatment standards have been met; when there is a change in a waste-generating process; when the generator requests a review; or when analytical results indicate a change in a waste stream.~~

~~Unit personnel perform verification/reevaluation reviews throughout the waste characterization process. Prior to the submittal of the DR form, SNL/NM generators will often consult with Unit personnel about their waste characterization. Unit personnel assist the generators in determining whether the generator's existing waste characterization data are sufficient to adequately characterize the waste and to complete a DR form. Once the DR form is received by Unit personnel, waste information is typically entered into a waste tracking database, and the information is again reviewed by Unit personnel to determine if the waste can be transported, stored, and/or treated at one of the SNL/NM Units.~~

B.3.1.3.2 Reevaluation of Waste Streams

~~All~~ Characterization information for routinely generated waste streams is ~~will be re~~evaluated periodically ~~, as needed, by the generator and Unit personnel~~ to verify that they have not changed. ~~This reevaluation will be accomplished through review and recertification of applicable waste~~

~~characterization documentation.~~ Any information that indicates a change in the process that generates the waste and may* affect the waste ~~shall~~ will cause the waste to be recharacterized no later than the next time the waste is generated.

In addition to the verification activities described above for individual wastes, Sandia/DOE will reevaluate initial characterization information for routinely generated waste streams as needed for any of the following reasons:

- To verify the accuracy of the initial waste characterization when Unit personnel suspect the characterization is not accurate;
- To verify that applicable treatment standards have been met for those wastes treated at one of the SNL/NM Units;
- When there is a change in a waste-generating process;
- When the initial generator requests a review;
- When analytical results indicate a change in a waste stream; or
- When regulatory requirements change and additional information is required for further management of the waste at SNL/NM Units.

In addition to the reevaluations performed for one or more of the reasons listed above, Sandia/DOE will reevaluate additional streams as needed for a total of ten percent of all SNL/NM RCRA-regulated waste streams that meet all of the following conditions:

- The waste is received at a SNL/NM Unit for storage or treatment during the past 12 months;
- The waste is part of a waste stream as defined in Section B.1.2; and
- The waste stream has not been evaluated during the past 12 months for any reason, including changes in waste composition and changes in the process(es) generating the waste.

In each case, Sandia/DOE will evaluate a single randomly-selected item from the waste stream, and the reevaluation will be limited to information necessary for management of the waste at the SNL/NM Unit. The evaluation will be conducted in the same manner as evaluation of individual wastes. For wastes that were characterized using acceptable knowledge, Unit personnel will review applicable waste characterization documentation to verify that it adequately describes the wastes. Verification analyses, if needed, will be conducted at SNL/NM or an approved laboratory, in conformance with appropriate methods (see Table B-3).
~~In addition, sampling and analysis is performed during pre- and post-treatment activities to verify that performance standards and applicable LDR treatment standards have been met. In cases where sampling and analysis would expose personnel to explosives, radiation, or other hazards, sampling and analysis will be replaced by acceptable knowledge as much as possible.~~

B.3.2 Characterization for Wastes to be Treated at SNL/NM

Wastes to be treated at SNL/NM will be characterized to determine suitability for treatment and subsequent compliance with treatment standards for land disposal. Characterization will be based on acceptable knowledge or on sampling and analysis, as discussed below.

B.3.2.1 Characterization for Waste to be Treated at the TTF

~~**B.2 WASTE CHARACTERIZATION (20 NMAC 4.1.500/40 CFR 264.13[a][1] AND 264.13[b][2], AND 20 NMAC 4.1.900/40 CFR 270.14[b][2])**~~

~~**B.2.1 Waste to be Treated at the TTF**~~

Explosive waste to be treated at the TTF is characterized through the use of process knowledge rather than sampling and analysis for the following reasons:

- ~~It is not possible to sample and analyze most explosive waste streams due to the danger it presents to human health.~~

- ~~Few labs exist that can analyze explosive waste samples and those that can are limited to very few waste streams.~~

- ~~SW-846 (EPA, 1986 and all approved updates) methods do not include specific tests for most explosives, and it is unclear what alternative approved method could be used.~~
- ~~Information from analysis would not improve knowledge of the waste because the explosives in the waste are unreacted and, therefore, unchanged from the original product.~~

- Information from sampling analysis would not improve knowledge of the waste because the explosive (e.g., SASN) and ignitable (e.g., acetone) components of the waste are known as a result of complete knowledge of process and a well-defined and documented procedure for formulating SASN.

- There is currently no other available treatment option for this ~~some~~ explosive waste stream. Sampling and analysis activities ~~This~~could delay or prevent timely disposition of ~~these~~ this waste~~s~~, affecting the safety of Unit personnel, and ~~, thus,~~ cause~~ing~~ a threat to human health and the environment.

~~Prior to accepting waste for treatment at the TTF, a detailed chemical and physical characterization of the waste must be performed in accordance with the requirements of 20 NMAC 4.1.500/ 40 CFR 264.13(a)(1) [6-14-00]. Characterization of explosive hazardous waste is accomplished by the application of KOP. KOP is defined in 20 NMAC 4.1.500/ 40 CFR 264.13(c)(2) [6-14-00], as waste identification by applying knowledge of the hazardous characteristics of the waste based on the materials or processes used.~~

~~In addition, 20 NMAC 4.1.500/ 40 CFR 264.13(c)(2) [6-14-00], specifies that the chemical and physical analysis of a representative sample of the waste may include existing published or documented data on the hazardous waste or on hazardous waste generated from a similar process.~~

Explosive ~~The~~ wastes treated in the TTF is ~~are~~ produced according to a documented formulation process. ~~es or are known, commercially-manufactured explosives.~~ Therefore, t~~T~~he composition of the waste is well known. Variability occurs only in the relative amounts of non-explosive ~~waste~~ liquid and solid items (~~e.g.,~~ i.e., ~~water, alcohol, solvents~~acetone, paper wipes, cotton rags and swabs) ~~contaminated with explosives~~. Sampling and subsequent laboratory analyses would present unnecessary hazards to personnel; therefore, process knowledge ~~KOP~~ and written signed documentation provided by the initial generators are the ~~only~~ methods used to determine the characteristics of the explosive waste before treatment at the TTF. Personnel document the waste constituents in the operating records for formulation and testing, and sign the documentation.

~~B.3 BOUNDARY CONDITIONS AND PROCESS TOLERANCE LIMITS~~

~~Boundary conditions are defined as the maximum values of waste properties that, if exceeded, would indicate that an incoming waste does not meet established, acceptable values for those properties. Process tolerance limits are defined as those characteristics of a waste that a waste management process can handle while maintaining permit compliance. Waste that exceeds boundary conditions or could lead to an exceedance of process tolerance limits will not be accepted for treatment at the TTF. Boundary conditions and process tolerance limits have been established to ensure compliance with RCRA waste management requirements.~~

~~B.3.1 Boundary Conditions~~

~~Waste(s) to be treated at the TTF will meet the following boundary conditions:~~

- ~~High explosive substances will be in the form of powders, pellets, or granules less than 0.5 inches (in.) in diameter.~~
- ~~Propellants or pyrotechnics will be in the form of powders, pellets, or granules less than 0.5 in. in diameter.~~
- ~~The maximum net explosive weight of high explosives and U.S. Department of Transportation (DOT) hazard class 1.1 explosives treated during any single burn event will not exceed one ounce.~~
- ~~The maximum net explosive weight of propellants and pyrotechnics, except DOT hazard class 1.1 explosives, treated during any single burn event will not exceed one pound.~~
- ~~The maximum total quantity of explosive-contaminated liquids treated during any single burn event will not exceed 20.8 gallons.~~
- ~~The maximum total quantity of waste (explosive, solid and liquid combined) treated during any single burn event will not exceed 190 pounds.~~

~~B.3.2 Process Tolerance Limits~~

~~Wastes to be treated at the TTF will not be:~~

- ~~Primary explosives other than SASN~~

- ~~Potentially fragment-producing when treated~~
- ~~Explosives that are confined~~
- ~~Explosives packaged with items that could become projectiles (e.g., wood, metal, or plastic) when treated~~
- ~~Unknown or uncharacterized explosives.~~

~~B.4 PARAMETERS, RATIONALES, AND TEST METHODS (20 NMAC 4.1.500/40 CFR 264.13[b][1])~~

~~Waste characterization information (i.e., KOP) is provided by the generators and reviewed by TTF personnel to ensure that the explosive wastes proposed for treatment at the TTF are properly characterized and can be managed safely. The waste characterization information to be provided by the generator must include information on the presence of hazardous metals and volatile organic compounds as defined in 20 NMAC 4.1.200/ 40 CFR Part 261, Subpart C [6-14-00]. The parameters of interest and the rationale for including each parameter in this plan are summarized below.~~

~~Knowledge of the original chemical constituents used and the operations that generated the waste are sufficient to determine if the explosive waste is RCRA-regulated or contains hazardous RCRA-regulated constituents. The risks inherent in sampling and analyzing explosive wastes outweigh the potential value of the data obtained (see Section B.2.1).~~

~~B.5 WASTE SCREENING AND VERIFICATION (20 NMAC 4.1.500/40 CFR 264.13[a][3] AND 264.13[b][4])~~

~~All waste to be treated at the TTF will be screened and verified prior to treatment. Screening will ensure that the waste meets the waste acceptance criteria established in Sections B.1.1 (Description of Acceptable Waste Categories) and B.3 (Boundary Conditions and Process Tolerance Limits) based on documentation provided by the generator. Verification is performed to ensure that the documentation is consistent with a visual inspection of the waste. Figure B-1 provides an overview of the waste screening and verification processes described in Sections B.5.1 and B.5.2.~~

~~B.5.1 Screening~~

~~TTF personnel will screen all waste intended for treatment to ensure that it meets the waste acceptance criteria prior to transport to the TTF. Screening is performed on the waste characterization documentation provided by the generator of the waste. The information contained in the waste characterization documentation will include, at a minimum:~~

Prior to formulating the explosive slurry, Unit personnel screen the formulation instructions to identify changes. If the formulation has changed, personnel evaluate the constituents to check that the wastes are acceptable for treatment in the TTF:

- ~~The type and name of explosives in the waste,~~
- ~~~~

~~□The gross quantity of the waste,~~

- The maximum net weight and estimated actual weight of ~~each~~ explosives in the waste,
- The non-explosive constituents in the waste,

~~□The United National Organization hazard classification and compatibility group of the waste or SNL/NM equivalent,~~

~~□A complete list of hazardous RCRA-regulated metals and/or chemicals present in the waste and their approximate quantities,~~

~~□The type of container the waste is in,~~

~~□Certification signed by generator regarding the accuracy of the information, and~~

~~□If TTF personnel do not have the appropriate technical information, it will be requested from the generator. Technical information used to justify the use of KOP as a substitute for chemical analysis must include:~~

~~–A Material Safety Data Sheet (and/or the equivalent) for the original product; or~~

~~–Purchase documents or photocopies of those documents specifying the original product contents; or~~

~~–A certification from the waste generator specifying the contents in the waste stream.~~

~~Figure B-2 is an example of the documentation provided by the generators to TTF personnel. If the documentation is incomplete or inadequate, TTF personnel will contact the generator for further clarification. Documentation will be provided for the contents of each waste item. TTF personnel shall compare the information on the documentation against the waste acceptance criteria. Only waste that meets the waste acceptance criteria will be transported to the TTF and accepted for treatment.~~

~~Figure B-2 is provided for informational purposes only and is subject to change. Any form(s) used will be functionally equivalent to the one shown in Figure B-2.~~

~~B.5.2 Verification~~

~~All waste shipments to the TTF will be verified in two phases. Phase 1 is to ensure shipping documentation completeness and Phase 2 is to ensure that the waste delivered corresponds to the screened documentation provided for this waste.~~

~~Phase 1 Verification~~

~~Phase 1 Verification consists of an examination of the waste shipping documents. Upon receipt of a waste shipment at the TTF, a determination of shipping document completeness will be made by TTF personnel. Each shipping document that accompanies a waste shipment will be checked to ensure that the following information is complete:~~

~~Figure B-2. Example of Explosive Waste Disposal Request Form~~

~~□The shipment identification number,~~

~~□The proper DOT basic description,~~

~~□The quantity (weight) of waste in the shipment,~~

~~□The number and type of containers in the shipment,~~

~~□A signed and dated certification of the shipment's content, and~~

~~□The shipment labels and placards match the shipping document.~~

~~If there are discrepancies, they will be resolved by contacting the generator before the shipping document is signed by TTF personnel. If the discrepancies cannot be resolved, TTF personnel will reject the shipment.~~

~~Phase 2 Verification~~

~~When waste is transported to the TTF for treatment and removed from its transportation container, the TTF operator will visually compare the contents with the description on the documentation provided by the generator. The visual inspection includes content identification and quantity estimation. If any waste fails verification, the shipment will be rejected. The generator will be contacted to resolve the discrepancy.~~

B.3.2.2 Characterization for Waste to be Treated at the RMWMF and AHCF

Wastes to be treated in containers at the RMWMF and AHCF will be characterized based on acceptable knowledge, supplemented by sampling and analysis if necessary (as described in Section B.3) before treatment takes place. This is necessary to determine the most appropriate treatment method and to determine the proper treatment parameters.

Characterization is also required before treatment in order to subsequently determine whether a waste has been properly treated and meets LDR treatment standards, including standards for UHCs that are reasonably expected to be present. This is especially important when determining the proper analyses needed and analytes to be assessed to ascertain whether concentration-based treatment standards have been met.

B.3.3 Characterization for Treated Wastes

RCRA-regulated wastes may* be generated during treatment operations at SNL/NM Units. Alternatively, treatment operations may* generate wastes that are no longer RCRA-regulated. The following sections describe the treated wastes and other wastes that may* be generated during or as a result of treatment operations at the TTF, RMWMF, and AHCF, and the associated waste characterization procedures.

Wastes that are treated using technologies specified in 20 NMAC 4.1.800/40 CFR 268.40 will not necessarily be subjected to sampling and analysis. Such treatment technologies include but are not limited to deactivation and macroencapsulation. In these cases, treatment effectiveness will be

determined by visual examination of the treated waste. Other treated wastes will be subjected to sampling and analysis to determine the effectiveness of the treatment as appropriate. If additional RCRA-regulated constituents have been introduced during the treatment process, they will be included in the analysis of the treated waste. The analysis will also include UHCs that are reasonably expected to be present in the treated waste.

B.3.3.1 Treated Wastes at the TTF

~~B.2.2 Treatment-Derived Waste~~

Waste~~s~~ residues ~~derived~~ from the thermal treatment of explosive waste~~s~~ at the TTF include ~~the by-products of thermal treatment and may include~~ decomposition by-products. ~~and contaminated water collected in the catch tank.~~

The principal by-products ~~of decomposition of the explosive waste treated in the TTF~~ are ash (carbon) produced from burned solid items (e.g., paper, filters) and gases (i.e., nitrogen, water vapor, carbon dioxide, carbon monoxide, ~~sulfur dioxide,~~ diatomic oxygen, and traces of nitrous oxides) produced by the decomposition ~~treatment~~ of SASN, PETN, acetone, and acetonitrile. ~~explosive wastes and burning solid wastes (e.g., paper towels, cloth filters).~~ Elemental silver is~~will be~~ also present in the ash ~~only~~ when SASN is treated at the TTF.

The success of deactivation/thermal treatment to eliminate the reactive and ignitable characteristics of the wastes treated at the TTF is assessed by visually screening the residue in the burn pan for the presence of unreacted SASN (and PETN, as applicable).

Ash residue generated as a result of the ~~"derived from"~~ treatment ~~ed~~ of explosive waste~~s~~ at the TTF ~~containing spent solvents~~ will be handled in compliance with all requirements for the EPA Hazardous Waste codes that pertain to the residue (e.g., D011 and F003). The contents of the burn pan are containerized and transferred to one of the other SNL/NM Units for storage and transportation to an off-site TSDF. Sandia/DOE will characterize the residue as needed to meet the requirements of the off-site TSDF.
~~as RCRA-regulated waste contaminated with the listed constituents of the original waste. Ash residue from treatment of characteristic RCRA-regulated waste will be sent to a Subtitle D facility if it no longer exhibits hazardous waste characteristics. Sandia/DOE will send a notice and certification to the Subtitle D facility stating that the ash residue meets the applicable treatment standards and prohibition levels in accordance with 20 NMAC 4.1.800/40 CFR 268.7(a)(2) [6-14-00]. Ash residue still exhibiting a hazardous characteristic and/or derived from a waste contaminated with listed constituents will be containerized and managed through the Hazardous Waste Management Facility (HWMF) for ultimate disposal in accordance with land disposal restrictions at an off-site RCRA-regulated waste management facility.~~

~~If water that has accumulated in the catch tank is known to be runoff resulting from precipitation and not suspected to be contaminated with RCRA-regulated waste constituents, it will be assumed to meet City of Albuquerque wastewater discharge parameters and be discharged (pumped) directly to the Technical Area III sanitary sewer system.~~

~~If water collected in the catch tank is known to be contaminated with RCRA-regulated waste constituents, or derived from RCRA-regulated listed wastes treated at the TTF, it will be containerized and arrangements will be made for disposal into the City of Albuquerque sewer~~

~~treatment system with a one-time notice placed in the facility file in accordance with 20 NMAC 4.1.800/ 40 CFR 268.7(a)(6) [6-14-00]. If the wastewater cannot be discharged into the City of Albuquerque sewer treatment system, it will be handled through normal procedures at the HWMF.~~

Because the TTF is located outside, the steel-lined concrete pad periodically collects water from precipitation; the water drains into the catch tank. Unless waste spills, untreated waste "kicks out" (i.e., is ejected from the burn pan) during treatment, or otherwise contaminates the steel-lined concrete pad, the water collected in the catch tank consists of precipitation. If water collected in the catch tank is known to be contaminated with RCRA-regulated waste constituents treated at the TTF, arrangements will be made for disposal into the City of Albuquerque wastewater system with a one-time notice placed in the facility file in accordance with 20 NMAC 4.1.800/40 CFR 268.7(a)(6) [6-14-00]. If the wastewater cannot be discharged into the City of Albuquerque wastewater system, it will be handled through waste management procedures at one of the other SNL/NM Units.

B.3.3.2 Treated Wastes at the RMWMF and AHCF

Treated wastes and waste residues resulting from treatment of RCRA-regulated wastes in containers at the RMWMF and AHCF include the following:

- Wastes treated by chemical deactivation at the RMWMF and AHCF include reactive metals and metal-containing particulates. These wastes are deactivated using water, an alcohol solution, or other organic liquid. Alcohol and other organic liquids may* exhibit the characteristic of ignitability, and can typically be characterized using knowledge of the treatment process.

- Wastes treated by chemical deactivation at the RMWMF and AHCF include corrosive aqueous liquids. The neutralized liquids are no longer corrosive. The wastes may* undergo further treatment.

- Wastes treated by stabilization at the RMWMF and AHCF include aqueous liquids (including liquids that have previously been neutralized). The treated wastes may* also contain TC metals and UHCs that are included in analysis of the treated waste.

- Wastes treated by stabilization at the RMWMF and AHCF also include oils that may* exhibit the characteristics of toxicity and ignitability. The treated wastes may* contain TC metals and UHCs that are included in analysis of the treated waste.

- Wastes treated by stabilization at the RMWMF and AHCF also include soils and particulates that may* exhibit the characteristics of ignitability, reactivity, and toxicity. The treated wastes no longer exhibit the characteristics of ignitability and reactivity after treatment. They may* contain TC metals and UHCs that are included in analysis of the treated waste.

- Wastes treated by macroencapsulation at the RMWMF and AHCF include RCRA-regulated debris exhibiting the characteristic of toxicity and containing or contaminated with spent solvents. The treated items are visually examined to determine whether treatment was effective.

- Wastes treated by physical treatment include small components exhibiting the characteristics of ignitability, reactivity, corrosivity, and/or toxicity. Treatment is considered effective if these items are successfully detached from larger items. Following treatment, the larger items are no longer RCRA-regulated.

- Wastes treated by physical treatment at the RMWMF also include liquids. The treatment consists of puncturing aerosol cans in a container equipped with a charcoal filter. The collected liquids may* include commercial chemical products and often exhibit the characteristic of ignitability. They are further characterized through knowledge from MSDSs and manufacturer-supplied information, supplemented by sampling and analysis, as needed.

- Wastes treated by thermal deactivation at the RMWMF include reactive batteries and other small reactive/explosive items that may* also exhibit the characteristic of toxicity. These wastes are deactivated by heating. Success of deactivation is evaluated using visual examination. The deactivated items may* contain TC metals and UHCs that are included in analysis of the treated waste.

- The waste treated by amalgamation at the RMWMF is liquid elemental mercury. This waste is immobilized into a solid, leach-resistant form by forming a metal alloy between the waste and a base metal, such as zinc or copper. Treatment is considered successive if the amalgam meets the treatment standards.

Treatment residue derived from listed wastes will be handled as RCRA-regulated waste contaminated with the listed constituents of the original waste, in accordance with regulatory requirements. Treatment residue from the treatment of characteristic RCRA-regulated waste will be sent to an appropriate off-site waste management facility if it no longer exhibits RCRA-regulated characteristics and meets the appropriate treatment standards. Treatment residue that still exhibits one or more RCRA-regulated characteristics and/or is derived from a waste contaminated with listed constituents will be containerized and transported to one of the other SNL/NM Units for storage pending ultimate disposal in accordance with LDRs at an off-site RCRA-regulated waste management facility. UHCs that are reasonably expected to be present will be considered as described above.

B.4 OFF-SITE WASTE ACCEPTANCE PROCEDURES [20 NMAC 4.1.500/ 40 CFR 264.13(a)(3)(ii) and (a)(4), 264.13(b)(5), and 264.13(c)]

RCRA-regulated wastes from off-site sources ~~may~~will be accepted at SNL/NM. These wastes and sources include:

- RCRA-regulated wastes generated by Sandia employees (or contractors in the service of Sandia) outside the KAFB boundary ~~may~~will be accepted for storage and/or treatment if the wastes are ~~is~~ properly characterized and transported~~manifested~~.

- Wastes or waste residuals associated with off-site treatment of Sandia/DOE wastes or waste streams managed or treated by off-site facilities ~~may~~will be returned to SNL/NM for storage and/or treatment if all such wastes are ~~is~~ properly characterized and transported~~manifested~~.

- Wastes ~~may~~will be received from other (non-Sandia) off-site DOE facilities for final characterization, storage, treatment, and/or transport to other off-site facilities, only if all such wastes are ~~is~~ properly characterized and transported~~manifested~~.

~~This section discusses~~ The general waste acceptance procedures that will be used when RCRA-regulated wastes are~~is~~ accepted from off-site sources are discussed below. These procedures will be used to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.13(a)(3)(ii), 264.13(a)(4), 264.13(b)(5), and 264.13(c) [6-14-00]. The process used for managing off-site wastes at SNL/NM is diagrammed in Figure B-1 and explained below.

~~B.4.1 Waste Acceptance Procedures~~

The basis for characterization of RCRA-regulated wastes or waste streams to be accepted by Sandia/DOE is generator documentation of the waste. Prior to waste shipment to SNL/NM, the appropriate Unit personnel receive a waste transfer request and characterization data from an off-site generator. Unit personnel review the request from the off-site generator for completeness and conformance with this WAP. For wastes received from off-~~-~~site large quantity generators, Sandia/DOE will require an LDR notification that addresses LDR requirements applicable to the specific waste type and will inform the ~~non-Sandia~~ generators in writing that Sandia/DOE has the appropriate permit(s) for and will accept the waste (20 NMAC 4.1.500/40 CFR 264.12[b] [6-14-00]).

After the documentation has been reviewed and determined to be complete, the waste will be ~~is~~ shipped to SNL/NM where the shipment records, ~~DR,~~ LDR ~~notice~~Notification Forms (if needed), Uniform ~~h~~Hazardous ~~w~~Waste ~~m~~Manifest (if needed), and proper generator signatures are reviewed to ensure the accuracy and completeness of documentation and compliance with container management requirements. If discrepancies are found, acceptable options for resolution include shipment of the waste back to the off-site generation facility, or temporary storage pending further analysis or characterization.

B.4.1.~~1~~ Waste Manifest Verification

Each Uniform ~~h~~Hazardous ~~w~~Waste ~~m~~Manifest that accompanies a waste shipment is checked for the following information:

- The shipment identification number;
- The name, address, and EPA identification number of the generator;
- The name and EPA identification number of the transporter;
- The destination of the waste shipment (i.e., SNL/NM) including the facility address and EPA identification number;
- Any EPA Hazardous Waste Numbers

~~Figure B-1, "Decision Flow Logic Diagram for Managing Off-Site Generated Waste at Sandia National Laboratories/New Mexico"~~

- The proper DOT shipping name and number;
- The quantity (e.g., weight) of waste in the shipment;
- The number and type of containers in the shipment; and
- A signed and dated certification of the contents of the shipment.

B.4.~~1~~.2 Waste Shipment Verification

A visual inspection of the shipment will be~~is~~ conducted by Unit ~~waste management~~ personnel to ensure that the number and type of container(s) match the manifest and the labeling on the container(s) is complete and matches the manifest. If discrepancies are found, acceptable options for resolution include shipment of the waste back to the off-site generation facility, or temporary storage pending further analysis or characterization. If any discrepancies between the shipment and associated documentation are found that cannot be resolved within 15 days after receiving the waste, Sandia/DOE will send a notification to the New Mexico Environment Department in accordance with 20 NMAC 4.1.500/40 CFR 264.72 [6-14-00].

B.4.~~1~~.3 Waste Description Verification

Unit personnel review waste ~~stream~~ data, including acceptable knowledge, sampling and analysis data, and treatment records for completeness. The exact parameters to be verified are determined by Unit personnel at the time of waste receipt, ~~and are~~ based upon the generator-supplied information and requirements of the off-site TSDF that will ultimately receive the waste.

Fingerprint analyses ~~may~~will typically be conducted by Unit personnel for waste received from off site to verify the waste characterization information provided by the generator. The parameters (e.g., specific gravity, color, flash point, and pH) that are tested by fingerprint analysis are based on the information provided by the generator and the expected characterization of the waste.

If the fingerprint analyses results do not match the waste characterization designated on the accompanying Uniform Hazardous Waste M~~m~~anifest, Unit ~~waste management~~ personnel ~~may~~will perform waste characterization analyses described in Section~~s B.2 and~~ B.3 of this ~~Appendix~~WAP or send the waste back to the facility where it was initially generated.

B.5 SPECIAL PROCEDURAL REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264.13(b)(6)]

RCRA-regulated waste management requirements specific to ignitable, reactive, and incompatible waste, as well as for compliance with LDR and 20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC [6-14-00] regulations, are described below.

B.5.1 Procedures for Ignitable, Reactive, and Incompatible Wastes ~~to be Stored~~

Pursuant to 20 NMAC 4.1.500/40 CFR 264.17 [6-14-00], Unit personnel take the necessary precautions to prevent accidental ignition or reaction of wastes at SNL/NM Units. Unit personnel also take the necessary precautions to ensure that incompatible wastes are identified and managed appropriately. These precautions are described in Section 1.1.2 of the General Part B and in Section 1.2.2 of each Unit-specific module.

As described in those sections, Sandia/DOE rely on waste characterization data and/or published chemical information (e.g., "NIOSH Pocket Guide to Chemical Hazards" [DHHS, 1994] or other chemical or engineering handbooks) for each waste in a planned treatment or repackaging operation involving ignitable, reactive, and incompatible wastes. This includes, but is not limited to, the segregation of these wastes according to compatibility groups (e.g., flammables/ignitables, oxidizers, corrosive acids, reactive with water, corrosive bases, and other reactives) and by the physical nature of the waste (i.e., liquids and solids).

~~specific waste management procedures for ignitable, reactive, and incompatible wastes to be stored and/or treated are described in the following sections. These waste management methods vary depending on the physical form and type of waste managed. To ensure that these wastes are managed safely and properly, their characteristics are identified and documented, the wastes are labeled appropriately, and the waste types are physically segregated within each container storage area.~~

~~B.5.2 Procedures for Ignitable, Reactive, and Incompatible Wastes to be Treated~~

~~Waste management procedures for ignitable, reactive, and incompatible waste will be followed pursuant to 20 NMAC 4.1.500/40 CFR 264.17 [6-14-00]. Unit waste management personnel will take the necessary precautions to prevent accidental ignition or reaction of wastes. Sandia/DOE rely on standard operating procedures for specific safety and handling associated with management of ignitable, reactive, and incompatible wastes. This includes, but is not limited to, the segregation of these wastes according to compatibility groups (e.g., flammables/ignitables, oxidizers, corrosive acids, reactives with water, corrosive bases, and other reactives) and by the physical nature of the waste (i.e., liquids and solids).~~

B.5.3~~2~~ Procedures to Ensure Compliance with LDR Requirements [20 NMAC 4.1.800/40 CFR ~~268.7(a) and~~ 268.7(b)~~(3), (4), and (5)~~ and 268.9(d)]

Pursuant to 20 NMAC 4.1.800/40 CFR 268 [6-14-00], Sandia/DOE will comply with LDR requirements for wastes stored or treated at the SNL/NM Units: through compliant management of wastes subject to LDR storage prohibitions, and through characterization of treated waste (i.e., RCRA-regulated wastes treated at SNL/NM Units) for LDR compliance, and processing of the applicable LDR certifications and notifications for such treated wastes.

B.5.2.1 Storage Prohibitions (20 NMAC 4.1.800/40 CFR 268.50)

~~In accordance with LDR requirements,~~ RCRA-regulated wastes are restricted from land disposal under 20 NMAC 4.1.800/40 CFR 268, Subpart C [6-14-00] unless they meet the treatment standards in 20 NMAC 4.1.800/40 CFR 268 Subpart D. Restricted wastes (i.e., wastes that do not

meet the applicable treatment standards) can be stored for up to one year at SNL/NM Units in compliance with 20 NMAC 4.1.800/40 CFR 268.50. Sandia/DOE assume that all of the RCRA-regulated wastes at SNL/NM are restricted from land disposal (i.e., they do not meet the applicable treatment standards) and apply the one-year storage limit to all RCRA-regulated wastes stored at any Unit except as noted below:

- RCRA-regulated wastes that are subject to the Federal Facilities Compliance Order (FFCO) (NMED 1995, as amended) between DOE, Sandia, and NMED can be stored at SNL/NM Units for more than one year even if they do not meet the treatment standards. Information about FFCO applicability is maintained in the operating record described in Section 9.0 of the General Part B.

- RCRA-regulated wastes that are not subject to the FFCO and do not meet the treatment standard(s) could be stored at SNL/NM Units for more than one year, solely for the purpose of accumulating sufficient quantities of RCRA-regulated waste to facilitate proper recovery, treatment, or disposal, in accordance with 20 NMAC 4.1.800/40 CFR 268.50(c). Information regarding proper recovery, treatment, or disposal is maintained in the operating record described in Section 9.0 of the General Part B.

- RCRA-regulated wastes that meet the treatment standards are not subject to the one-year storage limit. Analytical data or other information demonstrating compliance with the applicable treatment standard(s) is maintained in the operating record described in Section 9.0 of the General Part B.

B.5.2.2 Characterization for LDR Compliance: Wastes Generated Through Treatment of RCRA-Regulated Wastes at SNL/NM Units

RCRA-regulated waste generated through treatment at SNL/NM Units (e.g., treated waste, treatment residue)~~to be shipped off site may need to be analyzed,~~ is characterized as required by the off-site TSDF receiving the waste to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1.800/40 CFR 268, Subpart D [6-14-00]. The information required of Sandia/DOE as the generator of the treated waste is dependent on the ultimate disposal method; therefore, Sandia/DOE characterize the treated waste specifically to meet the requirements of the off-site TSDF receiving it.

~~Treatment standards are expressed in two ways: as constituent concentrations in the waste (from either an extract of the waste, as determined by the toxicity characteristic leaching procedure, or from the total volume of the waste, referred to as total waste analysis) or as specified treatment technologies.~~ Waste that must meet concentration-based treatment standards prior to shipment off site for disposal will be evaluated to determine if applicable constituent concentration levels have been attained. ~~This will be accomplished by testing the waste or by using acceptable knowledge. Testing will be conducted only to certify that a waste meets LDR treatment standards. I~~If a waste is known to meet~~s~~ applicable LDR treatment standards for certain constituents before treatment, testing the newly-generated waste (treatment residue) to certify LDR compliance for those constituents is not necessary. Section B.3.1.1 of this WAP includes a discussion of the criteria used to determine if acceptable knowledge is appropriate for characterizing a waste or waste stream, including the determination of LDR compliance for treatment residues. Likewise, if a waste must be treated by one or more specified treatment methods (e.g., macroencapsulation) prior to land disposal, analytical ~~based on acceptable knowledge, then~~ testing to certify LDR compliance for the newly-generated waste is generally not necessary, as described in Section B.3.3.

If acceptable knowledge or use of a specified treatment technology are not appropriate for determining LDR compliance status, the treated waste will be sampled and analyzed to certify that it meets LDR treatment standards. The analysis will determine the total concentration of RCRA-regulated constituents in the treatment residue, or the concentrations of RCRA-regulated constituents in an extract of the residue obtained using Test Method 1311 in SW-846, as appropriate for the individual waste. Analytical results obtained ~~completed~~ in support of LDR requirements will be retained within the Unit operating record. Characterization of treatment residues for LDR compliance will include RCRA-regulated constituents that were introduced as part of the treatment process, as discussed in Section B.3.3.

~~For wastes received from off site, Sandia/DOE will require an LDR notification that addresses LDR requirements applicable to the specific waste type. If off-site wastes are treated at SNL/NM, Sandia DOE will comply with the requirements of 20 NMAC 4.1.800/40 CFR 268.7(b) [6-14-00].~~

~~Wastes that exceed applicable LDR treatment standards will be sent to a permitted TSDF where treatment options are available. For off-site shipment of these wastes, LDR notifications, with information required under 20 NMAC 4.1.800/40 CFR 268.7 [6-14-00], will be supplied. In addition to the LDR notification, additional data for the waste stream (e.g., generator's characterization documentation and analytical data) may be provided to the designated TSDF.~~

For wastes generated through treatment at one of the SNL/NM Units, SNL/NM will comply with the applicable requirements of 20 NMAC 4.1.800/40 CFR 268.7(b), 268.40(c), and 268.49 [6-14-00]. RCRA-regulated treatment residues ~~wastes~~ that are determined through analysis or acceptable knowledge to meet treatment standards as specified in 20 NMAC 4.1.800/40 CFR 268, Subpart D [6-14-00], will be sent to ~~land disposed in~~ a permitted TSDF for disposal without further treatment. Wastes that have been generated through ~~treated with~~ treatment using technologies specified in 20 NMAC 4.1.800/40 CFR 268.42 and 268.44 [6-14-00] will also be sent to a permitted TSDF for disposal ~~land disposed~~ without further treatment. Residues that do not meet all of the applicable treatment standards will be sent to a permitted TSDF for further treatment. ~~The exception will be wastes that have been specifically exempted from LDR requirements, or disposed of or treated in other than a land disposal waste management unit. An LDR notification, including applicable analytical records to support the notification, will be prepared and will accompany the shipment of waste to the receiving TSDF.~~

Whenever Sandia/DOE send waste to an off-site TSDF for treatment and/or disposal as described above, it is in accordance with that facility's waste acceptance criteria. For treated wastes and residues generated at Units through treatment operations described in the General Part B and Unit-specific modules, Unit personnel review the LDRs as they relate to the further treatment and/or disposal of the treated waste at the TSDF that will accept the waste. Sandia/DOE obtain approval from the TSDF and meet TSDF-specific waste analysis requirements (including LDR requirements) prior to shipment.

Part of this review includes evaluating the waste for UHCs and Universal Treatment Standards for the treated wastes, and documenting the results of the evaluation as part of the certification process. UHCs must be declared if reasonably expected to be present in D001 through D0043 wastes. Unit personnel complete an appropriate LDR notification form (including signed certification) that accompanies the Uniform Hazardous Waste Manifest as part of the shipping documentation to the TSDF. Records are maintained at Sandia/DOE as discussed in Section 9.0 of the General Part B.

B.5.2.3 Characterization for LDR Compliance: Wastes From Off-Site Sources

For wastes received from off-site large quantity generators, Sandia/DOE will require an LDR notification that addresses LDR requirements applicable to the specific waste type. If off-site wastes are treated at SNL/NM, Sandia/DOE will comply with the requirements of 20 NMAC 4.1.800/40 CFR 268.7(b) [6-14-00] as discussed above.

When shipping the waste to an off-site TSDF, Sandia/DOE will use the process described in Section B.5.2.2 for characterizing the waste in accordance with that facility's waste acceptance criteria.

B.5.4~~3~~ Procedures to Ensure Compliance with Air Emission Requirements [20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC]

Sandia/DOE manage wastes that are subject to some of the requirements in ~~do not use any of the processes identified in~~ 20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC [6-14-00] as discussed in Section 1.1.4.6 of the General Part B. ~~for management of RCRA-regulated wastes. Therefore, Sandia/DOE are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00].~~

~~Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations >10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service will be~~is ~~used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052-264.1060, as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f). The equipment use will be noted in the Unit operating log.~~

Sandia/DOE wastes and waste streams described in this document may* be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/40 CFR 264.1080 [6-14-00].

For wastes that are not eligible for exemption under 20 NMAC 4.1.500/40 CFR 264.~~1082~~ 1080(b) [6-14-00], Sandia/DOE will address the applicable 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements for control of air pollutant emissions from each Unit subject to the regulations, as follows:~~.~~

- In lieu of determining the concentration of VOCs in a waste or waste stream at the point of origination, Sandia/DOE may* declare that a container holding waste that contains VOCs is subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC.

- To establish 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] applicability for a specific waste or waste stream, the initial ~~a~~ generator ~~may~~will follow the waste determination procedures specified in 20 NMAC 4.1.500/40 CFR 264.1083(a) [6-14-00] to determine the concentration of VOCs in the waste or waste stream at the point of origination ~~generation~~ and document this determination or assume/declare that the waste is subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] as listed above. Acceptable knowledge or process knowledge ~~may~~will be used to make this determination; however; if sampling and

analysis is necessary, it will be performed in accordance with the approved methods listed in Table B-3.

- Whenever changes to the source generating the waste stream are reasonably likely to cause the average VOC concentration of the RCRA-regulated waste to increase to a level that is equal to or greater than the applicable VOC concentration limits specified in 20 NMAC 4.1.500/40 CFR 264.1082, a new waste determination will be performed, as specified in 20 NMAC 4.1.500/40 CFR 264.1083(a)(1)(ii).

~~VOC-containing RCRA-regulated waste streams that are documented to contain VOC concentrations of less than 500 parts per million by weight are exempt, by regulation, from the Sandia/DOE Subpart CC container management requirements.~~

~~At SNL/NM, RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements while in SNL/NM RCRA-regulated treatment Units are managed in primary containers that 1) have a design capacity of less than or equal to 0.1 cubic meter (m^3) or 2) are DOT-approved and have a design capacity of greater than 0.1 m^3 but less than 0.46 m^3. Container covers are maintained in closed and sealed conditions but may be opened for access for the purposes described in 20 NMAC 4.1.500/40 CFR 264.1086(c)(i)-(v) [6-14-00].~~

~~WMAs used "solely" for the storage and/or treatment of "radioactive mixed waste" or "remediation waste" are not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements. If hazardous waste and radioactive mixed waste/remediation waste are managed in the same Unit, the wastes are segregated into separate WMAs, if possible. The WMA(s) used solely for "radioactive mixed waste" or "remediation waste" management are not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements while the WMA(s) used for hazardous waste management are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart cC [6-14-00] requirements. If waste types cannot be segregated into separate WMAs all of the waste containers within a WMA~~that Unit~~ are managed as though they are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC requirements [6-14-00].~~

- The characterization documentation for VOCs will be reviewed by the Unit personnel prior to acceptance of the waste, as discussed in Section B.3. If process knowledge in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(a)(4) is insufficient, sampling and analysis of the waste will be required, in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(a)(3) [6-14-00].

- RCRA-regulated wastes containing VOCs that are newly generated through treatment will be characterized for VOC content in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(b) [6-14-00] if the waste being treated contains VOCs, and/or the treatment process involves VOCs.

- Routinely-generated RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00], will be reviewed and updated at least once every 12 months (20 NMAC 4.1.500/40 CFR 264.1082(c)(1) [6-14-00]) to determine whether the Subpart CC requirements continue to apply.

B.6 RECORDS

Once Unit personnel have adequate characterization for a RCRA-regulated waste, the information is typically entered into a waste tracking database. Each package (the smallest discrete waste item) is assigned a unique identification and tracking number before it is picked up and transported to a Unit. Characterization information and analytical data associated with the package is either in paper or electronic format. Unit personnel perform activities that affect a waste package (e.g., movement, repackaging, additional characterization, treatment, or shipment to an off-site TSDF). Information about these activities is added to the paper and/or electronic record for each package. The records are maintained as discussed in Section 9.0 of the General part B.

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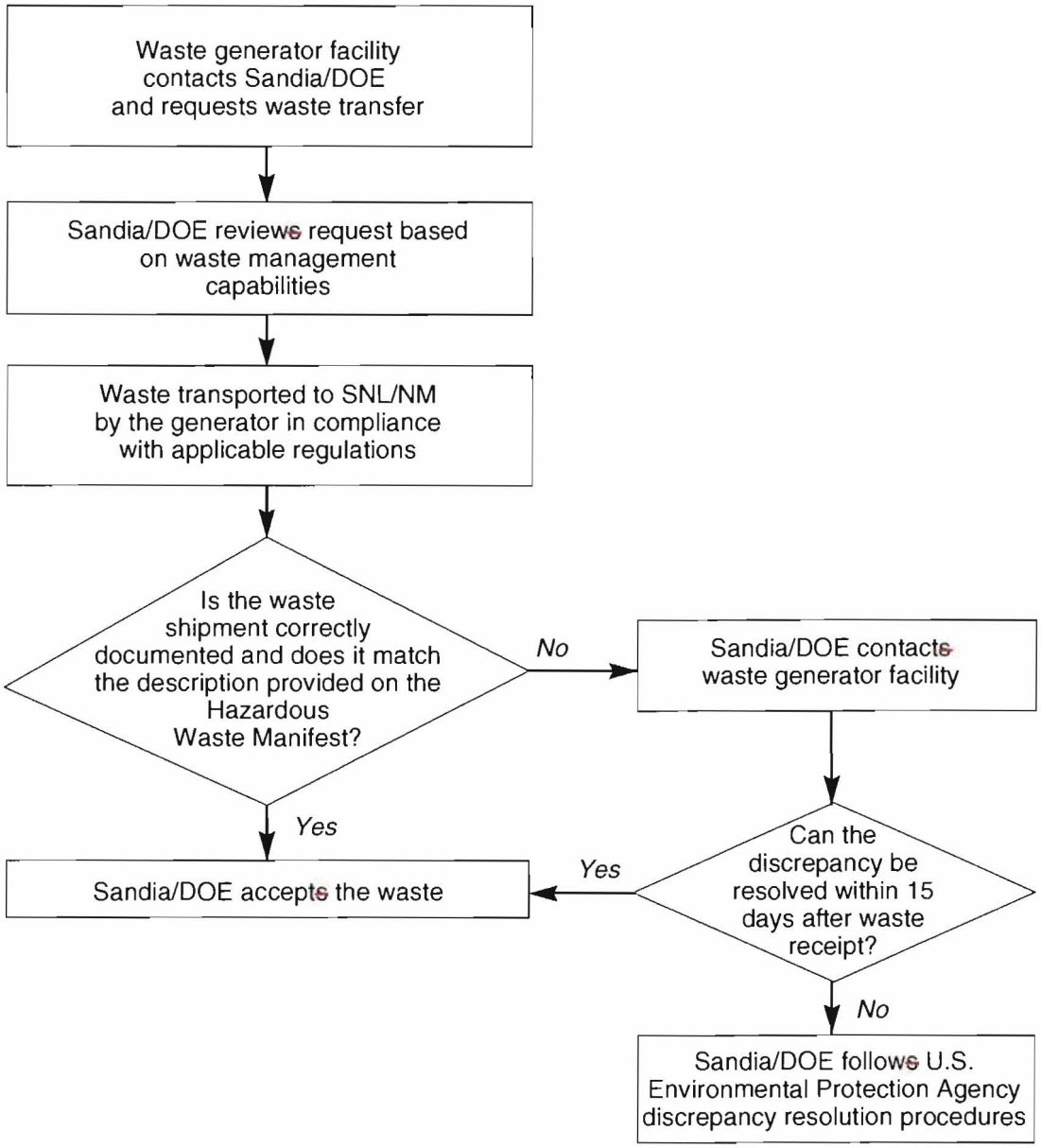

Figure B-1

Decision Flow Logic Diagram for Managing Off-Site Generated Waste at Sandia National Laboratories/New Mexico

General Part B – Appendix C

APPENDIX C

SITE-WIDE INSPECTION PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
DOE	U.S. Department of Energy
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SITE-WIDE INSPECTION PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart IX (20 NMAC 4.1.900), adopting by reference the Code of Federal Regulations, Title 40, Part 270 including Section 270.14(b)(5) (40 CFR 270.14[b][5]), and 20 NMAC 4.1.500/40 CFR 264.15, "General Inspection Requirements," revised June 14, 2000 [6-14-00], this appendix presents site-wide inspection requirements applicable to the Resource Conservation and Recovery Act (RCRA)-regulated waste management units (Units) at Sandia National Laboratories/New Mexico (SNL/NM), co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE).

Pursuant to 20 NMAC 4.1.500/40 CFR 264.15(a) [6-14-00], inspection schedules for the Units have been developed to identify equipment malfunctions and deterioration, operator errors, and discharges that might cause or lead to a release of RCRA-regulated waste and pose a threat to human health and the environment. This inspection plan, which presents general inspection schedules, is being submitted as required by 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00]. Unit-specific inspection requirements~~, if any, for SNL/NM Units~~ are provided in Section 4.0 of each Unit-specific module. Together, information in this appendix, in the General Part B, and in each Unit-specific module meets the applicable regulatory requirements.

C.1 INSPECTION REQUIREMENTS FOR UNITS [20 NMAC 4.1.900/40 CFR 270.14(b)(5), and 20 NMAC 4.1.500/40 CFR 264.15, 264.174, and 264.602]

In accordance with the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.15(b)(1), 264.174, and 264.602 [6-14-00], SNL/NM Units are inspected for malfunctions and deterioration, operator errors, and discharges which may be causing, or may lead to, a release of RCRA-regulated ~~hazardous~~ waste constituents to the environment or a threat to human health. Inspections include monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, and responding to environmental or human health hazards caused by RCRA-regulated waste. Containers of RCRA-regulated waste stored at a Unit are also routinely inspected to assess container integrity, closure, labeling, secondary containment, location with respect to incompatible wastes, and waste and container compatibility. Additional detail about specific items and areas is included in each Unit-specific module.

A copy of this a~~A~~ppendix, which includes relevant inspection schedules, is maintained at each Unit, together with the Unit-specific inspection plan, unless specified otherwise in Section 4.0 of each Unit-specific module, as required in 20 NMAC 4.1.500/40 CFR 264.15(b)(2) [6-14-00].

C.1.1 Inspection Records [20 NMAC 4.1.500/40 CFR 264.15(d)]

Unit personnel are assigned to conduct inspections and record the information on inspection forms. Figures C-1 and C-2 are representative of the inspection forms completed by personnel inspecting SNL/NM Units. Figures C-1 and C-2 are provided for informational purposes only; the forms are subject to change. Any forms used will be functionally equivalent to the ones

shown as Figures C-1 and C-2. The inspection forms identify the items to be inspected and the potential problems that may occur (20 NMAC 4.1.500/40 CFR 264.15(b)(3) [6-14-00]). Additional detail is included in each Unit-specific inspection plan. The following information is recorded on the inspection forms.

- Name of inspector
- Date and time of inspection
- Notation of observations and results of the inspection
- Date and nature of any repairs or remedial action.

For each Unit, inspection records are maintained for a minimum of three years from the date of inspection. Current calendar year records are maintained at the Unit. Previous calendar year records may be maintained at the Unit, SNL/NM Records Center, or as noted in Section 4.0 of each Unit-specific module.

C.1.2 Remedial Action [20 NMAC 4.1.500/40 CFR 264.15(c)]

For every item requiring inspection, a response indicating the condition of each item must be entered in the appropriate column on the form. If any defects, deterioration, damage, or potential hazards are discovered during an inspection, Unit personnel begin taking corrective action upon discovery to ensure that the problem does not lead to an environmental or human health hazard. Appropriate action may include evaluation and removal of accumulated liquids from secondary containment, transfer of waste from a defective container to an appropriate container in good condition, or repair or replacement of nonfunctioning equipment and/or systems. If an inspection reveals that a nonemergency problem has developed, corrective action including repairs, maintenance, and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs.

Corrective action(s) taken in response to conditions discovered during an inspection are noted on the inspection forms. The corrective action(s) taken (along with time, date, and other pertinent information) are recorded in the appropriate section of the inspection form on which the corrective action was first noted or the first weekly inspection form completed following implementation of the corrective action.

C.2 TYPICAL INSPECTION SCHEDULE AND REQUIREMENTS FOR UNITS [20 NMAC 4.1.500/40 CFR 264.15(b)(4), 264.174, and 264.602]

The schedules described in this s~~S~~ection are followed for the inspection of the items and areas noted in Section C.1. Inspections may be conducted at any time during the applicable time period (e.g., day, week, month) specified in the inspection schedule.

The U.S. Air Force, which operates Kirtland Air Force Base, may, for security or other reasons, deny access to Sandia/DOE personnel performing periodic Unit inspections. In such cases, Unit personnel will resume inspections as soon as possible after access is granted, and will document the missed inspections and reasons on the next inspection report.

SNL/NM Units are typically inspected according to the schedule provided below. Inspection frequencies have been developed based on the deterioration rates of equipment/systems and likelihood of failure, and the probability of harm to human health or the environment if: 1) the equipment/system fails between inspections; or 2) operator error goes undetected between inspections. Equipment and systems most likely to fail and those whose failure could lead to severe consequences are inspected most frequently.

The inspection frequencies for specific equipment and areas of operation at each Unit are listed in Section 4.0 of each Unit-specific module. Those detailed schedules are consistent with the general schedule described here.

C.2.1 Daily

A daily Unit inspection is conducted during each day that RCRA-regulated waste handling occurs at that Unit. Waste handling includes when RCRA-regulated waste is received at, moved or opened within, treated at, or removed from a WMA. An example of a daily inspection form (Figure C-1) lists the items typically addressed. A detailed list of items is included in Section 4.0 of each Unit-specific module.

C.2.2 Weekly

A weekly Unit inspection is conducted at least once during each week that RCRA-regulated waste is stored at that Unit. The example of a weekly inspection form (Figure C-2) lists the items typically addressed (included in Item 10 on the form). A detailed list of items is included in Section 4.0 of each Unit-specific module. For the purposes of inspections, weekly is defined as Sunday through the following Saturday.

C.2.3 Monthly

Safety and emergency equipment, security devices, and Unit operating and structural equipment are inspected on a monthly schedule at each active and inactive Unit. Monthly inspections are conducted at WMAs not currently in use for RCRA-regulated waste management. Items 7, 8, and 9 on the monthly inspection form (Figure C-2) identify the items to be inspected at active and inactive WMAs. A detailed list of items is included in Section 4.0 of each Unit-specific module.

C.3 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART AA REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, SUBPART AA]

Sandia/DOE do not manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight using process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations. Therefore, Sandia/DOE are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00].

C.4 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART BB REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, SUBPART BB]

Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 264.1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 1050(f) [6-14-00]. ~~The equipment use will be noted in the Unit operating log.~~

C.5 INSPECTION and MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, SUBPART CC]

Containers are visually inspected either at the time of pickup from a generator site or within 24 hours of acceptance at a Unit. The visual inspection assures that there are no cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position, in accordance with Container Level 1 air emission standards in ~~. Containers holding RCRA-regulated wastes managed in accordance with~~ 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]. The inspection requirements for these containers ~~air emission standards are also subject to an inspection and monitoring plan as required~~ are specified in ~~by~~ 20 NMAC 4.1.500/40 CFR 264.1088(b) [6-14-00]. At each Unit where such containers are stored, personnel take the following steps:

- Check containers and the condition and placement of their covers during inspections of stored containers.
- Take remedial actions if needed.
- Record container conditions and remedial actions taken in the inspection reports.

Figure C-1
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Daily Inspection Form – Example

1. Area(s) Inspected (i.e., Loading/Unloading Area, Treatment Area) _____
2. Structure(s) Inspected (i.e., HWMF, TTF, RMWMF, ~~HBWSF,~~ AHCF, MSB Bunker #)
3. Inspection Date _____
4. Inspection Time _____ am/pm
5. Inspector Name (print) _____

5. Loading/ Unloading Area(s)[a]	Inspection Criteria	Yes	No	NA ( ) load	Corrective Action Issue	Corrective Action Taken and Closure Date
Loading/Unloading Area[c]	Good condition, safe working surface, no spills					
Waste Handling Equipment[c]	Good condition, operational					
Container(s) Loaded/ Unloaded	Good condition					

6. Treatment Area(s)[b,c]	Inspection Criteria	Yes	No	NA ( ) treat	Corrective Action Issue	Corrective Action Taken and Closure Date
Treatment Area	Good condition					
Treatment Unit	Good condition (i.e., no releases or corrosion), maintains established parameters					
Monitoring Equipment	Good condition, operational					

7. Comments and Notes Comment on deficiencies by referencing section and question.

Inspector Signature: _____

Immediately file the completed inspection form in the Unit operating record.

[a] Required on days RCRA-regulated waste loading/unloading operations are conducted.
[b] Required on days RCRA-regulated waste treatment operations are conducted.
[c] Required monthly with facility operating and structural equipment if RCRA-regulated wastes are not managed at Unit during the month.

Figure C-2
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Weekly/Monthly Inspection Form – Example

1. Structure(s) Inspected (i.e., HWMF, TTF, RMWMF, ~~HBWSF,~~ AHCF, MSB Bunker #) _____
2. Inspection Date _____ 5. Monthly ☐
3. Inspection Time _____ am/pm Weekly ☐
4. Inspector Name (print) _____

6. Storage Status[a]	Inspection Criteria	Yes	No
RCRA-Regulated Waste Currently Stored at Structure	Storage status (Yes–waste present, No–waste not present)		

7. Safety & Emergency Equipment[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Spill Control Equipment	Present, good condition					
Fire Extinguisher(s)	Present, good condition, charged					
Decontamination Equipment	Present, good condition					
External Communication System	Present, operational					
Internal Communication and Alarm System	Present, operational					
Fire Suppression System (e.g., Water, Dry Chemical)	Present					

8. Security Devices[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Facility Fence	Good condition					
Gate(s) and Door(s)	Operational					
Warning Sign(s)	Present, legible					
Lock(s) and Tamper Indication Device(s)	Present, good condition					

9. Facility Operating & Structural Equipment[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Floor, Walls, Ceiling	Good condition					
Lighting	Operational					

Refer to footnotes at end of form.

Figure C-2 (Concluded)
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Weekly/Monthly Inspection Form – Example

10. Container Storage[c]	Inspection Criteria	Yes	No	NA ( ) monthly	Corrective Action Issue	Corrective Action Taken and Closure Date
Container Placement	Correct aisle space, correct stacking					
Container Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)					
Container Sealing	Correct lid/cover placement (i.e., closed)					
Container Labeling	Correct information, correct location, legible					
Storage Area (i.e., floor, walls) Condition	Good condition					
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition					
Storage Conditions	Waste compatibility, container compatibility					

11. Comments and Notes Comment on deficiencies by referencing section and question.

Inspector Signature: _____

Immediately file the completed inspection form in the facility operating record.

[a] Weekly inspection criteria are not applicable if RCRA-regulated waste is not stored at structure. Monthly inspection criteria are still applicable.
[b] Required during a monthly inspection. Criteria are not applicable during weekly (only) inspection.
[c] Required during a weekly inspection. Criteria are not applicable during monthly (only) inspection.

Inspector Name (signature) _____

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General Part B – Appendix D

APPENDIX D

SITE-WIDE PERSONNEL TRAINING PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
RCRA	Resource Conservation and Recovery Act
SNL/NM	Sandia National Laboratories/New Mexico
Unit	RCRA-regulated waste management Unit

SITE-WIDE PERSONNEL TRAINING PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

This appendix describes site-wide personnel training requirements for Sandia National Laboratories/New Mexico (SNL/NM) Resource Conservation and Recovery Act (RCRA)-regulated waste management unit (Unit) workers. Unit-specific training requirements, if any, for SNL/NM Unit workers are provided in Section 5.0 ~~Attachment D~~ of each Unit-specific module. Together, information in the General Part B, in this appendix and in each Unit-specific module meets the applicable regulatory requirements.

Training requirements for Unit personnel are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V, (20 NMAC 4.1.500), adopting by reference the Code of Federal Regulations, Title 40, Part 264 including Section 264.16 (40 CFR 264.16), revised June 14, 2000 [6-14-00], "Personnel Training." The primary objective of the training program is to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste, in accordance with 20 NMAC 4.1.500/40 CFR 264 [6-14-00]. This training program applies to all employees of the U.S. Department of Energy, Sandia Corporation, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at SNL/NM Units included in this SNL/NM General Part B. The degree of training varies with the job duties.

D.1 RCRA-REGULATED WASTE MANAGEMENT RESPONSIBILITIES

This program provides employees with training relevant to their positions. Unit personnel are given, at a minimum, a basic understanding of the RCRA regulatory requirements for waste management, emergency procedures, and operating procedures. Some employees receive additional classroom and on-the-job training designed for specific duties. Employees who have not received training or are unable to provide relevant and appropriate training documentation receive the required training within six months of assignment to RCRA-regulated waste management activities and prior to managing RCRA-regulated waste without supervision.

D.2 JOB TITLE/JOB DESCRIPTION [20 NMAC 4.1.900/40 CFR 270.14(b)(12) and 20 NMAC 4.1.500/40 CFR 264.16(d)(1), (2) and (3)

Job titles and descriptions are provided in Figures D-1 through D-9. The job descriptions include requisite skills, education, and/or other qualifications as well as RCRA-regulated waste management job duties. The required training for each job title is found in Table D-2.

A file of all Unit personnel, including their job titles and job descriptions, is maintained at each Unit unless specified differently in Section 5.0 of each Unit-specific module. For each job title, the file contains information on the minimum activities performed by employees, requisite qualifications, and training records.

D.3 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES [20 NMAC 4.1.900/40 CFR 270.14(b)(12), and 20 NMAC 4.1.500/40 CFR 264.16]

This program provides employees with training relevant to their positions and specific to the safe performance of assigned tasks. For example, personnel who are directly involved in RCRA-regulated ~~hazardous~~ waste handling are informed of the potential hazards associated with waste management activities, procedures for safe handling of wastes, and emergency procedures. Individuals in supervisory or decision-making positions receive a comprehensive overview of all aspects of RCRA-regulated ~~hazardous~~ waste management. Personnel with specific or short-term assignments, such as visitors or temporary contractors, may only receive training on the contingency plan and emergency response procedures. Hands-on RCRA-regulated waste management personnel receive training commensurate with their assigned duties.

The training program includes a combination of classroom instruction, reviews of written documents, and on-the-job training exercises. Training information is provided according to training topics (e.g., Contingency Plan), frequency (e.g., initial or refresher), and methods (e.g., classroom instruction, procedure review, on-the-job exercises). Training course content includes, at a minimum, the topics shown in Table D-1. As regulatory compliance requirements change, training courses are evaluated and modified, as necessary. The content is reviewed annually. Some training is standardized and given to all employees. Job-specific training appropriate to job function is given to Unit employees. Training is provided at the frequencies shown on Table D-1. Training that may be applicable to each job title is provided in Table D-2.

D.4 TRAINING DIRECTOR [20 NMAC 4.1.500/40 CFR 264.16(a)(2)]

The Unit-specific Department Manager or designee will function as the Training Director. The Manager maintains responsibility for ensuring that all Unit-specific required training is obtained. The Manager/Training Director is knowledgeable about the applicable RCRA-regulated waste management regulations and specific RCRA-regulated waste management operations employed at a Unit. The Manager/Training Director determines the exact content and duration of training required for individual employees.

The Manager/Training Director may perform or delegate training to qualified trainers. Trainers are qualified on the basis of attainment of one or more of the following, as applicable:

- Certification in the subject matter addressed by the training;
- Demonstration of knowledge and competence in the training subject; and/or
- Previous on-the-job and/or classroom training in the topics covered.

Table D-1
Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit
Training Content

RCRA Regulation Training

Duration: Variable (Typically 4 hours or more)
Frequency: Initial/Periodic Refresher (Typically annual)
Method: Classroom instruction, on-the-job training, and/or document review

Minimum content may include (as applicable to the specific Unit to which an employee is assigned):

- Identification of RCRA-regulated ~~hazardous~~ waste
- Treatment, storage, and disposal facility requirements
- Generator and transporter requirements

RCRA Contingency Plan and Emergency Procedures

Duration: Variable (Typically 1-4 hours)
Frequency: Initial/Annual Refresher
Method: Classroom instruction, document review, and/or on-the-job exercises

Minimum content must include (as applicable to the specific RCRA-regulated ~~hazardous~~ waste management unit to which an employee is assigned):

- Emergency notification procedures
- Response to emergencies
- Evacuation route and procedure
- Emergency equipment and personal protective equipment
- Emergency Coordinator responsibilities
- Post-emergency actions
- Contingency Plan
- Shutdown procedures (if any)

Table D-1 (Continued)
Sandia National Laboratories/New Mexico
RCRA-Regulated Waste Management Unit
Training Content

Technical Work Documents and Refresher

Duration: Variable (Typically 1 hour or more)
Frequency: Initial/Periodic Refresher
Method: Document review, on-the-job training

Minimum Content: This training is function-specific and may be divided into sections or modules. Each employee must participate in the sections that apply to his or her specific job function. Sections may include, but are not limited to:

- Waste Analysis Plan
- Unit-specific safety practices
- Unit-specific operational procedures (e.g., loading and unloading)
- Unit security, entry, and control
- Operation, maintenance, and inspection of equipment
- Prevention of the ignition/reaction of ignitable/reactive wastes
- Permit conditions
- Emergency response
- Unit tour

Table D-1 (Concluded)
Sandia National Laboratories/New Mexico
RCRA-Regulated Waste Management Unit
Training Content

Hazardous Waste Operations and Emergency Response

Duration: Variable (Typically 24 hours or more with an 8-hour refresher)
Frequency: Initial/Refresher (Typically annual)
Method: Classroom instruction, hands-on exercises

Minimum Content:

- RCRA-regulated ~~hazardous~~ waste management and regulations
- Sources of information
- Compatibility of RCRA-regulated ~~hazardous~~ wastes
- Personnel protection
- Principles of safety
- Emergency procedures

Table D-2
Training for Each Job Title

Required Training	Job Titles								
	Training Director	RCRA Project Leader	Emergency Coordinator	Chemist	Field Technician (Waste Handler)	Special Projects Staff	Inspector	Transportation Manager	Unit Operations Support Staff
Resource Conservation and Recovery Act (RCRA) Regulations (Applicable Modules)	X	X	X	X	X	X	X	X	
RCRA Contingency Plan and Emergency Procedures	X	X	X	X	X	X	X	X	X
Technical Work Documents (Applicable Modules)	X	X		X	X	X	X		
Hazardous Waste Operations and Emergency Response (24- or 40-hour course)	X	X	X	X	X	X	X	X	
Hazardous Waste Operations and Emergency Response (8-hour course)	X	X	X	X	X	X	X	X	

D.5 EMERGENCY TRAINING [20 NMAC 4.1.500/40 CFR 264.16(A)(3) AND (C)]

Appendix E of this permit renewal request/application provides a more detailed discussion of emergency procedures, personnel, and equipment.

Unit employees participate in Unit-specific emergency response training to assure effective emergency response. Emergency response training consists of classroom instruction, document reviews, and/or on-the-job exercises. The content is reviewed annually and revised as needed to incorporate changes in regulatory compliance requirements. Topics covered include at a minimum:

- Emergency notification procedures
- Response to emergencies, including fires, explosions, and releases of RCRA-regulated wastes
- Procedures for using, inspecting, maintaining, and replacing emergency equipment and personal protective equipment
- Procedures for the shutdown of operations (if any)
- Procedures for evacuation (i.e., communications/alarms)
- Responsibilities of the Emergency Coordinator
- Post-emergency reports and actions
- Contingency Plan.

D.6 IMPLEMENTATION OF TRAINING PROGRAMS [20 NMAC 4.1.500/40 CFR 264.16(b) and (c)]

The training program is implemented to assure that Unit personnel receive appropriate training in a timely manner. Employees who require training receive the specified training within six months of their date of hire or their transfer to a new position. Personnel do not work unsupervised in RCRA-regulated waste management areas until they successfully complete the indicated training requirements.

Training records are kept to document the type and amount of training received for each Unit employee who manages RCRA-regulated waste. Contents of these records include the following, at a minimum:

- Job title for each position related to RCRA-regulated waste management
- The name of the employee assigned to each job title
- Written job description

- Written training requirements for each job title
- Records that document training received, such as attendance or signature lists, certificates, memoranda of training, or reports from computerized databases of training completion status.

Training records for current and former Unit employees are kept at the Unit to which an employee is/was assigned, unless specified differently in Section 5.0 of each Unit-specific module. Training records for current Unit employees are kept until closure of the Unit. Training records for any former Unit employee are kept for a minimum of three years from the date the employee last worked at the Unit.

Job Title: RCRA Training Director

Job Description:
The RCRA Training Director ensures that all appropriate personnel meet the site-wide personnel training requirements for SNL/NM RCRA-regulated waste management Unit workers, including the Unit-specific RCRA training requirements. RCRA Training Director duties may include, but are not limited to:

- Identifying and/or coordinating training required by RCRA regulations and SNL/NM RCRA-regulated waste management worker training requirements.
- Ensuring maintenance of training records required by RCRA regulations and demonstrating compliance with SNL/NM RCRA-regulated waste management worker training requirements for all personnel.
- Informing personnel when specific training is required.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for the RCRA Training Director is:

- High school diploma or equivalent, or bachelor's degree from an accredited post-secondary institution; or
- Three years experience with RCRA waste management regulations

Training:
Initial and refresher training will be as required in Table D-2

FIGURE D-1
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
RCRA TRAINING DIRECTOR

Job Title: RCRA Project Leader

Job Description:
A RCRA Project Leader oversees, supervises, and coordinates collection, storage, and shipment of RCRA-regulated ~~hazardous~~ waste at the Sandia National Laboratories/New Mexico. Duties may include, but are not limited to:

- E~~e~~nsuring operation of the Unit in compliance with applicable RCRA regulations;
- I~~i~~dentifying and coordinating training required by RCRA regulations;
- D~~d~~etermining training and reading requirements specific to positions, tasks or Unit activities;
- C~~c~~oordinating activities related to management of RCRA-regulated ~~hazardous~~ waste at the Unit;
- E~~e~~nsuring maintenance of records required by RCRA regulations, such as training records, inspection records, waste analysis records, and a RCRA Contingency Plan;
- E~~e~~nsuring maintenance of additional records required for the Unit operating record;
- P~~p~~reparing, reviewing, submitting documents on waste management activities;
- E~~e~~nsuring compliance with RCRA regulations for RCRA-regulated ~~hazardous~~ waste shipments; and
- C~~c~~oordinating activities pertaining to RCRA-regulated ~~hazardous~~ waste audits.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a RCRA Project Leader is:

- H~~h~~igh school diploma or equivalent, or bachelor's degree from an accredited post-secondary institution; or
- T~~t~~hree years experience in managing RCRA-regulated ~~hazardous~~ waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-2
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
RCRA PROJECT LEADER

Job Title: Emergency Coordinator

Job Description:
An Emergency Coordinator evaluates, coordinates, and implements emergency actions in accordance with the RCRA Contingency Plan during an emergency (as defined in the Contingency Plan). As defined in the RCRA Contingency Plan, Emergency Coordinator duties during and after an emergency may include, but are not limited to:

- I~~i~~dentifying the character, exact source, amount, and extent of released RCRA-regulated ~~hazardous~~ waste by observation, records reviews, or chemical analysis;
- A~~a~~ssessing possible resulting hazards to human health or the environment considering both direct and indirect effects;
- T~~t~~aking all reasonable measures necessary to ensure fires, explosions, and releases do not occur, recur, or spread to other RCRA-regulated ~~hazardous~~ waste at the Unit including stopping processes and operations, collecting and containing released waste, and removing or isolating containers;
- M~~m~~onitoring for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment if the facility stops operations;
- P~~p~~roviding for properly treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material;
- E~~e~~nsuring that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
- E~~e~~nsuring that all equipment listed in the Contingency Plan is cleaned and fit for its intended use before resuming operations.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for an Emergency Coordinator is:

- H~~h~~igh school diploma or equivalent; or
- T~~t~~hree years experience working with RCRA-regulated ~~hazardous~~ waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-3
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
EMERGENCY COORDINATOR

Job Title: Chemist

Job Description:
A Chemist conducts supporting characterization of RCRA-regulated ~~hazardous~~ waste managed at Sandia National Laboratories/New Mexico. Duties may include, but are not limited to:

- E~~e~~valuating generator provided characterization data;
- I~~i~~dentifying treatment options for RCRA-regulated ~~hazardous~~ waste; and
- S~~s~~egregating RCRA-regulated ~~hazardous~~ waste.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a Chemist is:

- H~~h~~igh school diploma or equivalent; or
- T~~t~~wo years experience working with RCRA-regulated ~~hazardous~~ waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-4
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
CHEMIST

Job Title: Field Technician (Waste Handler)

Job Description:
A Waste Handler conducts RCRA-regulated ~~hazardous~~ waste handling, segregating, and storing operations at the Sandia National Laboratories/New Mexico. Waste Handler duties may include, but are not limited to:

- Ttransporting and handling RCRA-regulated ~~hazardous~~ waste;
- Cconducting daily inspections of waste management Units where RCRA-regulated ~~hazardous~~ waste loading, unloading, or treatment operations occur;
- Pperforming basic maintenance and housekeeping activities;
- Ssegregating RCRA-regulated ~~hazardous~~ waste
- Ssorting, packaging, marking, labeling, storing, treating, and segregating RCRA-regulated ~~hazardous~~ waste; and
- Ccompiling and entering into a database specific operating record information.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a Waste Handler is:

- Hhigh school diploma or equivalent; or
-
- Ttwo years experience in handling RCRA-regulated ~~hazardous~~ waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-5
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
FIELD TECHNICIAN

Job Title: Special Projects Staff

Job Description:
A Special Projects Staff member performs special project duties at Sandia National Laboratories/New Mexico. Special Projects Staff member duties may include, but are not limited to:

- H~~h~~andling RCRA-regulated ~~hazardous~~ waste during a special project;
- P~~p~~erforming special project related maintenance and housekeeping activities;
- O~~o~~perating RCRA-regulated ~~hazardous~~ waste treatment equipment associated with a special project;
- S~~s~~toring, labeling, and segregating RCRA-regulated ~~hazardous~~ waste associated with a special project; and
- I~~i~~dentifying and scheduling RCRA-regulated ~~hazardous~~ waste special project activities;
- M~~m~~onitoring RCRA-regulated ~~hazardous~~ waste special project activities for safety and procedural compliance; and
- C~~c~~ompiling special project information for the facility operating record.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualification for a Special Projects Staff member is:

- H~~h~~igh school diploma or equivalent; or
- T~~t~~wo years experience in handling RCRA-regulated ~~hazardous~~ waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-6
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
SPECIAL PROJECT STAFF

Job Title: Inspector

Job Description:
An Inspector conducts inspections of RCRA-regulated ~~hazardous~~ waste and RCRA-regulated waste management Units at the Sandia National Laboratories/New Mexico. Inspector duties may include, but are not limited to:

- Iinspecting at least daily areas subject to RCRA-regulated ~~hazardous~~ waste spills when these areas are in use;
- Iinspecting at least weekly containers holding RCRA-regulated ~~hazardous~~ waste, container equipment, and secondary containment;
- Iinspecting at least monthly emergency equipment, security devices, and structural equipment at RCRA-regulated waste management Units; and
- Rrecording inspection date, time, name, observations, and repairs in an inspection log (in the form of an inspection checklist).

Skill, Education, and Other Qualifications:
At a minimum, the qualification for an Inspector is:

- H~~h~~igh school diploma or equivalent; or
- T~~t~~wo years experience working with RCRA-regulated ~~hazardous~~ waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-7
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
INSPECTOR

Job Title: Transportation Manager

Job Description:
A Transportation Manager coordinates the shipment of RCRA-regulated ~~hazardous~~ waste from the Sandia National Laboratories/New Mexico. Transportation Manager duties may include, but are not limited to:

- P~~p~~reparing documentation and paperwork for off-site shipments of RCRA-regulated ~~hazardous~~ waste;
- E~~e~~nsuring proper packaging, labeling, marking, and placarding are in place for off-site shipments of RCRA-regulated ~~hazardous~~ waste; and
- C~~c~~oordinating the loading of RCRA-regulated ~~hazardous~~ waste for off-site shipment.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualification for a Transportation Manager is:

- H~~h~~igh school diploma or equivalent; or
- T~~t~~wo years experience coordinating shipments of RCRA-regulated ~~hazardous~~ waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-8
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
TRANSPORTATION MANAGER

Job Title: Unit Operations Support Staff

Job Description:
A Unit Operations Support Staff member has unescorted access to the facility but performs no activities that require contact with RCRA-regulated ~~hazardous~~ waste or waste containers. Unit Operations Support Staff may include, but are not limited to:

- Aadministrative personnel;
- Iinformation systems (database) personnel;
- Rradiation support personnel; and
- Ggenerator interface personnel.

Skill, Education, and Other Qualifications:
The Training Supervisor determines the requisite level of experience for each position.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-9
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
UNIT OPERATIONS SUPPORT STAFF

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General Part B – Appendix E

APPENDIX E

SITE-WIDE CONTINGENCY PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
DOE	U.S. Department of Energy
EC	Emergency Coordinator
EOC	Emergency Operations Center
ERO	Emergency Response Organization
IC	Incident Commander
ICS	Incident Command System
KAFB	Kirtland Air Force Base
NMED	New Mexico Environment Department
OKSO	Office of Kirtland Site Operations
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
Unit	RCRA-regulated waste management unit

DEFINITIONS

Emergency: Any imminent or existing fire or explosion, or unplanned sudden or nonsudden release of Resource Conservation and Recovery Act (RCRA)-regulated waste or constituents to air, soil, or surface water that threatens human health or the environment. Examples of emergencies include but are not limited to:

- A RCRA-regulated waste release within the Unit that cannot be contained with secondary containment or application of absorbents.
- An imminent or existing fire or explosion involving RCRA-regulated waste.
- A structure fire, grass fire, or forest fire that threatens to ignite RCRA-regulated waste.

Facility: A facility is defined by 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], as all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of RCRA-regulated waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them). The U.S. Environmental Protection Agency Identification Number assigned to Sandia National Laboratories/New Mexico is NM5890110518.

Hazardous Waste: A waste that meets the definition of RCRA solid waste, is not exempt from regulation, and exhibits one or more of the characteristics described in 20 NMAC 4.1.200/40 CFR 261, Subpart C [6-14-00], or is listed in 20 NMAC 4.1.200/40 CFR Part 261, Subpart D [6-14-00].

Mixed Waste: Waste that contains both hazardous waste and radioactive materials (including source, special nuclear, or by-product material) subject to the Atomic Energy Act of 1954 *(42 United States Code 2011 et seq.)*.

Radioactive Waste: Solid, liquid, or gaseous waste that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended.

RCRA-Regulated Waste: For the purposes of this site-wide Contingency Plan and the Unit-specific Contingency Plans, a waste that meets the definition of either hazardous waste or mixed waste.

RCRA-Regulated Waste Management Unit (Unit): A specific operational area used for the treatment and/or storage of RCRA-regulated waste.

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SITE-WIDE CONTINGENCY PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

This appendix presents site-wide contingency measures applicable to all Resource Conservation and Recovery Act (RCRA)–regulated waste management units (Unit) at Sandia National Laboratories/New Mexico (SNL/NM), co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE). Unit-specific Contingency Plan information is provided in Section 6.0 of each Unit-specific module. Together, information in the General Part B, in this appendix, and in each Unit-specific module meets the applicable regulatory requirements.

This Contingency Plan is intended to meet the requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), adopting by reference the Code of Federal Regulations, Title 40, Part 264 (40 CFR 264), Subpart D, revised June 14, 2000 [6-14-00], "Contingency Plan and Emergency Procedures," and 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00], for RCRA-regulated waste treatment, storage, or disposal facilities.

The provisions of this Contingency Plan will be carried out immediately to minimize hazards whenever there is an emergency, as required by 20 NMAC 4.1.500/40 CFR 264.51(b) [6-14-00].

E.1 SNL/NM SITE DESCRIPTION

SNL/NM is a multidisciplinary laboratory engaged in research and development of weapons and alternative energy sources. SNL/NM is managed by Sandia, a wholly owned subsidiary of Lockheed Martin, for the DOE, with work also performed for others. SNL/NM falls under North American Industry Classification System Numbers 92811 (National Security) and 54171 (Research and Development in the Physical, Engineering, and Life Sciences).

SNL/NM is located on Kirtland Air Force Base (KAFB) immediately southeast of the Albuquerque city limits in Bernalillo County, New Mexico. SNL/NM occupies an area of approximately 2,842 acres (1,150 hectares) within the 80-square-mile KAFB. SNL/NM consists of five Technical Areas, I through V, and remote test areas situated in the eastern half of KAFB (Figure E-1).

E.1.1 Unit Descriptions

The Units subject to 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00] and this Contingency Plan are listed in Table E-1. Additional detail about each Unit is provided in Section 6.0 of each Unit-specific module.

E.1.2 Waste Description

RCRA-regulated wastes at SNL/NM are generated primarily from laboratory research activities, process operations, and environmental restoration activities. Typical laboratory research waste includes bottles of excess or residual chemical mixtures and solutions, and solid laboratory ~~waste~~ items

Table E-1
RCRA – Regulated Waste Management Units Included in Contingency Plan

Name	Acronym	Location, size	Types of operations	Operating hours	Staff
Hazardous Waste Management Facility	HWMF	South of TA-I, north of entrance to TA-II. Includes Buildings 958, 959. 1.35 acres	Storage, Repackaging	M-F 8:00 am 4:30 pm	Staffed during operating hours
Thermal Treatment Facility	TTF	Northern part of TA-III, south of Building 6715. 196 square feet	Treatment	M-F 7:00 am 5:00 pm	Staffed only during operations at Unit
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. Includes Buildings 6920, 6921, 6925, and 6926. 3.11 acres	Storage, Treatment, Repackaging	M-Th 7:00 am – 5:30 pm	Staffed during operating hours
~~High Bay Waste Storage Facility~~	~~HBWSF~~	~~TA-V, Building 6596. 5670 square feet~~	~~Storage~~	~~M-Th 7:00 am – 5:30 pm~~	~~Staffed only during operations at Unit~~
Auxiliary Hot Cell Facility	AHCF	TA-V, Building 6597. 5578 square feet	Storage, Treatment, Repackaging	M-F 8:00 am – 4:30 pm	Staffed during operating hours
Manzano Storage Bunkers	MSB	In Manzano Area on KAFB. 0.4 acres occupied by 5~~7~~ bunkers (approximately 1600 to 21~~4~~00 square feet in each bunker)	Storage	M-Th 7:00 am – 5:30 pm	Staffed only during operations at Unit

such as rags, batteries, and equipment. Typical process waste includes larger volumes (5- to 55-gallon containers) of solvents, oils, and corrosive solutions. Typical environmental restoration activity waste includes contaminated soil cuttings, debris, personal protective equipment, and decontamination fluids.

Because Sandia/DOE research and other activities are subject to change, waste streams and volumes stored at SNL/NM Units vary. The general types of wastes and capacities of each Unit are summarized in Section 6.0 of each module. The detailed description, location, and quantity of the RCRA-regulated wastes managed are identified in the Operating Record maintained for each Unit.

E.1.3 Operating Schedule

The operating schedules of the RCRA-regulated Units are summarized in Table E-1. Sandia/DOE security personnel check each Unit periodically during non-operating hours~~the time the Units are closed~~. If an emergency is discovered during these inspections, the SNL/NM Emergency Operations Center (EOC) and the Unit Emergency Coordinator (EC) (Section E.3.1) will be notified immediately.

E.2 CONTINGENCY PLAN DISTRIBUTION AND AMENDMENTS [20 NMAC 4.1.500/40 CFR 264.53-54]

Copies of the current site-wide Contingency Plan and the applicable Unit-specific information (Section 6.0 of each Unit-specific module) are maintained at the following locations: each Unit, the SNL/NM EOC, and SNL/NM Records Center. Sandia/DOE also provide copies of the Plan and any amendments and updates to the KAFB Fire Department and the New Mexico Environment Department (NMED) for their use.

This site-wide Contingency Plan and the Unit-specific information will be reviewed periodically by the EC(s) and Sandia ERO personnel. The plan(s) will be amended, if necessary, whenever one or more of the following occur:

- Applicable regulations or RCRA permit conditions are revised;
- There is a significant change in facility or Unit design, construction, maintenance, operation, or other circumstance that increases the potential for emergencies or changes the response necessary in an emergency;
- The list of designated emergency coordinators changes;
- The list of required emergency equipment changes significantly; or
- Actual implementation of the plan during an emergency demonstrates inadequacies.

E.3 EMERGENCY RESPONSE RESOURCES [20 NMAC 4.1.500/40 CFR 264.52(c) and 264.53]

Resources are available at each Unit, at SNL/NM, within KAFB, and in Albuquerque as described in this section.

E.3.1 Emergency Coordinator and Responsibilities [20 NMAC 4.1.500/40 CFR 264.52(d), 264.55, and 264.56(a)–(h)]

The Unit-specific EC has thorough familiarity with this Contingency Plan and the applicable Unit-specific information~~attachment(s)~~, Unit layout, operations, the location of records, the locations and characteristics of the RCRA-regulated waste managed at the Unit(s), and the emergency equipment and supplies. The EC has the authority through the Sandia department manager to commit the necessary Unit resources (including personnel, materials, and funds) to respond to an emergency at SNL/NM.

During emergencies at each Unit, or until the SNL/NM emergency response Incident Commander (IC) arrives (E.3.3), the EC has three primary responsibilities:

1. **Assess the Situation.** By observing the scene, interviewing personnel, and/or reviewing records, the EC must gather information relevant to the response, such as the type of event, quantity and type of released material, and actual or potential hazards to human health or the environment.

2. **Protect Personnel.** The EC should take any reasonable measures to ensure the safety of personnel, such as activating the fire alarm, accounting for Unit personnel, attending to injuries, or coordinating the evacuation of Unit personnel, if necessary. If evacuation is indicated for other personnel, the IC must be informed.

3. **Contain or Mitigate the Hazards.** The EC should take reasonable measures to ensure that fires, explosions, or releases do not occur, recur, or spread.

After emergencies, the EC must ensure that the facility and equipment are cleaned, waste is properly handled and disposed, the Unit is safe to resume operation, and all information necessary for notifications and reports is provided to Sandia/DOE personnel, as outlined in Sections E.-6 and E.-7.

In the event the EC is not on site or immediately available during an emergency, an alternate EC is contacted. The names, addresses, and phone numbers of the primary and alternate ECs for each SNL/NM Unit are included in each Unit-specific module. A Unit-specific EC or alternate EC is on site or immediately available during the operating hours of each Unit. ECs are also available during non-routine RCRA-regulated waste management operations that may be conducted outside normal operating hours.

E.3.2 Emergency Response Groups

The SNL/NM Emergency Response Organization (ERO) consists of two response groups that respond to an emergency situation: (1) a field response group led by an IC under the Incident Command System (ICS) and (2) an EOC cadre. The ICS also includes Sandia/DOE Security, the KAFB Fire Department, and Sandia/DOE personnel with relevant technical skills. An IC is on site at SNL/NM at all times (24 hours per day, 7 days per week). Sandia/DOE security and the KAFB Fire Department personnel are also available at all times. Sandia/DOE technical personnel are available on site at SNL/NM from 8:00 am – 4:30 pm Monday through Friday and are on call the rest of the time. The SNL/NM EOC staff includes an Emergency Director and a staff of Sandia and DOE personnel who are responsible for the management decisions and notifications to outside parties that are required during an emergency response (Section E.5.3). EOC staff personnel are available on site at SNL/NM from 8:00 am–4:30 pm, Monday through Friday, and are on call the rest of the time.

In the field, the IC maintains overall management and control of response operations at the emergency site. The IC works in a unified command with the KAFB Fire Department and in concert with safety personnel, Unit-specific personnel (e.g., EC), and other emergency responders to develop and execute response plans, including on-site protective actions and recommendations for off-site protective actions. The ICS system is implemented at the time an emergency occurs, is expanded to control the emergency as needs arise, and remains in effect until the need for emergency management no longer exists.

E.3.3 Emergency Chain of Command

When the EC is notified of an incident, he must first determine if procedures for emergencies (Section E.-5) should be implemented. The EC manages the emergency response (Section E.3.1) until the IC arrives at the Unit and relinquishes control to the arriving IC. If possible, the EC maintains communication with the IC by telephone or radio before the IC arrives at the Unit. The EC remains at the Unit and assists in emergency response as directed by the IC. The EC advises the IC, as needed, on Unit operations, Unit layout, characteristics of RCRA-regulated waste on site, location of records, radio and cellular communication systems, and other information as necessary to respond to the emergency.

The SNL/NM IC is the liaison for communications with other emergency response organizations and functions, including medical and fire protection support. The EC can request both medical and fire protection services, if necessary, at the same time that he/she notifies the IC of the emergency.

E.3.4 Support Agreements and Coordination with Outside Agencies [20 NMAC 4.1.500/40 CFR 264.37]

Sandia/DOE maintain sufficient response resources to handle most emergencies arising from RCRA-regulated waste management activities as described in this contingency plan. These response resources include personnel, emergency equipment, medical facilities, and communications systems. DOE also has established mutual aid agreements and memoranda of understanding with several off-site agencies and facilities for additional response capabilities for SNL/NM. These agencies and facilities include:

Table E-2
Agreements and Memoranda of Understanding for Emergency Response

Agency or Facility	Type of Service
New Mexico Department of Public Safety	Mutual aid involving an actual or potential emergency, assistance in training and emergency response for local and tribal governments.
377th Air Base Wing, Kirtland Air Force Base	Various ~~types~~categories of support, including fire protection, police services, communications, and utilities.
U.S. Forest Service	Cooperative fire fighting arrangement between the USFS and KAFB for wildland fires.
City of Albuquerque	Mutual support and responsibilities during a potential or actual emergency requiring the combined resources of DOE and the City of Albuquerque.
University of New Mexico Medical Center	Mutual cooperation and assistance in providing timely and effective emergency medical services.
St. Joseph Medical Center	Mutual cooperation and assistance in providing timely and effective emergency medical services.
Lovelace Medical Center	Mutual cooperation and assistance in providing timely and effective emergency medical services.
Presbyterian Health Care Services	Mutual cooperation and assistance in providing timely and effective emergency medical services.

E.4 EMERGENCY EQUIPMENT [20 NMAC 4.1.500/40 CFR 264.32, 264.33, 264.34, and 264.52(e)]

A list of equipment available through the SNL/NM emergency response system is provided in Table E-3. Lists of emergency equipment available for use at each Unit are presented in each Unit-specific module.

E.5 CONTINGENCY PLAN IMPLEMENTATION [20 NMAC 4.1.500/40 CFR 264.56]

Unit personnel who become aware of an incident contact the EC immediately. If the incident is an emergency, personnel implement evacuation procedures identified in Section E.5.2 Personnel also immediately notify the Unit-specific EC or alternate EC of the emergency condition. The EC will then assess the situation and determine the scale of the incident.

If the EC determines that an emergency situation exists at the Unit, he will immediately notify the SNL/NM EOC and activate this Contingency Plan. The methods for contacting emergency response representatives are listed in Table E-4.

E.5.1 Emergencies

In the event of an emergency, the EC, an assignee, or Unit personnel (see note above) will immediately telephone the SNL/NM EOC (911 or 844-0911) or notify them in some other way (see Section E.5). Emergencies require the activation of this Contingency Plan and SNL/NM emergency response resources.

The EC will relinquish authority to the IC upon arrival as described in Section E.3.3. The EC and the IC will:

- Determine the extent of the emergency;
- Identify the character, source, amount, and areal extent of released materials by observation, records reviews, or chemical analysis;
- Assess possible resulting hazards to human health or the environment, considering both direct and indirect effects;
- Take all reasonable measures necessary to ensure fires, explosions, and releases do not occur, recur, or spread to other RCRA-regulated waste at the Unit, including collecting and containing released waste, and removing or isolating containers; and
- Monitor for leaks, pressure buildup, gas generation, and ruptures in equipment.

Table E-3
Sandia National Laboratories/New Mexico (SNL/NM) Facility[a] Emergency Equipment
2-18-2003

Item or Equipment	Description/Telephone
Emergency Vehicles (owned by Sandia/DOE unless noted)	
Emergency Response Vehicle	Mobile Command Post equipped with communications equipment, typically located at SNL/NM EOC[b]. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Ambulance	Typically located at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Security Vehicles	Vans and trucks equipped with communications equipment and utilized for transportation of personnel and equipment, typically located throughout SNL/NM. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Fire Trucks (owned by KAFB Fire Department)	Fire-fighting vehicles outfitted with equipment for fighting fires, typically located at KAFB fire stations. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Medical Supplies (owned by Sandia/DOE)	
Stretchers/Stokes Litter	Equipment for movement of injured personnel. Stokes litter will immobilize personnel so they may be moved vertically. Typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Blankets	Normal blankets, typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Medical Kits	Emergency first-aid supplies, typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Safety Supplies (owned by Sandia/DOE)	
Air Packs	Self-contained breathing apparatus for use by personnel entering hazardous atmospheres, typically located in ambulance or response vehicle. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Monitoring Instruments	Typically located in ambulance or emergency response vehicle. SNL/NM Emergency Response System — Call 911 or (505) 844-0911

[a] Lists of equipment available at each Unit are included in a table in each Unit-specific module.
[b] The SNL/NM EOC is located in TA-I.

Table E-4
Emergency Response System Notification, Sandia National Laboratories/New Mexico

Method	Number
Telephone (at Unit)	911
Mobile Telephone	(505) 844-0911
Portable Radio	NA
Automatic notification of emergency response when smoke detector or pull station is activated and/or water flows in sprinkler system	NA

Note: Any person in any Unit is authorized to implement the evacuation procedures, notify the EC or altemate EC, and/or contact the emergency response representatives in the unlikely event that the EC or alternate EC cannot be contacted or respond in a timely manner.

E.5.1.1 Fire

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing fire.

1. All non-essential Unit personnel should evacuate (Section E.5.2) to an upwind point at least 100 yards away from the fire as directed by the EC. All Unit personnel may evacuate at this time.

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. ONLY if safe to do so, Unit personnel may consider taking action to put out the fire or minimize its spread. These actions may be taken only after the SNL/NM IC and KAFB Fire Department have been notified. Personnel must not jeopardize their own safety or the safety of other personnel.

   - If the fire is small and the fuel source is small, portable fire extinguishers may be used to put out the fire.

   - Fire extinguishers may only be used by personnel trained in their use and in this Contingency Plan, and only for very small fires.

   - Flammable materials should be removed from the area of fire if safe to do so.

   - Only Lith-X fire extinguishers are to be used for water-reactive waste.

4. If the fire spreads or increases in intensity, all remaining personnel must evacuate (see Step 1).

5. The EC should remain near the site, but at a safe distance, so he can advise the personnel responding to the fire of the known hazards.

6. Upon arrival at a fire, the KAFB Fire Department officer-in-charge will be in command of fire fighting. He will accept and evaluate the advice of Sandia/DOE Unit and emergency response personnel, but he retains the responsibility to select the fire-fighting methods and tactics.

7. The IC will be in overall control of Sandia/DOE emergency response efforts until the emergency is terminated.

8. RCRA-regulated wastes involved in a fire can be identified in the following ways: The location of the container may indicate the contents. If the location does not indicate its contents, the label number can be used to identify the material. Records on the contents of each container can be accessed from outside the Unit or in the Unit office. If the label has been burned and the container cannot be identified, the material will be treated as an unknown and analyzed according to methods in the Waste Analysis Plan (Appendix B to the General Part B.)

9. Residues of RCRA-regulated wastes may be collected and contained by stabilizing or neutralizing the spilled material, as appropriate; pouring an absorbent over the spilled material; and sweeping or shoveling the absorbed material into drums or other appropriate containers.

10. If needed, affected surfaces will be cleaned using cleaners appropriate to the chemicals.

11. If possible and safe to do so, responding personnel will take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers. If possible, personnel will build dikes around storm drains.

12. Any fire-fighting waters collected in the stormwater catchment and retention ponds at the HWMF and RMWMF or the floor trenches at the ~~HBWSF and~~ AHCF will be analyzed to determine an appropriate disposal method.

E.5.1.2 Explosion

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing explosion.

1. Unit personnel will immediately evacuate the area (Section E.5.2).

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire

Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. The EC will remain near the site, but at a safe distance, so he can advise the response personnel of the known hazards involved and the degree and location of the explosion and associated fires.

4. Upon arrival at the site, the KAFB fire department officer-in-charge will be in command of fire fighting. He will accept and evaluate the advice of Sandia/DOE personnel and emergency response organization members, but he retains the responsibility to select the fire-fighting methods and tactics.

5. The IC will be in overall control of Sandia/DOE emergency response efforts until the emergency is terminated.

6. Residues of RCRA-regulated wastes may be collected and contained by stabilizing or neutralizing the spilled material, as appropriate; pouring an absorbent over the spilled material; and sweeping or shoveling the absorbed material into drums or other appropriate containers.

7. If needed, affected surfaces will be cleaned using cleaners appropriate to the chemicals.

8. If possible, responding personnel will take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers. If possible, personnel will build dikes around storm drains.

9. Any fire-fighting waters collected in the stormwater catchment and retention ponds at the HWMF and RMWMF or the floor trenches at the ~~HBWSF and~~ AHCF will be analyzed to determine an appropriate disposal method.

10. The EC will secure all operational units (e.g., process equipment, ventilation equipment) that may be affected directly or indirectly by the explosion once the areas needed to be entered have been determined safe by the IC or a safety officer.

E.5.1.3 Uncontrolled Release

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing release of RCRA-regulated waste or constituents.

1. Evacuate the immediate area (Section E.5.2).

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. Take actions to minimize, contain, and clean up the release only if safe to do so.

4. Review facility records (e.g., waste inventory database) to determine the identity and chemical nature of released material.

5. Don appropriate personal protective equipment for exposure to the material.

6. If possible, secure the source of the release.

7. If necessary and possible, build a dike to contain runoff.

8. Take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers. If possible, build dikes around storm drains.

9. Released wastes may be collected and contained by stabilizing or neutralizing the spilled material, as appropriate; pouring an absorbent over the spilled material; and sweeping or shoveling the absorbed material into drums or other appropriate containers.

10. No waste that may be incompatible with the released material will be treated, stored, or disposed of until cleanup procedures are complete.

11. After collection of a released material, the release site will be sampled and evaluated. If contamination is found to exist, contaminated materials may be collected, drummed (if appropriate), and removed from the site for disposal at a permitted disposal facility. Depending on the specific conditions, however, Sandia/DOE may choose to implement an alternative decontamination method such as surface cleaning or in situ neutralization or stabilization. Any such alternative will be discussed with the NMED prior to implementation.

E.5.2 Evacuation [20 NMAC 4.1.500/40 CFR 264.52(f)]

During an emergency that threatens the health or safety of personnel within a Unit, the following steps will be taken as needed to facilitate safe, coordinated evacuation:

1. Stop work.

2. If safe to do so, close containers and shut down equipment or otherwise place it in a safe mode.

3. Alert personnel in the affected area by announcing the evacuation by voice cornmand, "Evacuate the Area."

4. Activate the available Unit-specific evacuation signal consistent with the internal communications and alarm systems that are listed in Section 6.0 of each Unit-specific module.

5. Notify the Sandia/DOE ERO by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The

KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

6. Check to see whether there is evidence that the designated evacuation route is not safe.

7. If there is no evidence of danger or obstacles, exit the Unit according to the evacuation routes provided in Section 6.0 of the Unit-specific module.

8. If there is evidence of danger or obstacles, exit the Unit by any safe route available.

9. If safe to do so, check for other personnel in other areas of the Unit.

10. Proceed to the designated assembly area for roll call to be taken by the EC or designee.

11. If the EC and unit personnel are assembling at an alternate location, proceed to that location.

12. Inform the EC or designee about any other people still believed to be inside the Unit.

13. Do not reenter the Unit until the IC or EC determines that is safe to do so.

E.5.3 Coordination with Off-Site Parties and Emergency Notification [20 NMAC 4.1.500/40 CFR 264.56(a) and (b)]

The Sandia EOC notifies DOE of all emergencies at SNL/NM. Sandia/DOE will notify state and local agencies if state or local response resources are required (see Section E.3.4), if human health or the environment are threatened outside the SNL/NM facility, or if areas outside the SNL/NM facility may require protective action. Sandia/DOE will verbally notify the City of Albuquerque or Isleta Pueblo, respectively, as soon as possible in the unlikely event that residents of Albuquerque or Isleta Pueblo outside KAFB are or could be affected. The notification will include available information about the nature and location of the emergency, the materials involved, and the recommended protective actions. The most likely protective actions are expected to include evacuation or sheltering indoors with doors and windows closed and ventilation systems shut off.

In the event of an emergency involving injuries that require medical services from one of the hospitals listed in Table E-2, Sandia/DOE will provide all available information about the event and the materials involved to the responders as soon as possible.

Sandia/DOE will also notify the National Response Center (1-800-424-8802) if human health or the environment are threatened outside the facility. The notification will include the following:

- Name and telephone number
- Facility name and address
- Time and nature of emergency
- Type and quantities of materials involved to the extent known
- Personnel injuries, and
- Potential hazards to human health, or the environment, outside the facility.

Sandia/DOE will also provide this information to the NMED in accordance with regulatory requirements, including verbal notification (1-505-827-9329 or other emergency notification number designated by NMED).

E.6 POST-EMERGENCY ACTIONS [20 NMAC 4.1.500/40 CFR 264.56(f-i)]

Immediately after an emergency, the EC (and the IC, when present) will:

- Continue to monitor for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment if the Unit stops operations;
- Provide for properly treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material;
- Ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
- Ensure that all equipment used in responding to the emergency that is listed in either this site-wide plan or the Unit-specific Contingency Plan is cleaned and fit for its intended use before resuming operations.

Prior to resuming operations after an emergency involving RCRA-regulated waste in the affected area(s) of the Unit, Sandia/DOE will notify NMED that incompatible waste will not be managed until cleanup procedures are complete and equipment listed in the Unit-specific Contingency Plan is cleaned and fit for use.

E.7 EMERGENCY RESPONSE RECORDS AND REPORTS [20 NMAC 4.1.500/ 40 CFR 264.56(j)]

The time, date, and details of an emergency involving RCRA-regulated waste that require implementation of this Contingency Plan will be noted in the Operating Record maintained for the affected Unit. Within 15 days after the incident, a written report will be submitted to the NMED identifying:

- Name, address, and telephone number of the facility owner or operator
- Name, address, and telephone number of the facility
- Date, time, and type of incident (e.g., fire, explosion, release)
- Name and quantity of material(s) involved
- Extent of injuries (if any)

- Assessment of actual or potential hazards to human health or the environment, where applicable, and
- Estimated quantity and disposition of recovered material that resulted from the incident.

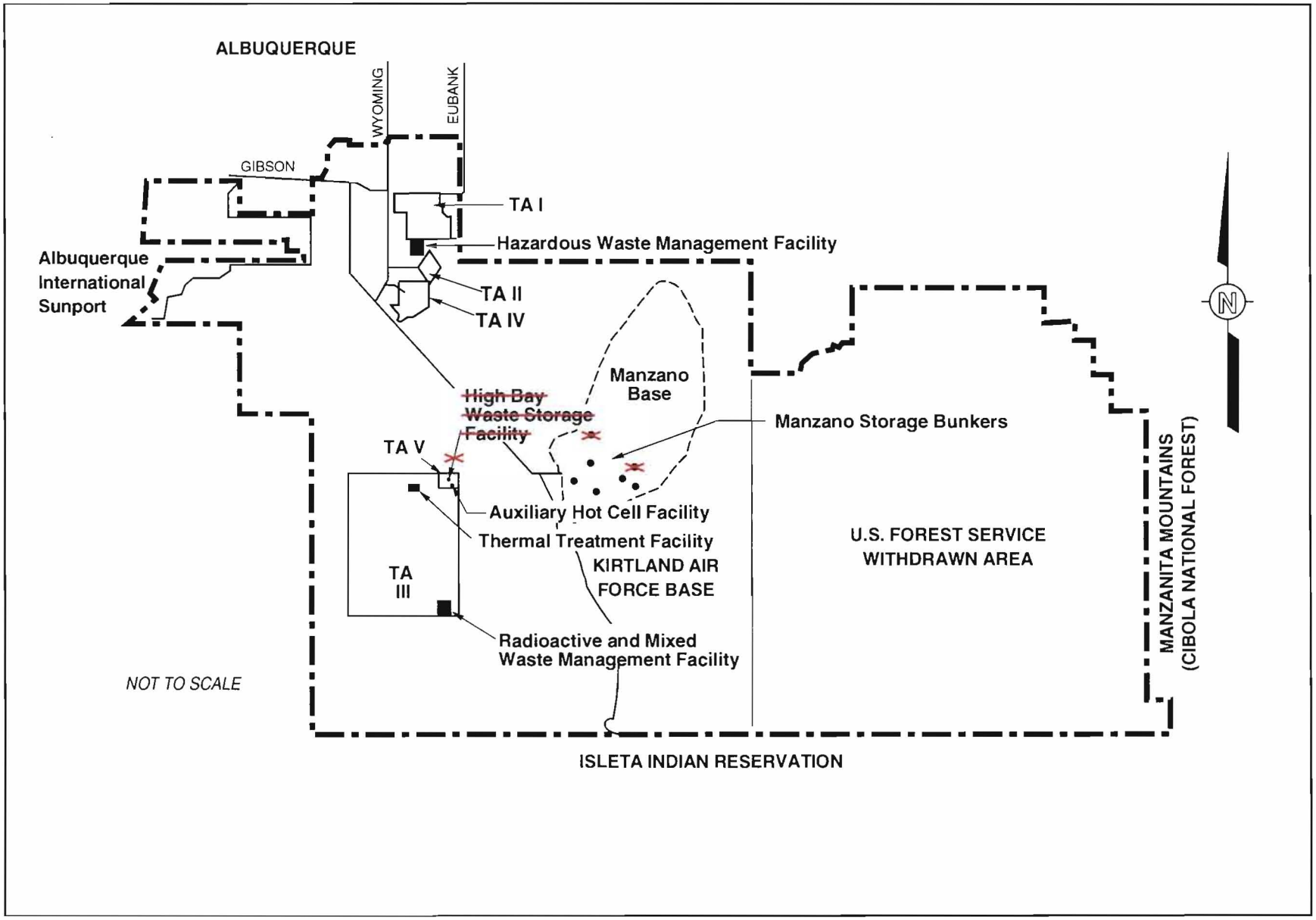

Figure E-1

Sandia National Laboratories/New Mexico, Technical Areas (TAs) and Resource Conservation and Recovery Act-Regulated Waste Management Units

General Part B – Appendix F

APPENDIX F

SITE-WIDE CLOSURE PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
ASTM	American Society for Testing and Materials
DOE	U.S. Department of Energy
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
NMED	New Mexico Environment Department
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TSDF	treatment, storage, or disposal facility
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit

SITE-WIDE CLOSURE PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part I, Subpart IX (20 NMAC 4.1.900), adopting by reference the Code of Federal Regulations, Title 40, Part 270 including Section 270.14(b)(13) (40 CFR 270.14[b][13]), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, revised June 14, 2000 [6-14-00], closure requirements for Resource Conservation and Recovery Act (RCRA)-regulated waste management units (Unit) at Sandia National Laboratories/New Mexico (SNL/NM), co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), are provided in this site-wide Closure Plan and in Section 7.0~~Attachment F~~ of each Unit-specific module. Together, information in the General Part B, in this appendix, and in each Unit-specific module meets the applicable regulatory requirements.

~~Closure information applicable to all Units at SNL/NM (Figure F-1) and sampling and analytical procedures to be used during closure activities are presented in this appendix. The closure information provided includes closure performance standards; an SNL/NM site description; waste description and estimate of maximum waste volumes managed at SNL/NM Units; closure methods; a sampling and analysis plan; a closure schedule; amendment of the Closure Plan; closure cost estimate, financial assurance, and liability requirements; closure certifications and reports; and post-closure and survey plat requirements.~~

F.1 INTRODUCTION (20 NMAC 4.1.500/40 CFR 264.111 AND 264.112[B][2]d)

This Closure Plan was prepared in accordance with the applicable requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart G, "Closure and Post-closure" [6-14-00]. This Closure Plan identifies the steps necessary for ~~partial~~ closure of individual Units ~~rather than final closure of the SNL/NM facility~~. Partial closure of SNL/NM will consist of closing one or more of the SNL/NM Units while leaving the remainder of the other Units in service. Partial closure will be deemed complete when equipment and structures have been decontaminated, if necessary; the Unit meets the performance standards for "clean" closure; and closure certification has been submitted to the New Mexico Environment Department (NMED). Final closure will be complete when all RCRA-regulated waste management Units at the SNL/NM facility have been closed. Neither partial nor final closure are expected to occur during the life of the permit.

Closure information applicable to all Units at SNL/NM (Figure F-1) and sampling and analytical procedures to be used during closure activities are presented in this appendix. This site-wide Closure Plan presents closure information that is applicable to all RCRA-regulated waste management units at the site, while information regarding individual Units is provided in Section 7.0 of the appropriate Unit-specific module. Prior to closure of a Unit, the Unit-specific module will be revised as needed (e.g., to provide Unit-specific sampling and analysis plans, or to incorporate updated decontamination technologies) and submitted to NMED for approval.
~~Sandia/DOE plan to clean close all storage and treatment Units to meet the closure performance standards in 20 NMAC 4.1.500/40 CFR 264.111 [6-14-00]. This Closure Plan will apply only to the RCRA permitted storage and treatment Units at SNL/NM.~~

~~This Closure Plan is designed to meet the following performance standards in 20 NMAC 4.1.500/ 40 CFR 264.111 [6-14-00]:~~

- ~~To protect human health and the environment;~~
- ~~To minimize the need for further maintenance.~~
- ~~To control, minimize, or eliminate the post-closure release of RCRA-regulated waste (i.e., Federal and State regulated hazardous waste), hazardous waste constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, surface waters, or atmosphere; and~~
- ~~Comply with the applicable closure and postclosure requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts G and I through DD [6-14-00].~~

~~Partial closure will be deemed complete when equipment and structures have been decontaminated, if necessary; the Unit meets the performance standards for "clean" closure; and, closure certification has been submitted to the New Mexico Environment Department (NMED).~~

F.2 SITE DESCRIPTION

SNL/NM (U.S. Environmental Protection Agency [EPA] Identification Number NM5890110518) is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. SNL/NM is managed by Sandia, a wholly-owned subsidiary of Lockheed Martin, for the DOE. Generation and management of RCRA-regulated wastes occur at SNL/NM as part of these activities. SNL/NM is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base in Bernalillo County. Descriptions of individual RCRA-regulated waste management Units are provided in Section 7.1 of each Unit-specific module.

F.3 WASTE DESCRIPTION, ~~AND~~ MAXIMUM VOLUME STORED, AND INVENTORY ELIMINATION (20 NMAC 4.1.500/40 CFR 264.112[B][3])

The RCRA-regulated waste types and quantities managed at the SNL/NM Units are highly variable and may include, but are not limited to, laboratory chemical waste, contaminated used oil, process waste, explosive waste, used batteries, unknown liquids and solids, elemental lead, contaminated soil, debris, decontamination/purge/treatment waters, and treatment residuals.

The maximum RCRA-regulated waste storage and/or treatment capacity of each SNL/NM Unit is provided in ~~Attachment F~~Section 7.2 of each Unit-specific ~~permit~~ module.

The first step in the closure of a Unit will be the elimination of any waste inventory stored in the Unit. Prior to initiation of further closure activity, all RCRA-regulated wastes will be removed from the Unit and will be either transferred to another RCRA-regulated waste management Unit at SNL/NM or transported directly to an off-site permitted treatment, storage, or disposal facility (TSDF).

F.4 CLOSURE PERFORMANCE STANDARDS (20 NMAC 4.1.500/40 CFR 264.111)

Sandia/DOE plan to clean close all storage and treatment Units to meet the closure performance standards in 20 NMAC 4.1.500/40 CFR 264.111 [6-14-00]. This Closure Plan applies only to the RCRA-permitted storage and treatment Units at SNL/NM.

This Closure Plan is designed to meet the following performance standards in 20 NMAC 4.1.500/ 40 CFR 264.111 [6-14-00]:

- To protect human health and the environment;
- To minimize the need for further maintenance.
- To control, minimize, or eliminate the post-closure release of RCRA-regulated waste, RCRA-regulated waste constituents, leachate, contaminated runoff, or RCRA-regulated waste decomposition products to the ground, surface waters, or atmosphere; and
- Comply with the applicable closure and post closure requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts G and I through DD [6-14-00].

F.45 CLOSURE METHOD (20 NMAC 4.1.500/40 CFR 264.112[B][1,2,4,5], 264.114, AND 264.115)

Sandia/DOE expect to demonstrate conformance with the closure performance standards in 20 NMAC 4.1.500/40 CFR 264.111 through 264.116 [6-14-00], as applicable, for SNL/NM Units. Closure methods proposed in this plan are based on the following assumptions about conditions during the operational life of SNL/NM Units:

- RCRA-regulated wastes were stored in containers (e.g., drums);
- Containers used to store and/or treat RCRA-regulated wastes retained their integrity;
- Adequate secondary containment was provided for liquid wastes;
- Appropriate spill cleanup and decontamination procedures were performed in response to releases, if any, of RCRA-regulated wastes at Units; and
- Releases of RCRA-regulated waste constituents to the environment did not occur.

These assumptions are derived from historical knowledge of waste management practices and policies as well as applicable written records (e.g., inspection logs, survey results, waste inventory reports, facility/activity descriptions).

In order to demonstrate achievement of the closure performance standards listed in Section F.~~1~~3 of this appendix, Sandia/DOE propose to perform the following closure~~s~~ activities:

- Phase I: Initial sampling and analysis.
  - The data quality objective (DQO) process will be implemented.
  - Initial sampling and analysis activities will be performed that are sufficient to detect contamination, if any, resulting from RCRA-regulated waste constituents known to have been released at a Unit ~~will be performed~~.
- Phase II: Performance of hazard surveys, if necessary.
  - A waste constituent contamination survey will be conducted to identify the nature and extent of contamination detected during Phase I sampling and analysis activities.
  - The nature and extent of contamination will be evaluated to determine closure options.
- Phase III: Decontamination, if necessary.
  - Decontamination of areas requiring remediation will be performed.
  - Verification of "clean closure" will be conducted.
- Phase IV: Certification of closure.
  - Closure will be certified by an independent, registered professional engineer.

Closure "phases" are fully described in Sections F.~~4~~5.1–F.~~4~~5.4. The site-wide sampling and analysis plan is provided in Section F.~~5~~6, and Unit-specific sampling and analysis plans will be revised as needed and submitted to NMED for approval prior to closure of a given Unit, as described by the closure schedule in Table F-2.

F.~~4~~5.1 Phase I: Initial Sampling and Analysis

The purpose of Phase I activities is to determine whether or not RCRA-regulated ~~hazardous~~ waste constituent contamination requiring remediation (i.e., decontamination) is present at a Unit. The DQO process is designed to ensure that the type, quantity, and quality of environmental data used in decision making are appropriate for the intended application. DQOs are qualitative and quantitative statements derived from a series of seven planning steps based on the scientific method. DQO statements applied to Phase I closure activities at SNL/NM Units are summarized below.

Define the Problem. The Unit to be closed is not needed for RCRA-regulated waste management activities and should be closed under applicable closure requirements. Regulatory closure must meet the performance standards found in 20 NMAC 4.1.500/40 CFR 264.111(a) and (b) [6-14-00] (see Section F.~~1~~4).

Identify the Decision. Does the Unit meet the applicable closure performance standards without further remediation? If so, closure certification will be submitted to the Secretary of the NMED. If not, the stated performance standards will be met before closure certification.

Identify Inputs to the Decision. Applicable archival records on RCRA-regulated waste management activities will be reviewed. The records (e.g., inspection logs, survey results, waste inventory reports, facility/activity descriptions) will be reviewed for evidence of incidents or activities that may have resulted in RCRA-regulated waste or ~~hazardous~~ constituent contamination at the Unit. Visual observations of the Unit will be performed to identify stains or discoloration that may indicate contamination.

Define the Study Boundaries. The records review is limited to RCRA-regulated waste management records generated during the operating life of the Unit as a RCRA-regulated waste management area. Visual observations are limited to surfaces in areas used for RCRA-regulated waste management activities. Initial samples will be collected from within the area used for RCRA-regulated waste management activities at the Unit to be closed. A Unit-specific sampling grid will be used to determine initial sample locations. If visible stains or discoloration are observed during visual inspections, biased sampling of those areas will also be performed during initial sampling activities. Analytical parameters addressed in Phase I sampling will be limited to RCRA-regulated waste or constituents known to have been released during operation of the Unit.

Develop the Decision Rule. If, based on the records review, visual observations at the site, and initial sampling and analysis results, the Unit is not contaminated due to RCRA-regulated waste management activities, the Unit will be considered "clean." Phase II and III activities will not be conducted. Closure activities will advance to Phase IV. If, based on the records review, visual observations at the site, and/or initial sampling and analysis results, the Unit is contaminated due to RCRA-regulated waste management activities, Phase II activities will commence.

Specify Limits on Decision Errors. Because measurement data from sampling and analysis can only estimate true values, there is always a possibility that decisions made based on measurement data will be in error. Decision errors can be attributed to either sampling error (when incorrect sampling fails to adequately represent the true environment) and measurement errors (when the combination of random and systematic errors in the measurement process inaccurately represent the true values). Precautions taken to minimize either type of decision error when performing regulatory closure of the Unit to be closed are discussed in the sampling and analysis plan included as Section F.5~~5~~6 of this Closure Plan.

Analytical Data Assessment. Chemical analysis data (if any are generated) used to document attainment of the closure performance criteria for the Unit to be closed will be assessed using SNL/NM data verification and validation procedures or equivalent methods.

Quality controls (QCs) for sampling and analysis will be implemented to ensure that measurement data collected meets the information objectives for this investigation. QC will be implemented by adhering to the sampling procedures described in the approved sampling and analysis plan; documenting sampling activities and sample custody; using controlled and standard equipment and materials; and collecting, analyzing, and evaluating field and laboratory QC samples.

F.~~4~~5.2 Phase II: Hazard Surveys

Phase II activities will be conducted only if contamination is identified during Phase I activities. Phase I activities are sufficient to detect the presence of contamination, if any, by RCRA-regulated waste or ~~hazardous~~ constituents known to have been released at a Unit. During Phase I, samples will be collected from locations established using a sample grid or equivalent, and from visibly stained or discolored spots. If, based on Phase I initial sampling results, an area is contaminated, additional Phase II samples will be collected to ~~determine the extent of contamination. The purpose of Phase II activities is to~~ identify the nature and extent of contamination~~, if any,~~ at a Unit. Samples will be collected at intervals specified in each Unit-specific sampling and analysis plan until the lateral extent of surface contamination is defined. Phase II sampling will be done in accordance with the procedures outlined in Section F.5~~6~~.

F.~~4~~5.3 Phase III: Decontamination Procedures

Decontamination will be performed only if contamination requiring remediation is found during Phase II hazard surveys. Otherwise, Phase III will not be conducted. All sampling conducted during decontamination will be done in accordance with sampling procedures in Section F.5~~6~~ of this appendix.

Appropriate remedial actions will be determined and undertaken after Phase I and II contamination investigations have been conducted. To the extent possible, all contaminated structures, surfaces, and equipment (if present) at a Unit will be decontaminated. The following general principles apply to decontamination of all RCRA-regulated Units at SNL/NM:

- If Phase III decontamination activities are performed, confirmatory samples will be collected to verify achievement of closure performance standards. The confirmatory samples will be collected at intervals specified in a Unit-specific sampling and analysis plan until the lateral extent of surface contamination is defined. Secondary containment surfaces will be inspected for cracks or gaps prior to decontamination to identify potential biased sampling locations to confirm that closure performance standards have been met.

- Before transport off-site or use elsewhere on-site, all equipment used for closure will be decontaminated via scraping and rinsing with high pressure water, steam, or other appropriate industrial cleaning solution until no visible evidence of contamination is present. Equipment decontamination may be performed in a specific decontamination staging area with adequate containment.

- Most personal protective equipment, plastic sheeting, and sampling equipment used by personnel performing decontamination activities will be disposable. These materials will be placed in containers and managed in accordance with all applicable requirements of 20 NMAC 4.1.300/40 CFR 262.34 [6-14-00], pending arrangements for transfer to an SNL/NM Unit or an off-site permitted TSDF.

- Any residues, rinsate, or wastes generated during decontamination activities, or equipment that cannot be successfully decontaminated will be handled in accordance with all

applicable requirements of 20 NMAC 4.1.300/40 CFR 262.34 [6-14-00], pending arrangements for transfer to an SNL/NM Unit or an off-site permitted TSDF.

- Sandia/DOE may propose improved decontamination technologies or an alternative demonstration of decontamination at the time of closure. This information would be submitted to NMED prior to closure in an updated Unit-specific Closure Plan.

The following sections describe decontamination procedures applicable to specific types of waste management Units.

F.5.3.1 Container Storage Units

The decontamination procedures described below are designed to satisfy closure performance standards by describing the steps taken to remove or decontaminate all RCRA-regulated waste residues and contaminated containment system components, equipment, and structures during closure. Soil and groundwater are not expected to be impacted by operations at container storage Units, as the Units are located inside buildings for protection from the weather, are equipped with impermeable secondary containment systems, and have been regularly inspected and maintained.

The decontamination techniques described below apply to hardened surfaces present in container storage Units such as asphalt, concrete, sheet plastic, and metal. These surfaces include the floors, walls, secondary containment structures, and miscellaneous equipment. Not all the steps will be required for each surface; some steps are contingent on the outcome of prior steps. The procedures described below are intended to allow structures and equipment in container storage Units to be returned to service in the management of non-RCRA regulated materials. These procedures may be revised before closure to incorporate new practices or technology.

- Remove gross residual material using brooms, mechanical sweepers, or similar equipment.
- Vacuum surface using a wet/dry vacuum equipped with a high-efficiency particulate air filter.
- Inspect surface and identify any stained areas for further cleanup.
- Small areas may be cleaned by hand using a solution of water and a surfactant (e.g., Alcojet™ washing detergent or equivalent) until all visible material is removed.
- For larger areas or those with stains that cannot be removed by hand cleaning, wash surface with a high pressure, low volume water spray using a surfactant (e.g., Alcojet™ washing detergent or equivalent) until all visible material is removed.
- Collect used wash water using appropriate means and sample for final disposition analytes (see Section 7.0 of appropriate Unit-specific module for required sample analytes).
- Allow surfaces to air dry.
- Conduct a walk-through visual inspection of all decontaminated surfaces.

- Repeat surface wash and wash-water collection procedures until all visible signs of contamination have been removed. Visible contamination that cannot be removed by washing will be removed by scraping or chipping using appropriate tools and equipment.

- Verify the absence of visible contamination using a site inspection logbook or memo entries and visual documentation (e.g., videotaping, photographing).

Wastes generated during closure of a Unit will be characterized and containerized, and the containers will be appropriately labeled. Containers of RCRA-regulated waste will be managed in accordance with 20 NMAC 4.1.300/40 CFR 262.34 [6-14-00], pending arrangements for transfer to an SNL/NM Unit or an off-site permitted TSDF.

~~Decontamination methods may include hot-water washing, chemical cleaning, dry decontamination, or other cleaning methods, as appropriate. Structures or items (e.g., equipment that cannot be decontaminated) will be managed in compliance with appropriate regulations. If Phase III decontamination activities are performed, confirmatory samples will be collected to verify achievement of closure performance standards. Samples will be collected at intervals specified in a Unit-specific sampling and analysis plan until the lateral extent of surface contamination is defined.~~

~~Most personal protective equipment, plastic sheeting, and sampling equipment used by personnel performing decontamination activities will be disposable. These materials will be placed in containers and managed as RCRA-regulated, radioactive, or solid waste, whichever is appropriate, based on detected contaminants. The containerized cleanup materials and equipment will be moved to appropriate Units at SNL/NM.~~

~~Any nondisposable tools and equipment used during decontamination will be cleaned as necessary to remove residue. Equipment that cannot be successfully decontaminated will be disposed of as RCRA-regulated or radioactive waste, as appropriate.~~

~~RCRA-regulated waste generated during closure of a Unit will be characterized and containerized, and the containers will be labeled. Containers of RCRA-regulated waste will be managed in accordance with 20 NMAC 4.1.300/40 CFR 262.34 [6-14-00], pending arrangements for on-site transfer to a storage facility at SNL/NM or an off-site permitted treatment, storage, or disposal facility.~~

~~An alternative demonstration of decontamination may be proposed at the time of closure, as circumstances indicate.~~

F.5.3.2 Waste Treatment Units

The closure processes described above are appropriate for indoor areas at Units where treatment in containers occurs (i.e., the Radioactive and Mixed Waste Management Facility and the Auxiliary Hot Cell Facility). The closure processes described above are also appropriate for the Thermal Treatment Facility (TTF) treatment equipment. Closure activities (if needed) for areas immediately surrounding the TTF treatment equipment will be addressed in the sampling and analysis plan to be prepared prior to closure.

F.45.4 Phase IV: Closure Certification

An independent, registered professional engineer will verify that closure activities followed the approved plan. Upon completion of closure, a letter certifying that the Unit was closed according to the approved plan will be prepared. The letter will be dated and signed by the engineer and will be stamped by the engineer with his or her professional seal. The original copy will be submitted to the Secretary of the NMED.

Upon completion of the closure activities, Sandia/DOE will submit closure information to the Secretary of the NMED. This information will include:

- Certification of closure
- Location and custodian of all closure documentation.

Additional information will be available, upon request, in the documentation supporting the independent registered professional engineer's certification in accordance with 20 NMAC 4.1.500/40 CFR 264.115 [6-14-00]. The supporting documentation will include:

- Discussion of closure activities
- Laboratory analyses/results summaries
- Original laboratory data package(s)
- Quality assurance (QA)/QC documentation for contract laboratory analyses.

F.56 SAMPLING AND ANALYSIS PLAN (20 NMAC 4.1.500/40 CFR 264.112[B][4,5])

Sampling and analysis activities will be performed to determine the presence or absence of contaminants (Phases I and II) or to verify decontamination (Phase III). Sample collection will be performed in accordance with established sampling procedures (e.g., EPA, American Society for Testing and Materials [ASTM]) or equivalent methods so that samples are representative of the Unit conditions at closure. Sample collection equipment and techniques are specified in this site-wide Closure Plan (Table F-1). Unit-specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) will be provided in an updated sampling and analysis plan as described in Section 7.5 of the appropriate Unit-specific module. These Unit-specific sampling and analysis plans will be submitted to NMED for approval prior to initiation of closure activities.

F.56.1 Sample Locations, Collection, and Handling

Sample locations will be determined during closure. Typical locations are described in Sections F.45.2 and F.45.3. Sample collection methods may include wipe sampling, chipping, coring, or drilling, as appropriate. Representative samples of clean and used decontamination wash water will also be collected using appropriate equipment.

Table F-1
Sampling and Analysis Plan for Closure of Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Units

Activity	Sampling Method/Type	Parameters of Interest[a]	Sample Number/ Frequency
Operations and site reviews	1) Visual observation 2) Review of RCRA-regulated waste management unit documentation/ records	1) Staining, discoloration 2) RCRA-regulated ~~Hazardous~~ constituents known to have been released during the operational life of the unit	1) Not applicable 2) Not applicable
Wall/floor surface sampling	Filter wipe	1) Physical state 2) RCRA-regulated ~~Hazardous~~ constituents known to have been released during the operational life of the unit	1 per area of discrete staining/discoloration and 1 per sampling grid location
Characterization of decontamination equipment[b] (e.g., personal protective equipment, plastic sheeting, dry wipes, and tools)	Filter wipe Liquid sampling Acceptable knowledge	1) Physical state 2) RCRA-regulated ~~Hazardous~~ constituents known to have been released during the operational life of the unit	As appropriate
Quality control sampling	Rinsate blanks, trip blanks, duplicate samples	1) Physical state 2) RCRA-regulated ~~Hazardous~~ constituents known to have been released during the operational life of the unit	1 per day per piece of sampling equipment[c] 1 per sample shipment[d] 1 per every 10 clean and used wash water samples[e]

[a] The parameters of interest are determined by reviewing Unit operating records to determine RCRA-regulated ~~hazardous~~ constituents and characteristics of RCRA-regulated wastes known to have been released at the Unit.
[b] Decontamination equipment wastes will be characterized using the results of decontamination sampling and analysis (i.e., used wash water or wipe sampling, as appropriate).
[c] Applicable to rinsate blanks.
[d] Applicable to trip blanks.
[e] Applicable to duplicate samples.

Samples will be collected, stored, and preserved in accordance with established and applicable procedures (e.g., EPA, ASTM). Samples will be analyzed for RCRA-regulated waste and ~~hazardous~~ constituents known to have been released during the operational life of the Unit.

F.56.1.1 Sample Collection Documentation

Sample collection will be documented for each sample following QA/QC information established by EPA guidelines~~, current SNL/NM procedures,~~ or equivalent methods.

F.56.1.2 Sample Identification

Each sample container will be labeled or marked with appropriate QA/QC information and laboratory analysis established by EPA guidelines~~, current SNL/NM procedures,~~ or equivalent methods.

F.56.1.3 Sample Preservation, Handling, and Shipment Preparation

Sample preservation and handling will be in accordance with applicable QA requirements. Proper container, preservative, and holding time requirements for each parameter will follow EPA guidelines~~, current SNL/NM procedures,~~ or equivalent methods. Sample shipment will be in accordance with U.S. Department of Transportation and International Air Transport Association ~~s~~Shipping requirements, as applicable.

F.56.1.4 Quality Control Sampling

The quality of data from initial and confirmatory sampling efforts will be controlled by using blank and duplicate samples. Blanks and duplicate samples will be collected so that the extent of any contamination introduced during sample collection and handling and the precision of the total sample collection and laboratory analysis system can be determined. Sampling equipment rinsate blanks will be collected at a frequency of one per day for each piece of sampling equipment to determine if samples have been cross contaminated by sampling equipment. One trip blank will accompany each sample shipment submitted for analysis to determine if volatile contaminants are introduced during shipment. One in every ten clean and used wash water samples collected will be submitted in duplicate for analysis and determination of precision. The blanks and duplicate samples will be treated as separate samples. Objectives for acceptable QC sample analytical results will follow available EPA guidance~~, current SNL/NM procedures,~~ or equivalent methods.

F.56.1.5 Analysis Request/Chain-of-Custody Form

In order to document the integrity of samples from collection to analysis, sample possession will be recorded on an analysis request/chain-of-custody form, which will be prepared for samples collected for laboratory analyses. This form is to be initiated at the point of sample collection and

will be kept with the samples during transfer to the laboratory. The form will be completed upon receipt in the laboratory. Specific analysis request/chain-of-custody procedures will follow available EPA guidance~~current SNL/NM procedures~~ or equivalent methods.

F.5~~6~~.1.6 Sampling Equipment Decontamination Procedures

To minimize the potential for cross contamination between samples, dry decontamination procedures may be used.

F.5~~6~~.2 Laboratory Analysis

Chemical constituents to be analyzed for during closure will be determined based on the ~~hazardous~~ constituent(s) listed in 20 NMAC 4.1.500/40 CFR 264, Appendix IX [6-14-00], and known to have been released during the operational life of the Unit. Analytical procedures will conform to "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," (EPA, 1986 and all approved updates) or other appropriate established methods.

F.6~~7~~ CLOSURE SCHEDULE (20 NMAC 4.1.500/40 CFR 264.112[B][6], 264.112[D], AND 264.113)

The schedule for completion of closure activities is shown in Table F-2. Closure is expected to take 180 days. If unforeseen circumstances that impact this schedule arise during closure, a Closure Plan modification will be requested in accordance with 20 NMAC 4.1.500/40 CFR 26~~4~~5.113(b)(1)(i) [6-14-00].

F.7~~8~~ CLOSURE PLAN AMENDMENT (20 NMAC 4.1.500/40 CFR 264.112[C])

This Closure Plan will be amended if any changes occur in the operating plans or Unit design that affect the plan, such as Unit size or capacity, types of RCRA-regulated waste in the Unit at closure, maximum waste inventory, or the closure schedule. The plan will be amended if, during closure, unexpected events require the plan to be modified. Additionally, the plan will be amended if there are changes in technical considerations such as availability of new technology, changes in requirements, or operating contingencies.

This site-wide Closure Plan is intended to provide general closure policies and procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. It is expected that revisions to the Unit-specific modules made prior to closure will address all necessary information, without requiring amendments to this site-wide Closure Plan.

~~This Closure Plan will be amended if, during closure, unexpected events require the plan to be modified. Additionally, the plan will be amended if there are changes in technical considerations, such as availability of new technology, changes in requirements, or operating contingencies.~~

Table F-2
Closure Schedule for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units

Activity[a]	Schedule[b]
Submit updated Unit-specific closure plan (Section 7.0 of appropriate Unit-specific module)	Prior to closure notification
Receive NMED approval of updated Unit-specific closure plan	Prior to closure
Notify the New Mexico Environment Department (NMED) of closure	Day minus~~-~~45
Begin closure activities	Day 0
Begin records review and site observations	Day 1
Conduct hazard surveys, if necessary	Day 90
Conduct decontamination activities, if necessary	Day 120
Verify decontamination, if necessary	Day 140
Complete final closure	Day 180
Submit closure certification to NMED	60 days later ~~from final closure~~

[a] Some activities may be accomplished concurrently with others.
[b] This schedule represents estimated completion time; some activities may be completed earlier than scheduled. Also, the schedule assumes that updated Unit-specific closure plans will be approved by NMED prior to notification of closure by SNL/NM.

If this Closure Plan requires amendment(s), Sandia/DOE will request authorization from the NMED in writing, in accordance with 20 NMAC 4.1.500/40 CFR 264.112(c) [6-14-00].

F.~~8~~9 FINANCIAL REQUIREMENTS (20 NMAC 4.1.500/40 CFR 264.140[C])

Cost estimates, financial assurance mechanisms, and liability coverage for closure and post-closure activities are not included. Federal facilities are exempt from these requirements, in accordance with 20 NMAC 4.1.500/40 CFR 264.140(c) [6-14-00].

F.~~9~~10 POST-CLOSURE CARE (20 NMAC 4.1.500/40 CFR 264.117 THROUGH 264.120)

Sandia/DOE plan to clean close all Units at the SNL/NM facility. Because all RCRA-regulated waste will be removed from the Units and the Units will be decontaminated, if necessary, at closure, a general post-closure care plan is not required. Potential post-closure care activities at the TTF are addressed in Module II.

F.~~10~~11 SURVEY PLAT [20 NMAC 4.1.500/40 CFR 264.116]

Sandia/DOE plan to clean close all Units at SNL/NM. Because all RCRA-regulated waste will be removed from the Units and the Units will be decontaminated, if necessary, at closure, a survey plat is not required.

REFERENCE

EPA, see U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

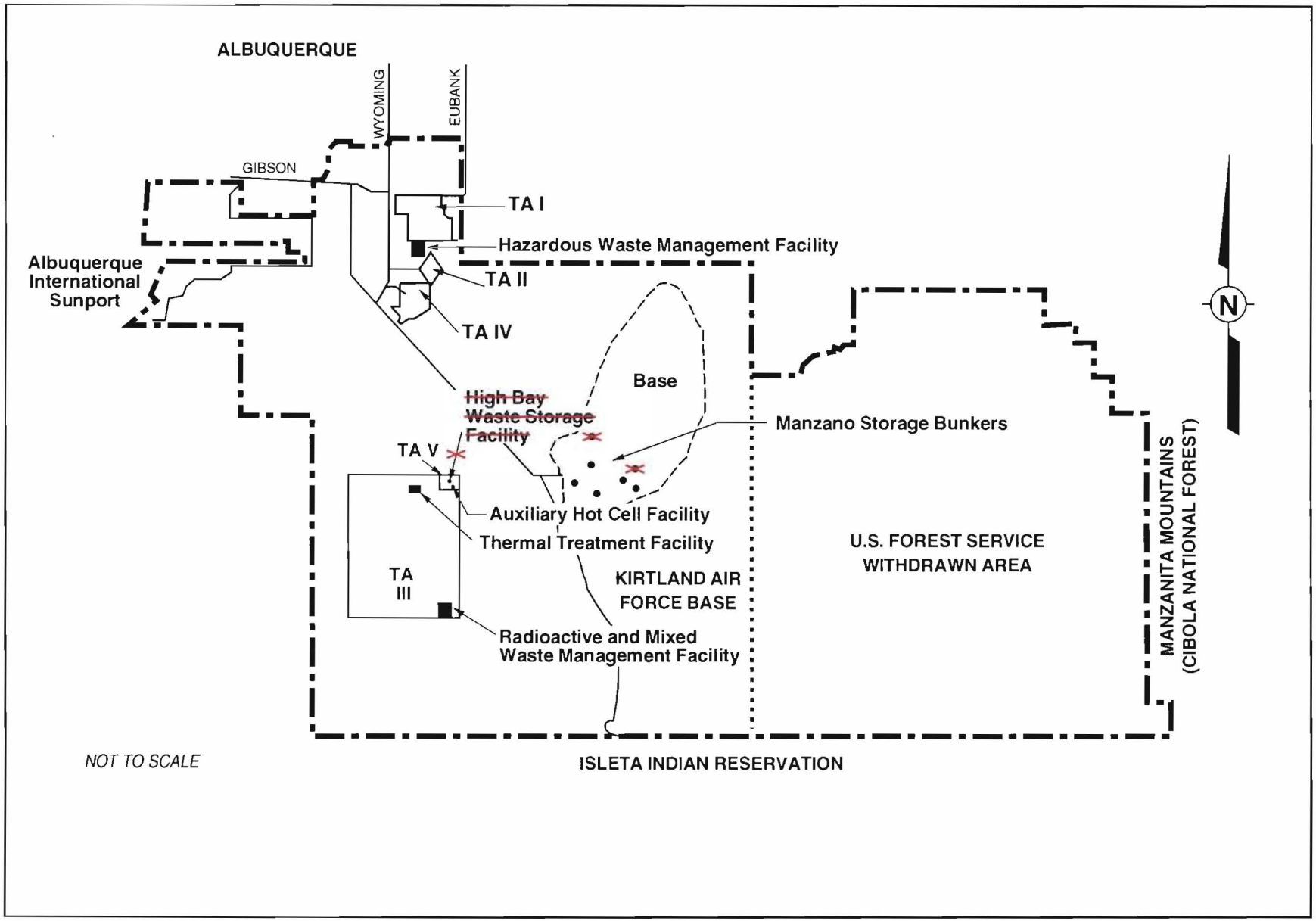

Figure F-1

Sandia National Laboratories/New Mexico, Technical Areas (TAs) and Resource Conservation and Recovery Act-Regulated Waste Management Units

Module I - HMWF

Sandia National Laboratories/New Mexico Hazardous Waste Management Facility Part B Permit Renewal Request

Module I

Revision 2.0

April ~~February~~ 2003

Prepared by
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185

Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
DOE	U.S. Department of Energy
ft	foot/feet
ft^2	square foot/feet
HWMF	Hazardous Waste Management Facility
HSWA	Hazardous and Solid Waste Amendments
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	Solid Waste Management Unit
TSDF	treatment, storage, and disposal facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

SANDIA NATIONAL LABORATORIES/NEW MEXICO HAZARDOUS WASTE MANAGEMENT FACILITY PART B PERMIT RENEWAL REQUEST

This Sandia National Laboratories/New Mexico (SNL/NM) Hazardous Waste Management Facility (HWMF) Part B Permit Renewal Request is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage operations at the HWMF. 20 NMAC 4.1.500 and .900, adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared and revised ~~are providing~~ this module to provide ~~address~~ Unit-specific details ~~and/or requirements~~ that supplement the information ~~those~~ provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application" ~~(SNL/NM, 2003a),~~ hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, ~~and~~ in the SNL/NM General Part B, and in the appendices to the General Part B ~~(SNL/NM, 2003a)~~ meet the applicable requirements for the HWMF that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00], and 20 NMAC 4.1.900/ 40 CFR 270 [6-14-00].

Sandia/DOE also prepared~~submitted~~ the "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" (SNL/NM, 2003~~2~~), hereinafter referred to as the SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The ~~SNL/NM~~ General Part A ~~(SNL/NM, 2002)~~ serves as a companion document to the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ and Unit-specific Part B modules, including this HWMF Part B Permit Renewal Request.

In ~~both~~ the ~~SNL/NM~~ General Part A, ~~(SNL/NM, 2002) and SNL/NM~~ the General Part B, ~~(SNL/NM, 2003a) submittals~~ its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Hazardous Waste Management Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The HWMF occupies 1.35 acres on DOE property between TA-I and TA-II. It is a fenced compound with several buildings and waste management areas (WMAs). Operations include storage of RCRA-regulated wastes in containers and repackaging the wastes into suitable containers for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A ~~(SNL/NM, 2002)~~ may be managed at the HWMF. Sandia/DOE currently operate the HWMF in accordance with the terms of NMED Permit NM5890110518-1, issued August 6, 1992 (NMED, 1992).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the HWMF WMAs and specific Unit waste management operations. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

Specific information in this section regarding~~includes:~~

~~B~~Unit operations~~,~~ includes:~~ing:~~ containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and

~~B~~c~~C~~ontainer storage of RCRA-regulated wastes.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003a)~~, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [6-14-00].

1.1 Designated Waste Management Areas

The location of the HWMF at SNL/NM is shown on Figure 1. The HWMF has three designated WMAs, shown on Figure 2:

- The Hazardous Waste Packaging Building (Building 959),
- The Hazardous Waste Storage Building (Building 958), and
- Two modular storage buildings.

The following sections provide descriptions of the storage structure, location, capacity, and secondary containment of each WMA.

1.1.1 Hazardous Waste Packaging Building (Building 959)

In the Hazardous Waste Packaging Building, lab packs are prepared by placing small containers into larger containers filled with absorbent material, and other wastes are repackaged into containers for shipment to off-site treatment, storage, and disposal facilities (TSDFs).

The Hazardous Waste Packaging Building is the easternmost WMA at the HWMF and is an ~~provides~~ 1,800-square-foo~~ot~~ot (ft^2) ~~of enclosed floor space (Figures 2 and 3). The building is constructed of~~ precast concrete ~~construction~~ building with an eave height of 12 feet (ft) (Figures 2 and 3). Eight ~~recessed~~ waste-holding cells and a ~~recessed~~ waste packaging area (all with recessed floors) are located in the building. The recessed floors of the cells and packaging area are constructed of reinforced concrete and are covered with metal grating. Waste containers are placed on shelves over the metal grating over the recessed secondary containment areas. The load-bearing capacities of the metal grating and the reinforced

concrete floor ~~and the metal grating~~ are 450 and 2,000 pounds per ft^2, respectively. The entire floor of the building and the bottom seven inches of wall surface in each recessed area are covered with an epoxy-based chemical-resistant coating. The coating forms a continuous protective barrier over the concrete and protects the floor from the effects of solvents and corrosive chemicals that may be released from the containers.

Secondary containment is provided by the recessed areas. The recessed area in each holding cell is 5 feet by 4.5 feet and 7 inches deep, with a capacity of 71 gallons. The recessed area under the packaging area is 5 feet by 12 feet and 7 inches deep, with a capacity of 188 gallons.

Based on the secondary containment capacity (10% of the stored volume or the volume of the largest container), each of the eight holding cells in the Hazardous Waste Packaging Building can hold a maximum of 13 55-gallon drums, or an equivalent volume. The packaging area can hold a maximum of 34 55-gallon drums, or an equivalent volume. The stacking configuration of waste containers will not exceed the load-bearing capacity of the reinforced concrete or metal grating. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

1.1.2 Hazardous Waste Storage Building (Building 958)

The Hazardous Waste Storage Building (Building 958) is located west of the Hazardous Waste Packaging Building (Figure 2). The Hazardous Waste Storage Building is a 3,250-ft^2 precast concrete building with an eave height of 14 ft. In the Hazardous Waste Storage Building, eight separate and recessed waste storage compartments for segregation of waste groups are contained in the building (Figure 4). The floors of Cells 1, 2, 3, 4, 6, 7, and 8 are constructed of reinforced concrete and metal grating. The floor of Cell 5 is constructed of reinforced concrete. The entire floor (all cells and walkway) is coated with an epoxy-based chemical-resistant coating. The coating protects the concrete from the effects of solvents and corrosive chemicals that could~~may~~ be released on the floor in the event of a spill. Waste containers are placed on metal grating over the secondary containment area, or on pallets on the reinforced concrete floor in Cell 5. The load-bearing capacity of the metal grating and reinforced concrete ~~and metal grating~~ are 450 and 2,000 pounds per ft^2, respectively. The storage compartments vary in size, secondary-containment capacity, and waste-container capacity.

The secondary containment in Bays 1, 2, 3, 4, 6, 7, and 8 is provided by the recessed areas under the grating. The secondary containment capacity in Bay 5 is provided by the volume of the entire recessed area. For example, the recessed area in Bay 1 is 11.75 feet by 14.67 feet by 5 inches deep, with a capacity of 542 gallons. The secondary containment capacity is 10% of the stored volume or the volume of the largest container; thus, the storage capacity in Bay 1 is 5420 gallons, 98 55-gallon drums, or an equivalent volume. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

Based on the secondary containment capacity, the storage compartments are limited to the following maximum storage capacity of 55-gallon drums, or equivalent volume, as listed in Table 1.

Table 1
Secondary Containment Capacity for Building 958

Bay No.	Maximum Number of 55-Gallon Drums
1	98
2	79
3	79
4	79
5	518[a]
6	79
7	79
8	79

[a] A portion of the secondary containment capacity is taken up by pallets.

The stacking configuration of waste containers will not exceed the load-bearing capacity of the reinforced concrete floor or the metal grating.

1.1.3 Modular Storage Buildings (958B and 958C)

The modular storage buildings are located west of Building 958 (Figure 2) and are used for storage of reactive wastes, including, but not limited to, lithium batteries, gas cylinders, and flammable solids.

The exterior dimensions of each modular storage building are 22 ft long, 8 ft wide, and 8 ft high. The buildings are constructed of welded 10- and 12-gauge steel supported by structural steel sections. Each building has three doors, each with a three-point locking system to provide access and security. Each has a 6-inch-deep integral spill containment reservoir under the entire building; the containment capacity is 500 gallons. The secondary-containment subfloor is constructed of continuously welded 10-gauge steel, which is epoxy-coated to resist chemical attack; the coating is compatible with reactive wastes. The floors are 1-inch-thick epoxy-coated, fire resistant plywood. The load-bearing capacity of the floor for each structure is 250 pounds per square foot. The inside walls and ceiling are also coated with chemical-resistant epoxy. Each building rests on structural supports that elevate it and allow visual inspections of the underside of the spill containment reservoir. The secondary containment capacity is 10% of the stored volume or the contents of the largest container; thus, the storage capacity is 5000 gal. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

1.2 Unit Operations

The HWMF WMAs are used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency Hazardous Waste Numbers listed in the ~~SNL/NM~~ General Part A ~~(SNL/NM, 2002)~~.

~~General~~ Iinformation regarding operation of all RCRA-regulated Units at SNL/NM is included ~~: containment systems; management of ignitable, reactive, and incompatible wastes;~~

~~preparedness and prevention; and hazards prevention requirements applicable to the HWMF WMAs are addressed~~ in Section 1.1 of the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003a)~~. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.15[a] and [b]; 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Containers are inspected for integrity when the wastes arrive at the HWMF, before they are placed on the shelves in the holding cells in Building 959. The shelves ~~in the holding cells in Building 959~~ have edges, but they ~~shelves~~ are not used to provide additional containment. ~~Containers are inspected for integrity when the wastes arrive at the HWMF, before they are placed on the shelves.~~ Containers of highly corrosive liquids may be placed within larger containers to capture any releases that may occur. Containers on the shelves are inspected regularly as noted in Appendix C ~~(SNL/NM, 2002c)~~ of the General Part B. Released materials are cleaned up as described in Section 1.1.1 of the General Part B ~~(SNL/NM, 2003a)~~.

Unit personnel begin taking action to evaluate and remove accumulated liquids in each ~~the~~ secondary containment area in the HWMF upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.~~Personnel attempt to identify the source, if possible. Accumulated liquid containing RCRA-regulated wastes may be sampled and analyzed as needed before removal to determine the most appropriate method of removing the liquid from the containment. The liquid is then pumped into containers or collected onto absorbent material, picked up, and placed into containers. Containerized liquids are characterized in accordance with the Waste Analysis Plan provided as Appendix B of the SNL/NM General Part B (SNL/NM, 2003b).~~

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 270.15[c] and [d]; 20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177)

Any of the ignitable or reactive wastes listed in the General Part A ~~(SNL/NM, 2002)~~ may be managed at the HWMF. The general precautions and practices employed by Unit personnel are described in Section 1.1.2 of the General Part B ~~(SNL/NM, 2003a)~~. Additional HWMF-specific features, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes and stored in the modular storage buildings. They may temporarily be managed in Building 959 after receipt and during repackaging activities.
- Forklifts are not used for waste movement in Building 959 to minimize potential sources of ignition in the building.
- Unit personnel use the process described in Section 1.1.2 to ground containers during transfer of flammable liquids between containers.

- The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. They ~~and~~ are equipped with a dry chemical fire suppression system to assure that water-reactive wastes will not be exposed to water during fire emergencies.

- Wastes are mixed together on a very limited basis during the repackaging operations at the Unit. Ignitable and reactive wastes are only mixed on a case-by-case basis. Unit personnel plan each such operation carefully ~~will use waste characterization data during repackaging~~ to identify the hazards and potential consequences~~, as described in Appendix B, Section B.5~~. Personnel use waste characterization data and/or published chemical information (e.g., NIOSH Pocket Guide to Chemical Hazards or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions.

- Containers of wastes are labeled and segregated in different holding cells in Building 959 according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. Containers in Building 958 are labeled. They are segregated into different bays according to general DOT hazard classes in 49 CFR 172 and 20 NMAC4.1.500/ 40 CFR 264 Appendix V as appropriate. The holding cells and bays are separated from each other by concrete walls and independent containment systems.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarms systems at the HWMF.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

General information about fire hydrants at each Unit is provided in Section 1.1.3.1 of the General Part B ~~(SNL/NM, 2003a)~~. The fire hydrant at the HWMF is shown in Figure 10.

The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. All buildings at the HWMF are equipped with automatic fire suppression systems, which are summarized in Table 2.

Information on other required equipment located at the HWMF is provided in Section 6.0 and Table 4 -of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the HWMF is provided in Section 1.1.3.2 and in Appendix C of the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003b)~~, and in Section 4.0 of this module.

Table 2
Fire Suppression Systems at the Hazardous Waste Management Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
959	13, 30	Special	Automatic sprinkler, wet pipe	GB/FS
958	13, 30	Special	Automatic sprinkler, dry pipe	GB/FS
958B	17	N/A	Dry chemical	
958C	17	N/A	Dry chemical	

[a] National Fire Protection Association (NFPA), 2000, 2002~~see references~~
[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the HWMF is provided in Section 1.1.3.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ and in Section 6.0 of this module.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the HWMF to prevent hazards. Additional information applicable to the HWMF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B ~~(SNL/NM 2003a)~~.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

HWMF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ to prevent hazards in unloading. Loading and unloading activities typically take place on the south side of buildings 958 and 959 (Figure 7). The surface is level, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Containers are typically shrink-wrapped to hold them together on a pallet before being loaded onto vehicles by a forklift for off-site shipment. Containers are typically transported within the Unit with drum dollies or pallet jacks.

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

The land around the HWMF is generally level, sloping gently toward the south and west. The paved areas of the HWMF are higher than the surrounding land on all sides, preventing sheet-

flow run-on of surface water from surrounding areas. The western edge of the paved area is also surrounded by a 6-inch high asphalt curb, further preventing runon and runoff from HWMF WMAs.

Within the HWMF, the paved areas are sloped toward a 74,800-gallon catchment pond located at the northwest corner of the Unit. During normal operations, the catchment pond collects only storm water. The catchment pond does not provide secondary containment for RCRA-regulated waste.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the HWMF will affect water supplies, as described in Section 1.1.4.3 of the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003a)~~.

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B ~~(SNL/NM, 2003a)~~. The HWMF is equipped with battery-operated ~~lights which~~lights that will automatically turn on in the event of a power failure. A permanent power transformer can provide emergency power from the SNL/NM emergency power network.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

HWMF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ to prevent undue exposure. In addition, a fume hood and drum vacuum hoods are available in Building 959 and can be used if there is a need to open a container of vapor-generating RCRA-regulated waste to sample the waste or transfer it to another container.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

HWMF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere during storage.

Subpart AA

HWMF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. HWMF repackaging operations sometimes involve a pump used in light organic service. It is used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [6-14-00]. The equipment list will be noted in the HWMF records, and equipment use will also be noted in the records.

Subpart CC

HWMF personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ to prevent releases to the atmosphere in accordance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B of the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00]. ~~RCRA-regulated waste containers may be opened to sample waste or transfer waste to another container. These activities are done only in the Hazardous Waste Packaging Building (959). A fume hood and drum vacuum hoods are available if there is a need to open a vapor-generating waste container. Only one category of waste is present in a ventilation system at any time.~~

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR, Subpart I)

The HWMF is permitted for container storage of RCRA-regulated wastes in accordance with the conditions of "Sandia National Laboratories/New Mexico Hazardous Waste Facility Operating Permit Number NM5890110518-1" (NMED, 1992). Container storage practices applicable to the HWMF are presented in the following sections.

1.3.1 Container Types and Labeling

HWMF personnel use the containers types and labeling practices described in Section 1.2.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

HWMF personnel employ the container handling practices described in Section 1.2.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.1 Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)

The condition of containers at the HWMF is maintained as indicated in Section 1.2.2.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

HWMF personnel employ the aisle space and storage configuration as described in Section 1.2.2.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Aisle width is typically 2.5 feet in all buildings. This is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked in Building 958 are stored on pallets, and are not stacked more than two pallets high. Smaller containers may be stacked on a single pallet. Box-shaped containers may be stacked two high without pallets. Containers may also be stored directly on the floor or on the grating.

Fifty-five-gallon d~~D~~rums stored in the modular buildings are not stacked. Smaller containers may be stacked.

1.3.2.3 Compatibility of Waste with Containers (20 NMAC 4.1.500/40 CFR 264.172)

HWMF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

All container storage areas at the HWMF are equipped with secondary containment. Therefore, Unit personnel do not verify whether containers contain free liquids before storage.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500 and ~~100~~–.900/40 CFR 264~~260–266, 268,~~ and 270) [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Section 2.0 and Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the HWMF.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The HWMF is located on DOE property between TA-I and TA-II (Figure 1). The Unit is surrounded by an 8-ft high chain-link fence topped with barbed –wire. A single entrance gate is located on the east side of the HWMF. The gate is locked during non-operational~~work~~ hours. An emergency exit gate is located on the west side of the Unit, as shown in Figures 6 and 7. This gate is locked at all times and can only be opened from the inside by pressing on the handle. All buildings are also kept locked during non-operational hours. As noted in Appendix A of the General Part B ~~(SNL/NM, 2003b)~~, Sandia security personnel periodically monitor the HWMF gates during non-operational hours.

During work hours, Unit signs instruct personnel and visitors to report to Office Trailer #1 for site entry privileges and instructions. Resident personnel have Sandia-issued badges.

Nonresidents are escorted while on site. These procedures limit access to the HWMF RCRA-regulated WMAs, in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The permanent perimeter fences surrounding the HWMF and the entrance to the HWMF are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, ~~and~~ are legible from a distance of 25 ft, and can be seen from any approach to the HWMF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003b)~~.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes to the HWMF include Hardin Boulevard (formerly O Street), Pennsylvania Avenue, Wyoming Boulevard, Eubank Boulevard, and 9th, 14th, and P Streets as shown in Figures A-4 and A-5 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

Waste transport vehicles enter the HWMF from 14th Street (Figure 5). Within the HWMF, waste is transported on paved surfaces.

2.2.2 Traffic Volumes

Traffic volumes on Hardin Boulevard, Wyoming Boulevard, and Eubank Boulevard are generally light to moderate; traffic volumes on Pennsylvania Avenue and 9th, 14th, and P Streets are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Approximately 10 to 30 vehicles per week travel into and out of the HWMF. These include flatbed trucks and trailers carrying supplies, RCRA-regulated wastes from initial generators, and RCRA-regulated wastes to off-site TSDFs.

2.2.3 Traffic Control Signals

Traffic on the access road is controlled by a stop sign at each end of the road: one at the intersection with 14th ~~P~~ Street, and a stop sign and speed limit sign posted on the fence adjacent to the HWMF vehicle entrance gate (Figure 5). The speed limit within the HWMF fenced area is 5 miles per hour and no private vehicles are allowed inside the HWMF. Vehicle

presence within the fenced HWMF is limited to work and waste transport vehicles (i.e., no personal vehicles). Therefore, signals or signs are not necessary to control traffic within the HWMF fenced area.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11] [i and ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMAs at the HWMF are not located within 3,000 ft of any fault with Holocene displacements (see Section A.4.2 in Appendix A ~~[SNL/NM, 2002c]~~ of the SNL/NM General Part B).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the HWMF are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the ~~SNL/NM~~ General Part B ~~[SNL/NM, 2003b]~~).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).

- Surface waters, including intermittent streams, near the HWMF are shown on Figure A-2 in Appendix A of the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003b)~~ and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [6-14-00]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003b)~~ and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [6-14-00]). The area surrounding the HWMF is occupied by other Sandia-controlled operations (industrial land use). As noted in Appendix A, the nearest residential areas are located west of Pennsylvania Avenue, north of Hardin Blvd (west of SNL/NM TA-I~~1~~), more than one mile away from the HWMF.

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003b)~~ and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).

- Legal boundaries of SNL/NM (including the HWMF) are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][vii] [6-14-00]).

- Access control features at the HWMF (e.g., fences, gates) are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the HWMF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).

- The location of the HWMF and associated WMAs and structures, loading and unloading areas, roads, and sanitary sewers are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][x] [6-14-00]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00]).

- Locations of the HWMF and HWMF WMAs are shown on Figures 1, 2, and 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the HWMF. As provided for in 20 NMAC 4.1.900/ 40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to NMED at these scales and contour intervals due to the size of the HWMF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of the Sandia/DOE comprehensive Part B permit request. The HWMF is not a regulated Unit. There have been no releases of RCRA-regulated waste in the past, nor is the HWMF likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

In accordance with 20 NMAC 4.1.900/40 CFR 270.14[b][2] and~~;~~ 20 NMAC 4.1.500/40 CFR 264.13, "General Waste Analysis"~~; and 20 NMAC 4.1.800/40 CFR 268.7, "Waste Analysis and Record-Keeping,"~~ [6-14-00], waste analysis requirements applicable to all Units, including the HWMF, are addressed in Appendix B of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] require that waste management areas (WMAs) and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the "Site-Wide Inspection Plan", provided as~~"~~ Appendix C of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. HWMF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 3, which includes the inspection criteria and frequency. The items listed in the table are inspected in each HWMF WMA.

~~Equipment subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00] will be used less than 300 hours per year. Equipment use will be documented during inspections, as appropriate.~~

Automatic fire suppression systems are included in Table 3. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems in accordance with the requirements of NFPA 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems~~,~~" (NFPA, 2002), as described in Section 1.1.3.2 of the General Part B ~~(SNL/NM, 2003a)~~.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B ~~(SNL/NM, 2003b)~~. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained at the HWMF. Inspection records for previous calendar years are maintained at the HWMF or the SNL/NM Records Center.

Table 3
Hazardous Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Eye wash / safety shower	Operational, accessible, in good condition	Monthly
Recovery drums and containers	Present and in good condition	Monthly
Self-contained breathing apparatus	Present and in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when wastes are managed. Monthly otherwise.
Secondary containment	Free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when wastes are managed. Weekly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when wastes are managed. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when wastes are managed. Monthly otherwise.
Monitoring equipment	Instruments in good condition, operational, calibrated	Daily when wastes are managed. Monthly otherwise.
Waste transfer pump	Present, operational, and in good condition	Prior to use. Monthly otherwise.

Table 3 (Concluded)
Hazardous Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
STORED CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Daily for individual containers that were handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Daily for individual containers that were handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Daily for individual containers that were handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Daily for individual containers that were handled. Weekly otherwise.
Location	Correct aisle space, correct stacking (2 maximum)	Daily for individual containers that were handled. Weekly otherwise.

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [6-14-00] "Personnel Training."

The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the HWMF.

HWMF personnel receive training in accordance with the "Site-Wide Personnel Training Plan"~~for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units"~~ provided as Appendix D of the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003b)~~.

Training records for HWMF personnel are maintained at the HWMF.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia /DOE Site-Wide Contingency Plan is included as Appendix E of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. Supplemental HWMF-specific information is included in this section, in Figures 9 and 10, and in Tables 4 and 5 of this module. Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained at the HWMF and at the SNL/NM Emergency Operations Center.

The HWMF is located at the curve of 14th and P Streets (approximately 1,000 feet (ft) north of the entrance to Technical Area II) at SNL/NM. The Unit ~~and~~ is used to repackage and store RCRA-regulated wastes. The RCRA-regulated WMAs at the HWMF include Building 958, Building 959, and the two modular storage buildings. The HWMF WMAs are located within a single area surrounded by a fence. All of the wastes listed in the General Part A may be stored at the HWMF.

- Building 959 is an 1,800-square-foot precast concrete building with an eave height of 12 feet. Inside the building are eight waste holding cells, a repackaging area, a restroom, a general use area, an office area, and an area for packing materials. The floor is coated with an epoxy finish. ~~A 1,200-square-foot covered outdoor area extends immediately to the west of Building 959.~~ Small containers of wastes (typically less than 55 gallons) are stored in this building. Containers of incompatible wastes are segregated into different holding cells. The containers and contents are repackaged into other ~~larger~~ containers for shipment to off-site facilities. Up to 7,590 gallons of waste may be stored in this building.

- Building 958 (west of Building 959) is a 3,520-square-foot precast concrete building with an eave height of 14 feet. The building includes eight separate and recessed waste storage compartments for segregation of waste groups according to compatibility. Containers of wastes are stored in this building. Up to 99,950 gallons of waste may be stored in this building.

- Buildings 958B and 958C are relocatable, prefabricated safety storage structures used for the storage of reactive and ignitable wastes. Each structure is constructed of welded 10- and 12-gauge steel with supporting structural steel sections, and each has three doors. The 500-gallon containment reservoirs within each building, the walls, and the ceilings are coated with chemical-resistant epoxy. The reservoirs are lined with polypropylene, which is compatible with reactive wastes. The floors are epoxy-coated, fire-resistant plywood. Up to 5,000~~5~~ gallons of waste may be stored in each building.

- Storage of reactive wastes, lithium batteries, gas cylinders and flammable solids is restricted to these two buildings except for temporary storage that may occur in Building 959 following acceptance of the waste at the HWMF.

Figure 9 presents the evacuation routes for the HWMF. Figure 10 presents emergency response and access information for the HWMF. Table 4 lists the emergency equipment typically available at the HWMF. Table 5 lists the emergency coordinators for the HWMF.

Current copies of the Site-Wide Contingency Plan (Appendix E of the General part B) and this supplemental information are maintained at the HWMF and at the SNL/NM Emergency Operations Center.

Table 4
Hazardous Waste Management Facility, Emergency Equipment and Locations

Building 958

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower / eyewash	Near south entrance
	Recovery drums and containers	At south entrance
	SCBA	At south entrance
	Miscellaneous personal protective equipment (protective suits, goggles, gloves)	At south entrance
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One each on the exterior and interior walls near north and south personnel doors
	Audible fire alarms	
External Communication System	Telephones – unlimited employee access	One on the interior walls near the north and south entrances
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One each on the exterior and interior walls near north and south personnel doors
Fire Extinguishers	Portable (A-B-C)	One at both the north and south entrances
Fire Suppression	Automatic wet-pipe water sprinkler system, with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	One hydrant, location shown in Figure 10

KAFB =-Kirtland Air Force Base.
SCBA =-Self-contained breathing apparatus.

Table 4 (Continued)
Hazardous Waste Management Facility, Emergency Equipment and Locations

Building 959

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower/eyewash	Near south entrance
	Recovery drums and containers	Near south entrance
	SCBA	Near south entrance
	Miscellaneous personal protective equipment (protective suits, goggles, gloves)	Near south entrance
	First aid kit	One in the bathroom
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).	One each on the exterior and interior walls near each personnel door
	Audible fire alarms	
External Communication System	Telephones – unlimited employee access	One in the office
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).	One each on the exterior and interior walls near each personnel door
Fire Extinguishers	Portable (A-B-C)	One at both the north and south entrances
	Lith-X	One in the general use area One in the office
Fire Suppression	Automatic wet-pipe water sprinkler system, heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	One hydrant, location shown in Figure 10

KAFB = Kirtland Air Force Base.

Table 4 (Concluded)
Hazardous Waste Management Facility, Emergency Equipment and Locations

Modular Storage Buildings (958B and 958C)

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Personal protective equipment Recovery drums and containers	Buildings 958 and 959
Internal Communication and Alarm System	Voice command	
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system). Audible fire alarms	Buildings 958 and 959
External Communication System	Telephones – unlimited employee access	Buildings 958 ~~and 959~~and 959
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)	Buildings 958 and 959
Fire Suppression	Ansul automatic dry chemical system	Coverage throughout the building

KAFB = Kirtland Air Force Base.

Table 5
Hazardous Waste Management Facility, Emergency Coordinator List

April 16, ~~February 18,~~ 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Charles Roma Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 844-0590 (office) (505) 263-7714 (cellular) (505) 540-4333 (pager)	(505) 271-5368
First Alternate	Brett Cummins~~Mark Miller~~ Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 844-1346~~845-8887~~ (office) (505) 238-3662~~681-4920~~ (cellular) (505) 540-5362 (pager)	(505) ~~839-4187~~ 275-1131
Second Alternate	David Castillo Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-4192 (office) (505) 540-9375 (pager)	(505) 899-1956

One or more of these personnel are routinely available during operating hours (8:00 am to 4:30 pm, Monday through Friday)

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13], and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, [6-14-00]. General closure information applicable to all RCRA-regulated Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. The site-wide Closure Plan~~general closure information~~ includes a description of the SNL/NM facility; waste description; closure performance standards; ~~an SNL/NM facility description~~; closure methods; sampling and analysis plan; closure schedule; procedures for amendment of the Closure Plan; closure certification and report; and survey plat and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The Hazardous Waste Management Facility (HWMF) is located at the curve of 14th and P Streets (approximately 1,000 feet (ft) north of the entrance to Technical Area II) at SNL/NM and is used to repackage and store RCRA-regulated wastes. The RCRA-regulated WMAs at the HWMF include Building 958, Building 959, and the two modular storage buildings. The HWMF WMAs are located within a single area surrounded by a fence.

- Building 959 is an 1,800-square-foot precast concrete building with an eave height of 12 feet. Inside the building are eight waste holding cells, a repackaging area, a restroom, a general use area, an office area, and an area for packing materials. The floor is coated with an epoxy finish. Small containers of wastes (typically less than 55 gallons) are stored in this building. Containers of incompatible wastes are segregated into different holding cells. The containers and contents are repackaged into other containers for shipment to off-site facilities

- Building 958 (west of Building 959) is a 3,520-square-foot precast concrete building with an eave height of 14 feet. The building includes eight separate and recessed waste storage compartments for segregation of waste groups according to compatibility. Containers of wastes are stored in this building.

- Buildings 958B and 958C are relocatable, prefabricated safety storage structures used for the storage of reactive and ignitable wastes. Each structure is constructed of welded 10- and 12-gauge steel with supporting structural steel sections, and each has three doors. The 500-gallon containment reservoirs within each building, the walls, and the ceilings are coated with chemical-resistant epoxy. The reservoirs are lined with polypropylene, which is compatible with reactive wastes. The floors are epoxy-coated, fire-resistant plywood. Storage of reactive wastes, lithium batteries, gas cylinders and flammable solids is restricted to these two buildings except for temporary storage that may occur in Building 959 following acceptance of the waste at the HWMF.

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total inventory of RCRA-regulated waste in storage at any time at the HWMF is estimated at 117,550 ~~69,740~~ gallons of liquids and/or solids (including lab packs that contain substantial quantities of absorbent). The maximum total waste inventory is broken down as follows:

- Building 959: 7,590 gallons
- Building 958: 99,950 gallons
- Building 958B: 5,005 gallons
- Building 958C: 5,005 gallons

~~7.2~~7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5~~4~~ in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~, partial closure activities specified in this plan assume the following conditions were met during the operational life of the HWMF:

- RCRA-regulated waste handling activities involving the opening of waste containers were confined to the interiors of HWMF RCRA-regulated waste management areas (WMAs). If contamination occurred, it would have been confined to these areas; and

- The interior walls and floors of WMAs were maintained to retain their integrity by following established maintenance and inspection procedures, and breaches of protective coatings did not occur.

~~7.3~~7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan in Appendix F provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the HWMF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the HWMF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan in Appendix F presents sample collection equipment and techniques applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the HWMF. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the HWMF.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan in Appendix F presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the HWMF.

8.0 TREATMENT PLAN

Sandia /DOE do not perform treatment of RCRA-regulated wastes requiring a permit at the HWMF.

9.0 REFERENCES

National Fire Protection Association (NFPA), 2000, "Flammable and Combustible Liquids Code," NFPA 30, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Installation of Sprinkler Systems," NFPA 13, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, " Standard for Dry Chemical Extinguishing Systems," NFPA 17, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," NFPA 25, National Fire Protection Association, Quincy, Massachusetts.

NFPA, see National Fire Protection Association

Sandia National Laboratories/New Mexico (SNL/NM), 2003~~2~~, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 5~~3~~.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003a, "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003b, Appendices A-F in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~
~~SNL/NM, see Sandia National Laboratories/New Mexico.~~

Module II – TTF

Sandia National Laboratories/New Mexico
Thermal Treatment Facility
Part B Permit Renewal Request

Module II

Revision 2.0

April ~~February~~ 2003

Prepared by
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185

Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
AAQS	Ambient Air Quality Standards
A/BCAQCB	Albuquerque/Bernalillo County Air Quality Control Board
COPC	chemicals of potential concern
DOE	U.S. Department of Energy
EA	environmental assessment
ER	Environmental Restoration
ft	foot/feet
HQ	hazard quotient
HSWA	Hazardous and Solid Waste Amendments
in.	inch(es)
mi	mile
mg/kg	milligram per kilogram
$\mu g/m^3$	microgram(s) per cubic meter
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NMFRCD	New Mexico Forestry and Resource Conservation District
PETN	Pentaerythritol tetranitrate
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SASN	silver acetylide/silver nitrate

ACRONYMS AND ABBREVIATIONS (Concluded)

SNL/NM	Sandia National Laboratories/New Mexico
SSL	soil screening level
SWMU	solid waste management unit
T and E	threatened and endangered
TA	Technical Area
TSDF	treatment, storage, and disposal facility
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WMA	waste management area

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SANDIA NATIONAL LABORATORIES/NEW MEXICO THERMAL TREATMENT FACILITY PART B PERMIT RENEWAL REQUEST

This Sandia National Laboratories/New Mexico (SNL/NM) Thermal Treatment Facility (TTF) Part B Permit Renewal Request is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste treatment operations at the TTF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared and revised ~~are providing~~ this module to provide Unit-specific ~~address~~ details ~~and/or requirements~~ that supplement the information ~~those~~ provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application" ~~(SNL/NM, 2003a)~~, hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, ~~and~~ in the SNL/NM General Part B, ~~(SNL/NM, 2003a)~~ and in appendices to the General Part B meet the applicable requirements for the TTF that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00], and 20 NMAC 4.1.900/40 CFR 270 [6-14-00].

Sandia/DOE also prepared ~~submitted~~ the "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" (SNL/NM, 2003~~2~~a), hereinafter referred to as SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The ~~SNL/NM~~ General Part A ~~(SNL/NM, 2002)~~ serves as a companion document to the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ and Unit-specific Part B modules, including this TTF Part B Permit Renewal Request.

In ~~both~~ the SNL/NM General Part A, ~~(SNL/NM, 2002) and~~ the ~~SNL/NM~~ General Part B, its appendices, ~~(SNL/NM, 2003a) submittals~~ and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Thermal Treatment Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The TTF occupies 196 square feet south of Building 6715 in Technical Area (TA)-III. It is a thermal treatment unit surrounded by an earthen berm and a fence. The entire area within the fence is 8140 square feet. It is used for ~~Operations include~~ treatment of explosive waste exhibiting the characteristic of reactivity ~~reactive~~ (D003) ~~RCRA-regulated wastes. Wastes~~ generated during operations in Building 6715 (adjacent to ~~are treated at~~ the Unit). Sandia/DOE currently operate the TTF in accordance with the terms of NMED Permit NM5890110518-2, issued November 4, 1994 (NMED, 1994).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the TTF waste management area (WMA) and TTF ~~treatment~~ operations. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

Specific information in this section regarding Unit operations includes ~~:~~

~~Unit operations, including:~~ containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; and hazards prevention.

Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts X, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.23 [6-14-00].

The TTF is used to treat specific and well-defined explosive (D003) wastes generated at a test facility in Building 6715. The wastes also meet the definition of ignitable waste (D001), and may bear EPA Hazardous Waste Numbers D011 and F003, depending on the presence of silver and spent solvents. Explosive silver acetylide/silver nitrate (SASN) slurry is formulated from raw ingredients as needed for tests. SASN is present in the solid and liquid wastes treated at the TTF. SASN is categorized as a primary explosive, and each discrete crystal (when dry) has the potential to detonate. According to published technical data (Wilden, 1986), SASN can be initiated by the energy of bright light (by raising the surface temperature to the auto ignition temperature of 457 degrees Fahrenheit) or small contact shock. SASN is not approved for transport on public roads. Thermal treatment is an accepted treatment technology for the deactivation of explosive waste (20 NMAC 4.1.800/40 CFR 268.40 [6-14-00]) to meet treatment standards.

1.1 Designated Waste Management Area (20 NMAC 4.1.900/40 CFR 270.23[a])

The location of the TTF at SNL/NM is shown on Figure 1. The TTF has one designated WMA, the treatment area, shown on Figure 2.

The treatment area at the TTF is located outside the south end of Building 6715 in TA-III at SNL/NM. The treatment area consists of a square burn pan constructed of 0.375-inch (in.) steel, 2 feet (ft) 6 in. on a side and 6-in. deep. The burn pan is located near the center of a square curbed slab of concrete 14 ft on a side lined with 0.5-in. steel, with a 4-in. high, steel-lined concrete curb around the edge. The burn pan is enclosed within a square cage approximately 4 ft on a side, consisting of expanded metal screen approximately 8-ft high with a nearly solid metal roof having slots for tracks and cables. An expanded metal screen door, remotely activated from inside Building 6715, provides access to the treatment area (i.e., the burn pan). TTF site plans and drawings are presented in Figures 3 and 4.

An enclosure on the east side of the cage houses three propane burners, which can be remotely activated from inside Building 6715. Two propane burners ~~jets~~ are positioned to heat ~~located at the bottom of~~ the burn pan. A ~~The~~ third burner ~~gas jet, located over the burn pan~~is positioned to ~~,~~ ignite~~s~~ the contents of the burn pan and flammable vapors above the pan. Liquid wastes to be treated are transferred from Building 6715 to the TTF through flexible transfer hoses utilizing a remotely operated peristaltic pump. The hoses are contained inside a metal channel that provides secondary containment. The flexible hoses and channel terminate approximately 5 ft. from the burn pan and metal tubing transfers the waste the final distance into the burn pan. Solid items to be treated in the TTF are manually loaded into the burn pan.

Liquids that might accumulate at the TTF WMA are contained within a secondary containment system (i.e., the steel-lined concrete pad that drains into a catch tank) that is sufficiently impervious to contain spills or accumulated precipitation until the liquid is removed. The secondary containment system provided by the steel-lined concrete pad is designed to contain at least 20.8 gallons~~the entire volume~~ of ~~potential~~ liquid waste. This is the maximum volume of RCRA-regulated liquid waste in the TTF burn pan at any time. ~~is 20.8 gallons.~~ The catch tank has a containment capacity of approximately 157 gallons.

A circular tank located north of the unit and south of Building 6715 is primarily utilized as a process tank for collecting non-RCRA-regulated wastewater from test operations; wastewater collected in this tank is not intended to be treated at the TTF.

Because the TTF is located outside, it is difficult to prevent equipment deterioration; however, the unit and its ancillary equipment are periodically inspected to insure proper operation as described in Section 4.0 of this module. If deterioration sufficient to affect the operation, safety, or reliability of the unit is identified, the affected equipment is either refurbished or replaced.

1.2 Unit Operations (20 NMAC 4.1.900/40 CFR 270.23[a])

~~The TTF WMA is used to treat RCRA-regulated wastes specified in Section 1.1 of this module. The U.S. Environmental Protection Agency Hazardous Waste Numbers for those wastes are listed in the SNL/NM General Part A (SNL/NM, 2002).~~

~~General~~ Information regarding operation of all RCRA-regulated Units at SNL/NM is included~~: containment systems; management of ignitable, reactive, and incompatible wastes; preparedness and prevention; and, hazards prevention requirements applicable to the TTF WMA are addressed~~ in Section 1.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.23; and 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Because the TTF is located outside, the steel-lined concrete pad periodically collects water from precipitation; the water drains into the catch tank. Unless waste spills, untreated RCRA-regulated waste "kicks out" or is ejected from the burn pan during treatment, or otherwise contaminates the steel-lined concrete pad, the water collected in the catch tank ~~primarily~~ consists of precipitation.

Treatment operations occur periodically at the TTF and may involve burns during one to three days. Each treatment operation is followed by a post-treatment inspection, described in Section 8.0 of this module, which identifies kick-out or contamination of the steel-lined concrete pad, if any. If the post-treatment inspection does not reveal kick-out or contamination of the steel-lined concrete pad, then the water that collects in the steel-lined concrete pad and/or in the catch tank prior to the next treatment operation is ~~If the water is~~ known to be runoff resulting from precipitation and is not ~~suspected to be~~ contaminated with ~~any~~ RCRA-regulated waste constituents. If the post-treatment inspection reveals kick-out or contamination of the steel-lined concrete pad but the situation is remediated prior to the next precipitation event, then the water that collects in the steel-lined concrete pad and/or in the catch tank after remediation and prior to the next treatment operation is known to be runoff resulting from precipitation and is not contaminated with RCRA-regulated waste constituents.

In both instances, the accumulated water ~~, it~~ will be assumed to meet City of Albuquerque wastewater discharge parameters and will be discharged (pumped) directly to the Technical Area III sanitary sewer system after appropriate notifications and approvals. Previous analyses of storm water collected in the catch tank indicate the water meets the wastewater discharge parameters set by the City of Albuquerque.

If a post-treatment inspection reveals kick-out or contamination of the steel-lined concrete pad that is not remediated prior to a precipitation event that results in the accumulation of water in the steel-lined concrete pad and/or the catch tank, then the accumulated water will be managed as described in Section B.3.3.1 of the Waste Analysis Plan (Appendix B) ~~If the water is suspected to be contaminated with RCRA-regulated waste constituents, or is derived from RCRA-regulated listed wastes treated at the TTF, it will be containerized and arrangements will be made for disposal into the City of Albuquerque sewer treatment system with a one-time notice placed in the facility file in accordance with 20 NMAC 4.1.800/40 CFR 268.7(a)(6) [6-14-00]. If the wastewater cannot be discharged in the City of Albuquerque sewer treatment system, it will be containerized and handled through normal procedures at one of the other SNL/NM Units.~~

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 20 NMAC 4.1.500/40 CFR 264.17)

1.2.2.1 General Precautions for Handling Reactive Waste

The grounds and berms near the TTF are routinely cleared of dry or dead weeds and brush. This helps to prevent brush fires near the TTF. During normal operations, wastes are not stored at the TTF prior to treatment, and the wastes are ~~. Reactive explosives and energetic waste (sensitive to impact, heat, shock, and light) are~~ treated soon after transfer to or placement in the TTF burn pan, as described in Section 8.0 of this module.

Incompatible wastes are not accepted for treatment at the TTF. In particular~~addition~~, copper is incompatible with the ~~an~~ explosive slurry of silver acetylide/silver nitrate (SASN) treated at the TTF; therefore, no exposed copper is allowed when ~~the explosive~~ SASN is present. No other

materials that would produce undesirable reactions with RCRA-regulated waste (e.g., explosion, toxic fumes, or structural damage) are located at the TTF.

Unit personnel also take the measures described in Section 1.1.2.1 of the General Part B to prevent accidental ignition or reaction of wastes at the TTF.

1.2.2.2 Engineering Precautions to Prevent Reactions

General Treatment Operations

Unit personnel operate the TTF from the control room inside Building 6715. Personnel are not present in the area between Building 6715 and the Unit during treatment operations. Treatment operations begin only after an audible warning signal, an area check for personnel, and a public address announcement that the TTF will begin operations. The TTF access gates are closed and locked. The Building 6715 Complex fence access gates are closed during TTF waste transfer operations.

Solid Items

Solid items, saturated in water, are loaded manually into the burn pan. Unit personnel open the TTF expanded metal screen door from the key-operated control console in Building 6715. The door is operable only from the control console. Unit personnel then remove the only key from the control console, which ~~Reactive waste is protected from open flames by disabling the gas burner system during manual loading of the TTF burn pan; however, the gas burners may be operational when waste is transferred to the burn pan via the waste transfer pump.~~ disables the ~~The~~ gas burner system before manually loading waste into the TTF burn pan. ~~is disabled by removing the only key from the lock on the control console in Building 6715. T~~Typically~~hus~~, the gas burner system is controlled by the same operator who manually loads the TTF burn pan. ~~while the TTF expanded metal screen door is open. The door is also operable from the control console which reduces the chance of opening the door for loading or unloading without disabling the gas burner system. The gas burner system is reactivated at the control console only after an area check for personnel and a public address announcement is made that the TTF will begin operations.~~

Liquids

Liquids are transferred to the burn pan through the waste transfer pump and lines. The operator at the control console in the building operates the pump remotely. The burners may or may not be operating during the transfer, depending on the stage of the treatment operations.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.500/40 CFR 264, Subpart C)

The following sections address required equipment, testing, and maintenance of equipment, and access to communications or alarm systems at the TTF.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

Information about fire hydrants is provided in Section 1.1.3.1 of the General Part B ~~(SNL/NM, 2003a)~~. The fire hydrant at the TTF is shown in Figure 9. Information on other required equipment located at the TTF is provided in Section 6.0 and Table 43 ~~-~~of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the TTF is provided in Appendix C of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the TTF is provided in Section 1.1.3.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ and in Section 6.0 of this module.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the TTF to prevent hazards. Additional information applicable to the TTF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

TTF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ to prevent hazards in unloading, as applicable. Waste treated at the TTF is pumped or hand-carried to the Unit from Building 6715. Unl~~L~~oading activities are limited to removal of ash residue from the burn pan or contaminated water from the catch tank, followed by ~~and~~ loading of ~~the~~ containers of ash or contaminated water onto a flatbed truck or other vehicle for transport to another Unit. Vehicles are typically loaded on the paved area southeast of Building 6715 (Figure 7). The surface is level, the pavement is in good condition in the area, and there is sufficient room for the ~~smaller~~ vehicles used to transport RCRA-regulated wastes between the TTF and the receiving Unit(s).

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

The land surrounding the TTF slopes gently toward the west. Sheet-flow runon of surface water from surrounding areas is diverted around the TTF treatment area by an 8-ft-high earthen berm that surrounds the Unit on the east, south, and west. The diverted storm water drains to the west.

Sheet-flow runoff from the outside face of the berms surrounding the TTF flows away from the Unit. Sheet flow runoff from the inside face of the berms is directed toward the center of the bermed area, around the steel-lined concrete pad, and toward the opening in the berm on the north side~~ and away from the burn pan~~. The TTF burn pan sits near the center of the steel-lined concrete pad, which is surrounded by a 4-inch-high concrete curb and is elevated approximately 12 to 24 inches above the surrounding soil, further preventing runon.

The curbs also prevent runoff from the TTF WMA. Storm water that collects in the pad ~~is~~ drains to the catch tank. The containment capacity of the catch tank exceeds the volume of ~~expected from runoff from the~~ treatment area runoff expected during a storm event~~, as described in Section 1.2.1~~.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the TTF will affect water supplies, as described in Section 1.1.4.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Section 2.6 of this module includes a discussion of the surface water and groundwater in the vicinity of the TTF. Section 9.0 discusses the potential for the deposition or migration of waste or waste constituents to surface water and groundwater in the vicinity of the TTF.

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B ~~(SNL/NM, 2003a)~~.

Four pieces of equipment at the TTF would be affected by a power failure: ~~-~~the burners, the motor-driven burn cage door, the motor-driven burn pan lid, and the waste transfer pump. In the event of a power failure, personnel would take the following actions.

1. If the power failure occurs before waste is~~were~~ placed inside the burn pan, treatment operations will be delayed until power is restored.

2. If the power failure occurs after wastes are present in the burn pan but before the burners are ignited, personnel will manually lower the burn pan lid and wait until power is restored before proceeding with treatment. If the treatment cannot be conducted during the same day, Unit personnel will wet the waste with water as needed to stabilize it, secure the area and notify Sandia/DOE security personnel of the presence of and potential hazards associated with ~~of~~ the waste~~.~~. Unit personnel will conduct treatment when power is restored and all other permit requirements for treatment operating conditions, listed in Section 8.1.3 of this module, have been met.

3. If the power failure occurs during treatment, personnel will not enter the TTF until all combustion has ceased and water has been added to the waste and residue to reduce the explosive hazard, and it is deemed safe to enter.~~ Personnel will complete treatment~~

~~as soon as power is restored.~~ If the power is not restored in time to complete treatment during the day, personnel will secure the area, manually lower the burn pan lid if it is deemed safe to do so, and allow the waste to remain in the burn pan. Unit personnel will notify Sandia/DOE security personnel of the presence of and potential hazards associated with ~~of~~ the waste. Unit personnel will complete ~~the~~ treatment when power is restored and all other permit requirements for treatment conditions have been met~~as soon as possible~~.

4. If power failure occurs during waste transfer, personnel will stop transferring waste and follow the procedures outlined in #3 above.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

TTF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ to prevent undue exposure to the wastes to be treated at the TTF.

Hazards associated with the waste treated at the TTF (e.g., the explosive nature of the wastes) serve to increase the potential for personnel exposure to RCRA-regulated waste constituents. These are addressed through Unit design and operations:

- Treatment operations are scheduled as soon as practicable after the operations in Building 6715 are completed, minimizing the amount of time that explosive wastes are present on site.

- RCRA-regulated waste that cannot be pumped to the TTF (solid items) is first wetted with water to temporarily reduce the explosive sensitivity and minimize hazards to personnel.

- During treatment operations, Unit personnel keep the burn pan covered with the lid except when combustion is occurring. This practice serves to minimize personnel exposure to the wastes.

- The TTF is operated from a control console inside Building 6715. Operating personnel observe the treatment through a video camera. During combustion, personnel are not allowed in the area between Building 6715 and the TTF. Both of these practices serve to minimize the potential for exposure to the wastes.

In addition to the hazards associated with treatment of explosives, there are three sources of noise during treatment:

- Detonation of dried explosive SASN crystals from the liquids and solids treated at the TTF. Because the particles are small, the detonations are relatively small, with a popping noise similar to a popping balloon.

- Operation of the propane burners. The sound of the operating burners is similar to the sound of burners used in a hot air balloon.

- Warning bells. The warning bells and buzzers are designed to alert Unit personnel to treatment operations. The bells are louder than the propane burners or the detonation.

Because Unit personnel are inside Building 6715 during treatment, they are not subjected to the noise. Personnel in neighboring Sandia operations and buildings will hear the warning bells but will not be affected by the noise of TTF treatment. The closest continuously occupied building is approximately 795 feet east southeast of Building 6715 and the TTF. The physical locations of neighboring buildings and personnel are summarized in Section 9.3 of this module.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi]; 20 NMAC 4.1.500/40 CFR 264 Subparts AA, BB, and CC~~.601[c]~~)

TTF operations do not include storage of RCRA-regulated wastes in containers subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC. Further, operations do not include any storage or management associated with storage that would be subject to the requirements of 20 NMAC 4.1.500/40 CFR Subparts AA or BB.

~~The TTF is subject to the regulations of the Albuquerque/Bernalillo County Air Quality Control Board (A/BCAQCB). Open burning of high explosives is allowed under A/BCAQCB Regulation Number 3 when transporting the material would be unnecessarily hazardous. The TTF is granted a permit for open burning of explosives by the City of Albuquerque on an annual basis. Treatment will be restricted to the open burning conditions imposed by the most current City of Albuquerque open burn permit.~~

~~The TTF will burn limited quantities of explosive wastes and explosive-contaminated wastes. The waste may be burned several times to complete the destruction of any explosives. The burns may, therefore, occur over two or three days. Each burn will last a minimum of 30 minutes. The sequence of burns is typically:~~

- ~~Burning the contents of the burn pan until 30 minutes after audible and/or visual evidence of explosives has ceased;~~
- ~~Lowering the burn pan cover; and~~
- ~~Inspecting the contents of the burn pan after several hours to ensure no unburned waste remains and all pan contents are ashed; repeat burn if necessary.~~

The treatment process and releases to the atmosphere are described in Section 8.0 of this module. Compliance with the requirements of 20 NMAC 4.1.500/40 CFR Subparts AA, BB, and CC is discussed in Section 8.1.4.

~~Equipment~~

~~The burn pan is equipped with a cover that is lowered over the pan when the TTF is not operating. This engineering control limits wind dispersal of any ash or particulates remaining in~~

~~the pan during cool-down between burns and during cool-down after the final burn, as does the expanded metal screen enclosing the unit.~~

~~Evaluation of Potential Exposure~~

~~Carbon monoxide and nitrous oxide by-products from the TTF appear to have little effect on Albuquerque's air quality. The only contaminant that may migrate from the TTF with the potential to cause adverse effects on human health and the environment is silver in the particulates, resulting from the treatment of SASN.~~

~~Because the silver discharge from the TTF to the air cannot be measured, a screening-level evaluation of the potential exposure due to pollutant discharge from the TTF was performed.~~

~~The Industrial Source Complex Short-Term Dispersion Model (EPA, 1986) was used to model airborne releases from the TTF. Silver is a key pollutant, although the results apply to any pollutant released at the assumed rate of one gram/second. The following assumptions were used:~~

- ~~The source is 0.5 square meter in the area at a reference elevation of 0 meter (on the ground);~~
- ~~Topography was not taken into account because of the open nature of the site;~~
- ~~National Weather Service data for Albuquerque, New Mexico, were utilized;~~
- ~~The wind direction is toward the receptor of interest;~~
- ~~Generic meteorological data consisting of 48 combinations of wind speed and stability classes were used to represent typical meteorological conditions during a burn event; a one-hour duration was arbitrarily assigned to each of the 48 combinations; and~~
- ~~Thermal buoyancy of the plume from the TTF operation is ignored.~~

~~The last three assumptions assure a conservative result when concentrations are calculated at the various receptors. The receptor distances were selected to reflect actual site conditions. Key receptors in the area of the TTF are:~~

- ~~The McCormick Ranch (unoccupied); nearest structure outside the SNL/NM, Albuquerque, property (14,000 ft, 227°, southwest of site)~~
- ~~Nearest base housing (18,500 ft, 344°, north-northwest of site)~~
- ~~Nearest housing to the west (i.e., the most frequent downwind direction) (36,500 ft, 270°, west of site)~~
- ~~Nearest structure on the west (may or may not be residential) (30,000 ft, 270°, west of site)~~

~~□Nearest sensitive population; Veterans Administration Hospital (23,000 ft, 329°, northwest of site).~~

~~Table 1 lists the one-hour average concentrations for silver calculated using the assumptions stated above.~~

~~Table 1~~
~~Calculated Silver Concentrations~~
~~at Selected Distances from the~~
~~Thermal Treatment Facility~~

~~Distance (feet)~~	~~One-Hour Average Silver Concentration[a] ($\mu g/m^3$)~~
~~14,000~~	~~44.3~~
~~18,500~~	~~30.4~~
~~23,000~~	~~22.8~~
~~30,000~~	~~15.3~~
~~36,500~~	~~12.3~~

~~[a] Calculated using the Industrial Source Code Short-Term Dispersion Model (EPA, 1986), assuming a release rate of 1 gram per second.~~
~~$\mu g/m^3$ = micrograms per cubic meter.~~

~~The Occupational Exposure Limit (or Threshold Limit Value Time Weighted Average) for silver is 100 micrograms per cubic meter ($\mu g/m^3$). The calculated concentrations are well below this value even at the nearest receptor utilizing the very high emission rate of one gram/second and other conservative assumptions. In reality, the total quantity of silver in 4 liters of slurry would not sustain an emission rate of 1 gram/second over a one-hour span; if all the silver became airborne, the calculated concentration at 14,000 ft would be less than 10 $\mu g/m^3$. These hypothetical airborne silver concentrations from the TTF are unlikely to result in heavy metals concentrations in suspended particulates exceeding state limits for the 30-day average (10 grams per cubic meter).~~

~~Wind may blow during cool down. The earthen berms surrounding the TTF are designed primarily to reduce the effects of wind on the burning operation and to limit ash dispersal. The slab and cage enclosure are designed to collect most material that may escape the burn pan due to wind.~~

1.3 Container Storage Practices

Sandia/DOE do not conduct container storage of RCRA-regulated wastes requiring a permit at the TTF.

1.4 Treatment Operations

The TTF is currently permitted for the treatment of RCRA-regulated wastes in accordance with the conditions of the "Sandia National Laboratories/New Mexico Hazardous Waste Facility Operating Permit Number NM5890110518-2" (NMED, 1994). Treatment practices applicable to the TTF are presented in Section 8.0 of this module.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.5~~1~~00 and ~~-~~.900/~~-[6-14-00].~~ 40 CFR 26~~40-266, 268,~~ and 270 [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]).~~;~~
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]).~~;~~
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]).~~;~~
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]).~~;~~
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).
- Unit-specific environmental setting information (20 NMAC 4.1.900/40 CFR 270.23[b] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.601[a][2-6], [b][3-9], [c][4,5] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the TTF.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The TTF is completely surrounded by an approximately 8-ft high, single chain-link fence topped with three strands of barbed wire. Three gates provide access to the TTF and remain locked except when TTF personnel are performing treatment operations, inspections, maintenance, or repairs. The active portion of the TTF is also the south portion of the Building 6715 complex. Access to the north TTF fence, and, therefore, all three TTF gates, is from inside the Building 6715 complex, which is also completely surrounded by an 8-foot tall chain link fence with three strands of barbed wire at the top and lock-equipped gates. The gates to the Building 6715

complex and the building doors are kept locked during non-operational hours. As noted in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~, Sandia security personnel periodically monitor the Building 6715 complex and TTF gates during non-operational hours.

TTF personnel have Sandia-issued badges. Individuals who do not have a Sandia-issued badge are escorted. TTF personnel and visitors typically enter the Building 6715 Complex through the east gate. During treatment events, all TTF gates are locked. These procedures limit access to the TTF RCRA-regulated WMAs, in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The Building 6715 complex is located inside TA-III (Figures 1 and 2). TA III is surrounded by a barbed-wire fence with designated access gates. TA-III access control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-III.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The permanent perimeter fences surrounding the TTF are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, ~~and~~ are legible from a distance of 25 ft, and can be seen from any approach to the TTF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes from the TTF include Wyoming Boulevard, Hardin Boulevard (formerly O Street), P Street, ~~and~~ Pennsylvania Avenue, and the access road to TA-III.

Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved access road to TA-III turns southwestward off Pennsylvania Avenue at a point just over 5 miles south of the Wyoming Boulevard Kirtland Air Force Base entrance gate as shown on Figure A-4 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

Within TA-III, traffic access to and from the TTF is along the 2-lane asphalt-paved roads shown on Figure A-6 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. Vehicles entering the Building 6715 complex travel on a 2-lane asphalt-paved drive from the road to the east gate (Figure 5). Within the Building 6715 Complex, waste is typically transported on concrete- or asphalt-paved surfaces.

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard, Hardin Boulevard, and P Street are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Traffic volumes within TA-III are light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Fewer than 5 vehicles typically enter/exit the compound per week. These include flatbed trucks and trailers carrying supplies, treated residues, and contaminated catch tank water from the TTF. SASN materials and w~~W~~astes are generated in ~~within the compound~~ Building 6715; therefore, wastes are ~~and~~ not transported in vehicles to the TTF for treatment. Treated residues ~~and contaminated catch tank water~~ are transported to another Unit for storage and/or treatment prior to disposal. Catch tank water may also be transported to another unit, as discussed in Section 1.2.1.

2.2.3 Traffic Control Signals

Vehicles must stop at a gate prior to entering or leaving TA-III. Only authorized personnel are permitted ~~into~~ enter TA-III. Speed limit signs (i.e., "30 mph Unless Otherwise Posted") are located at several locations in TA-III.

There are no traffic control signals or signs at the Building 6715 Complex. The TTF is locked except when personnel are present. Treatment operations are carefully coordinated with appropriate individuals to limit vehicle presence and access to operating and treatment ~~event~~ personnel. The paved access surface from the Building 6715 Complex east gate to the TTF is approximately 100 ft long. Therefore, signals or signs are not necessary to control traffic within the Building 6715 Complex.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11]; 20 NMAC 4.1.900/40 CFR 264.18)

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i] and [ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMA at the TTF is not located within 3,000 ft of any fault with Holocene displacement (see Section A.4.2 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMA at the TTF is not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19] and 270.23[b]; 20NMAC 4.1.500/40 CFR 264.601[a][6] and [b][9])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) and 270.23[b] [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).

- Surface waters, including intermittent streams, near the TTF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii][6-14-00]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and ~~on~~ Figure 6 of this module. (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] and 270.23[b]; 20NMAC 4.1.500/40 CFR 264.601[a][6] and [b][9] [6-14-00]). The area surrounding the TTF is occupied by test areas and Sandia-controlled operations (industrial land use). The area of KAFB immediately north of SNL/NM TA-III is mostly open (other land use).

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).

- Legal boundaries of SNL/NM (including the TTF) are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [6-14-00]).

- Access control features at the TTF (e.g., fences, gates) are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the TTF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).

- The location of the TTF WMA and associated structures, loading and unloading areas, roads, and sanitary sewers are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [6-14-00]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figures 6 and 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00]).

- The location of the TTF WMA is shown on Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the TTF. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to the New Mexico Environment Department at these scales and contour intervals due to the size of the TTF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information for SNL/NM is provided in Part 3 of the Sandia/DOE comprehensive Part B permit request. The TTF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the TTF likely to affect groundwater quality during normal operations or during unusual events.

2.6 Environmental Setting (20 NMAC 4.1.900/40 CFR 270.23[b] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.601[a][2-5], [b][3-8], [c][4,5] [6-14-00])

As described in Appendix A of the General Part B, SNL/NM is located in the western part of Kirtland Air Force Base in Bernalillo County. DOE/Sandia monitor weather conditions and ambient air quality at SNL/NM through a network of monitoring stations. Meteorological data from a tower at the northeast corner of TA-III indicate that the prevailing winds at SNL/NM are from the southeast and east. The annual wind rose is shown on Figure 6. During daylight hours, the prevailing winds are from the west, southwest, and northwest. Rapid nighttime ground cooling after sunset on cloudless or near-cloudless nights generates drainage winds out of the mountains; in TA-III, these winds come from the southeast and east (SNL, 2002).

Bernalillo County meets the New Mexico and national ambient air quality standards (AAQS) for ozone, particulates, lead, and oxides of nitrogen and sulfur. Bernalillo County currently meets the New Mexico and national AAQS standards for carbon monoxide. DOE/Sandia monitor ambient air quality at several stations; the two nearest the TTF are located north of TA-III and at the southeast corner of TA-III (near the RMWMF). Data from both stations indicate air quality is in compliance with New Mexico and national AAQS. The monitoring results also allow DOE/Sandia to establish background airborne concentration levels for pollutants of concern and determine that SNL/NM operations do not affect ambient air quality (SNL, 2002).

SNL/NM is located in an arid region with an average annual precipitation of approximately 8 inches (National Oceanographic and Atmospheric Administration [NOAA], 1990). Half of the average annual precipitation occurs in the form of brief but heavy thunderstorms during the summer period, July through September.

Water rarely infiltrates more than a few feet into the soil, and typically returns to the atmosphere via evapotranspiration. Evapotranspiration in the area has been estimated at 95 percent of the annual rainfall (Thomson and Smith 1985). Sandia/DOE have conducted extensive field investigations and analytical studies in TA-III. Data collected from boreholes, groundwater

monitoring wells, and instantaneous profile tests have measured saturated and unsaturated zone characteristics that include volumetric water content, saturated and unsaturated hydraulic conductivity, bulk density, and isotopic chloride content (Peace et al., 2002). Based upon these data, groundwater recharge is negligible at TA-III and most of the water from precipitation returns to the atmosphere via evapotranspiration. Vegetation, although sparse at the site, increases the rate of moisture loss from the subsurface soil through transpiration.

Sandia/DOE's ongoing Terrestrial and Ecological Surveillance Program includes monitoring for the presence of various compounds in soil, sediment, surface water, and vegetation near past or present SNL/NM operations (SNL/NM, 2002). As part of the program, samples of soil and vegetation have been collected for several years at a location in the northern part of TA-III (approximately 600 feet northeast of the TTF). The samples collected in 2001 were analyzed for several metals, including silver. Concentrations of silver and other metals in the soil and vegetation vary slightly from year to year due to slight variations in sampling location, differences in climatic conditions, and laboratory variations or errors. The silver concentrations in the samples from this location were consistent with the levels in off-site samples. Silver has historically and consistently been detected in soils at concentrations that are consistent with those found in off-site locations, and the data do not indicate a trend toward increasing concentrations over time (SNL/NM, 2002).

As noted in Appendix A of the General Part B, the nearest major body of surface water (the Rio Grande river) is situated approximately 7 mi west of the TTF. Surface water (with the exception of several springs in the eastern part of KAFB) is found only as ephemeral streams that flow for short periods from runoff after storm events or during the spring melt of mountain snowpacks. The primary surface water drainage channels on KAFB are Tijeras Arroyo and Arroyo del Coyote (which joins Tijeras Arroyo north of TA-III.) Surface water in TA-III infiltrates into the soil, and does not flow to either of the arroyos or to the Rio Grande.

The depth to saturated groundwater underlying SNL/NM TA-III is approximately 500 feet. Sandia/DOE have an established extensive groundwater monitoring system to assess the quality of the groundwater in the SNL/NM area. The monitoring network includes observation wells, test wells, production wells, and other hydrogeologic devices. Routine samples are analyzed for toxic constituents, basic water quality, and water levels. The results are published annually in the Groundwater Monitoring Report (SNL/NM, 2003b).

The historical direction (no longer apparent) of regional groundwater flow in the western part of KAFB (including the area west of TA-III) has been westward from the mountains toward the Rio Grande (Gram, 1985). However, due to groundwater pumping by KAFB and the City of Albuquerque, a depression in the water table has created a broad trough (drawdown) directing flow towards the well fields at the northwest end of KAFB. The trough extends as far south as TA-III and affects groundwater flow at the western edge of TA-III. The TTF is east of the trough, and groundwater flow under the TTF is toward the west (SNL/NM, 2001a, 2001b).

The well fields at the northwest end of KAFB are located approximately 3 miles northwest and downgradient of the TTF, and the closest downgradient water supply well is KAFB-4. Approximately 117,000 gallons of water were pumped from Well KAFB-4 during the 12-month period ending September 30, 2001. During the same time period, approximately 1.2 billion gallons of water were pumped from all the KAFB wells (SNL/NM, 2003b).

Over 280 archeological sites have been recorded on KAFB (including the withdrawn area), and in the buffer zones west of KAFB. No archeological sites or Native American traditional cultural properties have been identified in TA-III (DOE, 1999).

3.0 WASTE ANALYSIS PLAN

In accordance with 20 NMAC 4.1.900/ 40 CFR 270.14[b][2]~~;~~ and 20 NMAC 4.1.500/ 40 CFR 264.13, "General Waste Analysis"~~; and 20 NMAC 4.1.800/ 40 CFR 268.7, "Waste Analysis and Record-Keeping,"~~ [6-14-00], waste analysis requirements applicable to all units, including the TTF, are addressed in Appendix B of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] require that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

20 NMAC 4.1.500/40 CFR 264.15(b)(4) [6-14-00], requires inspections of specific portions of a facility, rather than the general facility. RCRA-regulated waste at the TTF is managed in a miscellaneous unit requiring inspection as a "specific portion" of the SNL/NM facility. 20 NMAC 4.1.500/40 CFR 264.602 [6-14-00], requires that inspections required in 20 NMAC 4.1.500/ 40 CFR 264.15 and 264.33 [6-14-00], as well as any additional requirements needed to protect human health and the environment, be met. The requirements of 20 NMAC 4.1.500/ 40 CFR 264.15 and 264.33 [6-14-00]~~,~~ are discussed in this section, Section 6.0, and Appendices C and E of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the "Site-Wide Inspection Plan", provided as Appendix C of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. TTF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table ~~2~~1, with the inspection criteria and frequency.

~~Equipment subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00] will be used less than 300 hours per year. Equipment use will be documented during inspections, as appropriate.~~

The inspection results (including any remedial actions taken) are recorded on a form similar to those in Appendix C. The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms similar to the ones presented in Appendix C. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained in Building 6715. Inspection records for previous calendar years are maintained in Building 6715 or the SNL/NM Records Center.

Table ~~2~~1
Thermal Treatment Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Eye wash and safety shower	Operational, accessible, in good condition	~~Weekly when operations are conducted in Building 6715.~~ Monthly ~~otherwise~~.
First-aid kit	Present and stocked	~~Weekly when operations are conducted in Building 6715.~~ Monthly ~~otherwise~~.
Personal protective equipment	Required items ~~P~~present~~, quantities per inventory,~~ and in good condition	~~Weekly when operations are conducted in Building 6715.~~ Monthly ~~otherwise~~.
Spill control equipment	Present, accessible, quantities per inventory, in good condition	~~Weekly when operations are conducted in Building 6715.~~ Monthly ~~otherwise~~.
Fire alarm pull station(s)	Present, accessible, and in good condition	~~Weekly when operations are conducted in Building 6715.~~ Monthly ~~otherwise~~.
Public address system	Operational	~~Weekly when operations are conducted in Building 6715.~~ Monthly ~~otherwise~~.
Telephone(s)	Present and operational	~~Weekly when operations are conducted in Building 6715.~~ Monthly ~~otherwise~~.
Fire extinguisher(s)	Present, charged, accessible, and in good condition	~~Weekly when operations are conducted in Building 6715.~~ Monthly ~~otherwise~~.
OPERATING AND STRUCTURAL EQUIPMENT		
Waste transfer pump	Present, operational, and in good condition	Prior to use~~.~~ ~~Monthly otherwise.~~
Waste transfer tubes	Free of apparent leaks and in good condition	Prior to use~~.~~ ~~Monthly otherwise.~~
Burn pan	Present, free of apparent leaks, and in good condition	Prior to treatment ~~event~~. Monthly otherwise.
Burn pan lid	Operational and in good condition	Prior to treatment ~~event~~. Monthly otherwise.
Burn cage	Present and in good condition	Prior to treatment ~~event~~. Monthly otherwise.
Burn cage door	Operational and in good condition	Prior to treatment ~~event~~. Monthly otherwise.
Steel-lined concrete pad	Free of apparent cracks and in good condition	Monthly~~.~~
Filter element	Present, free of apparent tears or holes, and in good condition	~~After measurable precipitation event.~~ Monthly ~~otherwise.~~
Rain catch tank	Free of apparent leaks and in good condition	~~After measurable precipitation event.~~ Monthly ~~otherwise.~~

Table ~~2~~1 (Concluded)
Thermal Treatment Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
Area condition	Free of combustible materials and weeds and in good condition	Prior to treatment ~~event~~. Monthly otherwise.
Red warning beacons	Present and operational	Prior to treatment ~~event~~. Monthly otherwise.
Water spigot and hose	Present, operational, and in good condition	Prior to treatment ~~event~~. Monthly otherwise.
Burner control warning bell	Operational	Prior to treatment ~~event~~. Monthly otherwise.
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present legible, and in good condition	Monthly
Gates	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/ 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [6-14-00] "Personnel Training." The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the TTF.

TTF personnel receive training in accordance with the "Site-Wide Personnel Training Plan" ~~for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units"~~ provided as Appendix D of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

Only the following job descriptions identified in Appendix D, Table D-2 are applicable at the TTF: Training Director, Project Leader, Emergency Coordinator, Field Technician, and Inspector.

Additional training designed to specifically teach TTF personnel (i.e., TTF Project Leader, TTF Field Technician, TTF Inspector) to perform their duties safely and in conformance with regulatory requirements is presented in this section. TTF training course content includes, at a minimum, the topics shown in Table ~~3~~2.

Training records for TTF personnel are maintained in Building 6715.

Table ~~3~~2
Thermal Treatment Facility
Resource Conservation and Recovery Act-Regulated Waste Management Unit
Training Content

Explosives Personnel Safety Course

Duration: Variable (Typically 16 hours)
Frequency: Initial
Method: Classroom instruction

Minimum content may include:

- Basic explosives definitions
- Overview of explosives and explosive device categories and characteristics
- Initiation stimuli and safety guidelines for avoiding accidental ignition
- Standards for explosives operations, including compatibility, storage, and standard operating procedures

Operating Procedures of the Thermal Treatment Facility

Duration: Variable (Typically 4 hours)
Frequency: Annual
Method: Classroom instruction, on-the-job training, and/or document review

Minimum content may include:

- Overview of written operating procedures
- Overview of the waste analysis plan
- Safety practices
- Security, site entry, and site control
- Facility operations
- Facility equipment and structures
- Procedures to prevent the reaction of reactive waste
- Permit requirements for the Thermal Treatment Facility

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia /DOE Site-Wide Contingency Plan is included as Appendix E of the SNL/NM General Part B~~ (SNL/NM, 2003b)~~. Supplemental TTF-specific information is included in this section, in Figure 9, and in Tables 43 and ~~5~~4 of this module. Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained in Building 6715 and at the SNL/NM Emergency Operations Center.

The TTF is located in the north-central portion of Technical Area III at SNL/NM, just south of Building 6715. The TTF consists of a square, steel burn pan, 30 inches (in.) on each side and 6 in. deep. A remotely-operated metal lid can be raised to open, or lowered to cover, the burn pan. The burn pan is enclosed by an expanded metal screen (i.e., open to the air) cage, approximately 4 feet (ft) on each side and 8 ft tall. Access to the burn pan is provided by a door on the north side of the burn cage, which is operated remotely using ~~from~~ controls inside Building 6715. The burn cage sits in the center of a steel-lined concrete pad. The concrete pad is surrounded on the west, south, and east sides by an earthen berm, approximately 8 ft tall. An 8-ft-high chain-link security fence surrounds the entire TTF.

The TTF is used to thermally treat (i.e., burn) small quantities of waste explosive substances, waste liquids (e.g., water, volatile organics) contaminated with explosive substances, and waste items (e.g. rags, wipes, swabs) contaminated with explosive substances. Wastes treated at the TTF may have~~bearing~~ U.S. EPA Hazardous Waste Numbers D001, D003, D011, and F003~~may be treated at the TTF~~.

RCRA-regulated waste is not stored at the TTF and is only present just before and during ~~a planned~~ treatment ~~operationsevent~~. However, if for some reason ~~a~~ treatment operations are ~~event is~~ aborted and it is deemed unsafe to remove the waste, the waste will be wetted as needed to stabilize it, the burn pan lid will be lowered remotely to cover the burn pan and the waste will remain there until it is possible to perform the treatment or safely remove the waste.

Figure 9 presents the evacuation route, emergency response, and access information for the TTF. Table 43 lists the emergency equipment typically available at the TTF. Table ~~5~~4 lists the emergency coordinators for the TTF.

~~Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained in Building 6715 and at the SNL/NM Emergency Operations Center.~~

Table 43
Thermal Treatment Facility, Emergency Response Equipment

Building 6715 Complex

Category	Description/Capabilities	Location
Safety and Decontamination Equipment	Permanent eyewash/hand-held deluge showers	Building 6715
	First aid kit	Building 6715~~l~~
	Absorbent	Building 6715~~l~~
	Miscellaneous PPE (protective suits, goggles, gloves)	Building 6715~~l~~
Internal Communication and Alarm System	Fire alarm pull ~~)~~station (pulling handle sends signal to KAFB fire department)	One on east wall inside Building 6715 near personnel door
	Public address system	Microphone in Building 6715
External Communication System	Telephones	Building 6715
	Fire alarm pull station (pulling handle sends signal to KAFB fire department)	Near personnel doors in Building 6715.
Fire Extinguishers	Portable (A-B-C)	One at or near each personnel door in Buildings 6715~~ and 6715l~~
Fire Suppression	Water supplied by fire hydrant	One hydrant, location shown in Figure 10

KAFB ~~=~~Kirtland Air Force Base.

Table ~~5~~4
Thermal Treatment Facility, Emergency Coordinator List

April 16~~February 18~~, 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	David Castillo Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-4192 (office) (505) 540-9375 (pager)	(505) 899-1956
~~Second~~ First Alternate	Bill Suderman Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-4218 (office) (505) 540-4019 (pager)	(505) 265-1786
~~First~~ Second Alternate	Tim Covert~~Maryann Krauss~~ Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	~~(505) 845-9997 (office)~~ (505) 284-4664 (office) ~~(505) 540-2688 (pager)~~ (505) 530-0215 (pager)	(505) 299-5367~~(505) 299-0793~~

One or more of these personnel are routinely available during operating hours (7:00 am to 5:00 pm on days when activities are conducted in Building 6715).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/~~-~~40 CFR 270.14[b][13], and 20 NMAC 4.1.500/40 CFR 264, Subparts G and X, [6-14-00]. General closure information applicable to all RCRA-regulated Units at SNL/NM, and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. The site-wide Closure Plan includes a description of the SNL/NM facility; waste description; closure performance standards; closure methods; sampling and analysis plan; closure schedule; procedures for ~~general closure information includes closure performance standards;~~ amendment of the Closure Plan; closure certification and report; and survey plat and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The TTF is located in the north-central portion of Technical Area III at SNL/NM, just south of Building 6715. The TTF consists of a square, steel burn pan, 30 inches (in.) on each side and 6 in. deep. A remotely-operated metal lid can be raised to open, or lowered to cover, the burn pan. The burn pan is enclosed by an expanded metal screen (i.e., open to the air) cage, approximately 4 feet (ft) on each side and 8 ft tall. Access to the burn pan is provided by a door on the north side of the burn cage, which is operated remotely from controls inside Building 6715. The burn cage sits in the center of a steel-lined concrete pad. The concrete pad is surrounded on the west, south, and east sides by an earthen berm, approximately 8 ft tall. An 8-ft-high chain-link security fence surrounds the entire TTF.

~~7.1~~7.2 Estimate of Maximum Waste Inventory (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total inventory of RCRA-regulated waste in treatment at any time at the TTF is~~was~~ no more than 20.8 gallons of explosive-contaminated material. The total quantity of RCRA-regulated waste treated in the TTF during its operating life will be estimated at the time of closure.

~~7.2~~7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5~~4~~ in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~, partial closure activities specified in this plan assume the following conditions were met during the operational life of the TTF:

- RCRA-regulated waste handling activities at the TTF were confined to the burn pan and immediate surrounding area. If contamination occurred, it would have been confined to those areas; and

- The burn pan was maintained to retain its integrity by following established maintenance and inspection procedures.

7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan in Appendix F provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the TTF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the TTF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan in Appendix F presents sample collection equipment and techniques applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the TTF. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the TTF.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan in Appendix F presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the TTF.

7.7 Contingent Post-Closure Care

The intent of the site-wide and Unit-specific Closure Plans is to establish procedures for clean closure of RCRA-regulated waste management Units. It is expected that the closure activities described herein will successfully remove or decontaminate all RCRA-regulated constituents from the Unit and surrounding soils. In the event that soil contamination remains upon completion of closure activities at the TTF, Sandia/DOE will prepare a post-closure plan to address this contamination in accordance with 20 NMAC 4.1.500/40 CFR 264.118.

~~ATTACHMENT G~~

~~TREATMENT PLAN FOR THE THERMAL TREATMENT FACILITY~~

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~~G-1 Regulatory References and Corresponding Permit Module Location~~

~~ACRONYMS AND ABBREVIATIONS~~

~~20 NMAC 4.1.*X*00~~	~~New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*~~
~~40 CFR 2*XX.XX*~~	~~Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*~~
~~ºF~~	~~degrees Fahrenheit~~
~~HWMF~~	~~Hazardous Waste Management Facility~~
~~mi~~	~~mile(s)~~
~~mph~~	~~mile(s) per hour~~
~~RCRA~~	~~Resource Conservation and Recovery Act~~
~~SASN~~	~~silver acetylide/silver nitrate~~
~~SNL/NM~~	~~Sandia National Laboratories/New Mexico~~
~~TTF~~	~~Thermal Treatment Facility~~

~~TREATMENT PLAN FOR THE THERMAL TREATMENT FACILITY~~

~~In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart IX (20 NMAC 4.1.900), adopting by reference the Code of Federal Regulations, Title 40, Part 270 including Section 270.23 (40 CFR 270.23), revised June 14, 2000 [6-14-00], treatment operations for Resource Conservation and Recovery Act (RCRA) regulated wastes treated at the Thermal Treatment Facility (TTF) are described in this attachment.~~

8.0 TREATMENT PLAN

In accordance with 20 NMAC 4.1.900/40 CFR 270.23 [6-14-00], treatment operations for RCRA-regulated wastes treated at the TTF are described in this section. Waste analysis procedures are provided in Appendix B (Section B.3.2 and Section B.3.3) of the General Part B.

8.1 Treatment Operations

The treatment is designed to deactivate the reactive and ignitable components of the waste. Thermal treatment is an accepted treatment technology for the deactivation of explosive waste (20 NMAC 4.1.800/40 CFR 268.40 [6-14-00]) to meet treatment standards. The waste may also contain pentaerythritol tetranitrate (PETN, an explosive); however, PETN is rarely used in the process. PETN and SASN both exhibit the RCRA characteristic of reactivity (D003). The treatment also effectively deactivates the ignitable (D001) components in the SASN slurry and liquid wastes. The residue may require further treatment to address other constituents, as discussed in Section B.3.3.1 in Appendix B of the General Part B.

The waste treated at the TTF is typically generated as a result of the formulation of SASN slurry, its application to test articles, and post-test cleanup activities. Liquid RCRA-regulated waste is generated from the formulation and application of SASN slurry. Solid RCRA-regulated waste (e.g., paper wipes, cotton rags, swabs, filter elements, cardboard masks) is generated as a result of post-test cleanup, which may occur the day after formulation. The solid items are typically saturated with water to protect personnel from explosive hazards.

According to published technical data (Wildin, 1986), SASN can be initiated by the energy of bright light (by raising the surface temperature of the SASN to the auto ignition temperature of 457 ºF) or small contact shock. The TTF was specifically built to treat SASN slurry and SASN contaminated waste because of the hazards associated with handling the waste.

A description of the TTF burn pan design, construction, and materials is provided in Section 1.1 of this module ~~permit renewal request~~ to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.23(a) [6-14-00]; and 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00].

Prior to treatment operations, TTF personnel perform a pretreatment inspection of the Unit as described in Section 4.0 of this module. During treatment operations, Unit personnel have immediate access to a telephone or two-way radio to summon help, if needed, as described in Section 6.0 of this module.

8.1.1 Waste Quantities

The TTF is limited to the treatment of the following ~~annual~~ quantities of reactive wastes during treatment operations:

~~□7,300 pounds maximum net weight of explosive-contaminated substances (D001, D003, D011, F003, F005) combined as long as the individual "Boundary Condition" quantities specified in the Waste Analysis Plan (Section 3 of this module) are not exceeded.~~

- The maximum net explosive weight of explosive treated during any treatment operation will not exceed 2.4 pounds (1.092 kilograms).

- The maximum total volume of SASN-contaminated waste (solid and liquid combined) present in the burn pan at any time will not exceed 20.8 gallons (75.7 liters), the capacity of the burn pan.

- The maximum total mass of waste (solid and liquid combined) present in the burn pan at any time will not exceed 190 pounds (86 kilograms).

If more restrictive conditions are imposed by the annual Open Burn Permit issued by the Albuquerque/Bernalillo County Air Quality Control Board (A/BCAQCB), those conditions will be followed. The Open Burn Permit and conditions are described in Section 8.1.4.

8.1.2 Operations

Waste treatment at the TTF will generally occur on the same day that the RCRA-regulated waste is generated in Building 6715.

Liquid waste is generally pumped to the TTF utilizing a remotely-operated peristaltic pump that is located inside the area where SASN is formulated and used. The waste is transferred to the TTF burn pan via flexible hoses and metal tubing that lead into the burn pan. RCRA-regulated waste that cannot be pumped to the TTF (solid items) is first wetted with water to temporarily reduce the explosive sensitivity and then hand carried in appropriate containers and manually placed or poured into the burn pan by qualified personnel, using extreme care to prevent spills. TTF personnel are required to wear appropriate personal protective equipment when performing treatment operations.

After the waste is pumped and/or manually placed or poured into the burn pan, all open TTF gates are closed and locked and the door to the TTF is closed remotely. Transfer of liquid waste to the TTF can be accomplished remotely, without opening the TTF door or accessing the fence gates. The burn pad lid remains closed as much as possible except during combustion to minimize evaporation of volatile waste.

The area between the TTF north fence and Building 6715 is cleared of all personnel by announcing over the public address system that treatment operations will soon commence. The TTF is controlled from the console inside Building 6715. Propane burners are pre-positioned to both heat the burn pan and ignite the contents; this is necessary to vaporize water-bearing wastes so that the explosive component can be treated effectively. The burn pan lid is raised and the burners are ignited and operate until combustion is complete. To provide additional assurance of complete treatment, personnel operate the burners for a period of time (typically 30 to 60 minutes) after the treatment is complete (i.e., all the explosives are deactivated and the ignitable liquids are combusted). Unit personnel use visual and audible evidence to determine treatment completion. Evidence of complete deactivation of explosives

is the cessation of audible popping noises and visual flashes of light and/or puffs of smoke. Evidence of the complete combustion of ignitable liquids includes the absence of large yellow flames from the burn pan and absence of liquid inside the burn pan. After treatment and the post-treatment burn are complete, Unit personnel turn off the propane burners and lower the lid to preclude wind dispersal of treatment residue and water infiltration into the burn pan during the cool-down period. The cool-down period varies, but will not exceed 24 hours.

After the unit has cooled sufficiently, Unit personnel perform a post-burn inspection to identify any untreated waste in the burn pan and contamination and/or "kick-out" on the steel-lined concrete pad. Kick-out is defined as untreated RCRA-regulated waste ejected from the burn pan during treatment. If any kick out is identified, Unit personnel return it to the burn pan. Untreated waste remaining in the pan and kick-out returned to the burn pan are subsequently retreated. If the inspection indicates that all the waste has been treated, the contents of the burn pan (i.e., ash) are removed, containerized, managed, and characterized as described in Section B.3.3.1 of the WAP. If the post-treatment inspection identifies contamination on the steel-lined concrete pad, it will be decontaminated by wiping with paper wipes, and the wipes will be treated at the TTF.

~~All waste to be treated is manually placed, poured, or pumped into the burn pan by qualified explosive waste handlers. All other treatment operations are performed remotely from inside Building 6715 by qualified TTF personnel. The door to the burn cage is remotely closed and the treatment process started from the control console in Building 6715. Three remotely-operated propane gas jets, one positioned to heat the inside of the burn pan and two positioned to heat the bottom of the burn pan, are ignited. The gas jet located over the burn pan ignites materials in the pan. Upon heating, the waste burns and decomposes (i.e., oxidizes to nonhazardous gases and carbon). The burn may be repeated several times to assure complete destruction of the explosive waste.~~

~~The treated contents of the burn pan are managed in accordance with applicable requirements (determined by the composition and types of RCRA-regulated waste that were treated.~~

~~A waste transfer pump will be used to transfer waste liquid contaminated with SASN from Building 6715 into the TTF burn pan and is the only non-manual waste-handling equipment used at the TTF.~~

8.1.3 Operating Conditions

To minimize air emissions or exposure of people to toxic or hazardous air emissions, the TTF will be operated only:

- Between the hours of 7 a.m. and 7 p.m. Operations may extend beyond 7 p.m. if necessary to complete treatment of the wastes in the burn pan.
- When the wind speed is less than or equal to 20 miles per hour (mph).
- When threatening weather is more than 10 miles (mi) from the TTF. Threatening weather is defined as winds in excess of 35 mph; tornadoes; electrical storms with or without precipitation of any type; snow storms with a visibility of less than 2000 feet~~3/8~~

~~of a mi~~; rain with accumulations greater than 0.3 inch per hour; or any hail, sleet, or ice storms.

8.1.4 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi]; 20 NMAC 4.1.500/40 CFR 264 Subparts AA, BB, and CC)

TTF personnel employ the practices described in Section 8.2 of the SNL/NM General Part B to prevent releases to the atmosphere during treatment.

Subpart AA

TTF treatment operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

TTF operations involve a pump and transfer lines in light organic service. These are used less than 300 hours per calendar year and are therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052-.1060 as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f). A list of the equipment will be maintained in the Unit records, as described in Section 9.0 of the General Part B. Hours of operation will also be noted in the Unit records.

The TTF is subject to the regulations of the A/BCAQCB. Open burning of high explosives is allowed under A/BCAQCB Regulation Number 3 when transporting the material would be unnecessarily hazardous. The TTF is granted a permit for open burning of explosives by the City of Albuquerque on an annual basis. Treatment will be restricted to the open burning conditions imposed by the most current City of Albuquerque Open Burn Permit.

Subpart CC

TTF treatment operations do not include management of RCRA-regulated wastes in containers subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC.

8.2 Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

The thermal treatment of RCRA-regulated waste at the TTF is completely effective in deactivating explosive~~s~~ and ignitable constituents in the wastes. The ~~Waste explosives have autoignition~~auto ignition temperature of SASN is ~~s of less than 662~~ 457 degrees Fahrenheit (°F). Propane, used to ignite the waste, has a flame temperature of 3500°F. The TTF burners are operated for a minimum of 30 minutes after there is no visual (sparks) or audible evidence of untreated explosive waste remaining in the burn pan. No waste explosives have been observed in the treated TTF ash.

Given the extremely high vapor pressure and low flash points of ignitable ~~volatile organics~~solvents (e.g., acetone, acetonitrile) that may be treated at the TTF (the flash point of acetone is 15°F and the flash point of acetonitrile is 35.6°F), it can be concluded that the materials are completely burned and decompose to gaseous by-products and ash.

The principal by-products of combustion of liquids and solids treated at the TTF are ash (carbon), gases, and silver. Gases consist primarily of nitrogen, water vapor, carbon dioxide, carbon monoxide, sulfur dioxide, diatomic oxygen, and traces of nitrous oxides. Treated residues (ash) are managed in accordance with applicable RCRA requirements and characterized in accordance with Section B.3.3.1 of the Site-Wide WAP (Appendix B).

9.0 ENVIRONMENTAL PERFORMANCE STANDARDS FOR THE MISCELLANEOUS UNIT ~~(20 NMAC 4.1.500/40 CFR 264, SUBPART X)~~

The TTF will be operated, maintained, and closed in a manner that will ensure protection of human health and the environment, in accordance with 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00]. The Unit ~~TTF~~ is located in a sparsely populated area, and is ~~. The TTF has been~~ designed and operated to facilitate safe handling and treatment of RCRA-regulated wastes in order to prevent adverse impacts to human health and the environment~~al impacts~~. The Unit features, small quantities of waste treated, ~~open burning restrictions,~~ and operating requirements minimize the potential for a release. Operations, including h~~H~~azard prevention features and practices, ~~programs~~ are described in Sections 1.2 and 8.1 of this module. Contingency and emergency response actions to minimize impacts of unanticipated events, such as spills, are described in ~~referenced in~~ Section 6.0 of this module. Treatment operations and effectiveness are described in Sections 8.1 and 8.2 of this module. ~~The closure plan for the TTF is provided in Section 7.0 of this module.~~

In conformance with 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00], a miscellaneous RCRA-regulated waste storage, treatment, or disposal facility must be shown to prevent any releases to groundwater, surface water, soil, or air that may have adverse effects on human health and the environment. The TTF has been designed and is operated in such a manner as to meet these requirements, as described below.

9.1 Characteristics of the Waste and the Unit ~~Protection of Groundwater/Vadose Zone~~ (20 NMAC 4.1.500/40 CFR 264.601[a][1], [b][1,2], and [c][1-3])

Sandia/DOE assessed the potential risk to human health and ecological receptors due to operation of the TTF under the conditions described in this module. The chemicals of potential concern (COPCs) and Unit features are summarized below.

9.1.1 Waste Characteristics

Waste quantities are discussed in Section 8.1 of this module. The RCRA-regulated wastes treated at the TTF consist of the following:

- A liquid or slurry containing varying amounts of acetone, acetonitrile, nitric acid, water, and typically some SASN crystals. The liquid or slurry may also contain PETN.
- Solid items that may contain small quantities of SASN, including paper wipes, cotton rags and swabs, filter elements, incidental silver nitrate that did not react to form SASN, and traces of Viton™ fluoroelastomer.

The estimated quantity of waste generated by testing operations is based on individual batches of SASN. Table ~~6~~5 summarizes the COPCs in the wastes treated at the TTF.

Table ~~6~~5
Estimated Maximum Quantities of Constituents in SASN Wastes

Constituent	Approximate quantity in wastes from cleanup of aborted test using four batches of solution
Acetone	65 L [a]
Acetonitrile	Trace [b]
Nitric acid	0.25 L
Silver nitrate	Trace [b]
SASN	1.092 kg [c]
PETN (optional)	0.04 kg [c]
Water	20 L
Solid items (paper, cloth, wood, cardboard)	50 kg

kg kilogram
L liter
[a] In normal operations, most of the acetone would be applied to the test article, and approximately 5L of acetone would be present in the solution to be treated at the TTF.
[b] An ingredient consumed in the formulation of the SASN slurry. Traces of unreacted material may be present in the waste from normal operations and from aborted tests.
[c] In normal operations, all the explosive would be applied to the test article, and a trace would remain in the solution to be treated at the TTF. Some explosive would also be present on the solid items treated.

Most test operations will require at least two batches of SASN; the largest may require four batches. PETN is used on rare occasions. Normal test operations result in a mixture containing nitric acid, some acetone, water, and traces of acetonitrile, silver nitrate, and SASN that requires treatment at the TTF. Aborted tests may result in the entire quantity of formulated SASN requiring treatment in addition to the normal wastes. The latter situation is shown in Table ~~6~~5.

Of the COPCs identified above, silver is the only COPC remaining in the ash after treatment at the TTF. There are limited analytical data for residual ash from the TTF. For the analytical data available (a total of 5 samples), silver was detected at a maximum concentration of 140 milligrams per kilogram (mg/kg). Sandia/DOE used this concentration as the exposure point concentration when considering direct contact in the human health screening evaluation.

9.1.2 Unit Features

The TTF is described in Section 1.1 of this module. It is comprised of a steel burn pan with a cover, located inside a steel cage. The cage and burn pan rest on a steel-lined concrete pad. The cage and pad are surrounded by an earthen berm.

Seven~~Four~~ situations present the potential for the release of RCRA-regulated waste to the ~~TTF's hydrogeologic~~ environment surrounding the TTF. Each situation is addressed~~They are~~ below:

- *Transfer of liquid wastes to the TTF burn pan.* Liquid wastes are transferred to the Unit through enclosed tubing equipped with secondary containment. No more than 20.8 gallons of liquid wastes are present in the Unit at any time, limiting ~~If a spill of liquid waste occurs,~~ the maximum ~~amount of material that could be~~ released ~~to~~ 20.8 gallons. ~~Spillage would be removed immediately and placed in the TTF.~~ Spills on the ground or on the TTF pad will be wetted with water using spray hoses. When saturated with water, the explosive waste is stable. The spilled, wet waste can then be wiped or scooped up and deposited in the burn pan for destruction. Similarly, contaminated soils will be wetted, excavated, and placed in the TTF burn pan for treatment.

- *Transfer of solid items ~~waste~~ to the TTF burn pan.* Solid ~~waste~~items~~,~~ such as explosive-contaminated paper and~~,~~ filters~~, and solid explosives,~~ are contained and carried to the TTF burn pan by qualified Unit personnel~~hand~~. Solids that are spilled during transfer would be handled in the same manner as described above for liquids.

- *Runoff of potentially contaminated precipitation.* Once waste is transferred to the burn pan, treatment generally takes place immediately. In the unlikely event of spillage from the burn pan, waste material will be contained on the steel-lined concrete pad. Any precipitation or spillage in the steel-lined concrete pad ~~is~~ drains~~ed~~ through a filter and settling basin into the 157-gallon catch tank. In addition, no untreated waste or treated residue is allowed to remain for extended periods of time in the burn pan.

- *Discharge of potentially contaminated precipitation from the catch tank.* Water collected in the catch tank is managed as described in Section 1.2.1 of this module.~~will be containerized if it is suspected to be the result of a release or contaminated with RCRA-regulated constituents, according to the Waste Analysis Plan, Section 3 of this module. If the catch tank is nearing maximum capacity (157 gallons) and the water is not suspected of being derived from the treatment of RCRA-regulated waste, the water will be discharged to the City of Albuquerque sewer treatment system.~~

- *Evaporation of liquid wastes from the burn pan.* Untreated wastes are not allowed to remain for extended periods in the burn pan, and treatment generally takes place immediately during normal operations. If treatment cannot be performed, the burn pan lid is lowered. During treatment, the high vapor pressure and low flash point of the organic liquids in the waste, combined with the burner design (Section 1.1), maximize the destruction of organic constituents through combustion.

- *Emission of particulates and gaseous combustion products during treatment.* ~~In addition, no waste material is allowed to remain for extended periods of time in the burn pan, and waste may be burned repeatedly to ensure the complete destruction of explosive materials.~~ Combustion products are described in Section 8.2. Products of complete combustion include nonhazardous gases. As noted above, the high vapor pressure and low flash point of the organic liquids in the waste, combined with the burner design (Section 1.1), maximize combustion performance.

- *Emission of particulates following treatment.* Ash and particulate matter (residues) from the thermal treatment process are removed from the burn pan as soon as possible, and the pan is covered between treatments.

~~Exposure of humans or environmental receptors to RCRA-regulated waste or constituents via groundwater is unlikely. This conclusion is supported by the following considerations:~~

- ~~The maximum volume of waste to be treated during any burn event is limited.~~
- ~~The burn pan is situated on a steel-lined concrete pad with a four-inch curb that drains into a catch tank that serves as secondary containment.~~
- ~~Depth to groundwater in the vicinity of the TTF is approximately 500 feet below the ground surface.~~
- ~~The nearest location of groundwater withdrawal is greater than 2 mi away from the TTF, and the nearest major body of surface water (the Rio Grande) is situated approximately 6 mi to the west of the TTF.~~
- ~~The mean annual moisture deficit or net recharge (evapotranspiration minus precipitation) is approximately 14 in., limiting the potential for contaminants in solid material to leach to the water table.~~

9.2 Potential for Deposition or Migration of Wastes or Waste Constituents ~~rotection of Surface Water, Wetlands, and Soil Surface~~ (20 NMAC_4.1.500/40 CFR 264.601[a][7]~~[b]~~)

~~Exposure of humans or environmental receptors to RCRA-regulated waste or constituents via surface water, wetlands, or the soil surface is unlikely. This conclusion is supported by the following considerations:~~

- ~~The maximum volume of waste to be treated during any burn event is limited.~~
- ~~The TTF is approximately 6 mi from the Rio Grande.~~
- ~~The burn pan is situated on a steel-lined concrete pad with a four-inch curb that drains into a catch tank that serves as secondary containment.~~

~~This supports the conclusion that the potential for adverse effects to human health or the environment via surface water, wetlands, or soil surface pathways is implausible.~~
The potential for release of COPCs to the soil is directly associated with the operations and residual waste at the TTF. COPCs may be released to the surface soil as a result of wind-blown ash deposition. Wind can transport ash particles with adsorbed COPCs (silver) as suspended dust, capable of dry or wet deposition away from the site. The site is sparsely vegetated, and is susceptible to wind and water erosion. Surface runoff and biota are natural, but minor mechanisms of COPC transport. Water percolation through the soil is the primary mechanism for the transport and migration of COPCs in the subsurface soil and into groundwater.

It has been estimated that loss through evapotranspiration accounts for 95 percent of the total precipitation received at SNL/NM (Thomson and Smith 1985). Vegetation, although sparse at the site, will increase the rate of moisture loss from the subsurface soil through transpiration. As moisture evaporates from the soil surface, the direction of COPC movement near the surface may be reversed (i.e., upward transport) with capillary rise of the soil moisture.

Because of the arid nature of the environment at the TTF, characterized by low precipitation and high evapotranspiration rates, recharge to the water table at TA-III (measured at a solid waste management unit in north central TA-III) is insignificant under current climatic and vegetative conditions (Peace et al., 2002). Because groundwater at the TTF is approximately 500 feet below ground surface, the potential for COPCs to reach groundwater through the unsaturated zone above the water table is very low and can be ruled out as a transport pathway of concern.

Plant roots can access COPCs that are in the soil solution and transported to the aboveground tissues with the xylem stream. This may be a passive process, but active uptake (i.e., requiring energy expenditure on the part of the plant) or exclusion of some constituents in the soil solution may also take place. Aboveground tissues can absorb constituents directly from the air or by contact with dust particles. Constituents in plant tissues that are consumed by herbivores may pass through the gut and be returned to the soil in feces (at the site or transported from the site in the herbivore), or be absorbed into tissues, to be held, metabolized, or later excreted. The herbivore may be eaten by a primary carnivore or scavenger, and the constituents still held in the consumed tissues will repeat the sequence of absorption, metabolization, excretion, and consumption by higher predators, scavengers, and decomposers. The potential for transport of the constituents within the food chain is dependent upon both the mobility of the species that comprise the food chain and the potential for the constituent to be transferred across the links in the food chain. Inorganic COPCs (silver) at the TTF are elemental in form and are, therefore, not considered to be degradable via biotic or abiotic processes.

Table ~~7~~6 summarizes the fate and transport processes that may occur at the TTF. Because the topography of the site is relatively flat and maintained for treatment operations, the potential for surface-water transport is low. Because winds in the Albuquerque area can be fairly strong in late winter and early spring, the potential for transport of COPCs in surface soil by wind is moderate. In both cases, however, the significance of these transport mechanisms is lessened by the fact that the principal COPC that would be released (i.e., silver) has been and is expected to be present in the residual ash at low initial concentrations. Because of the arid nature of the climate at the site, significant movement of water through the subsurface soil is unlikely and migration to groundwater is not expected to occur. The potential for food chain uptake is low because of the small size of the site, the disturbed nature of the habitat, and the continued operations at the site. The potential for degradation is minimal due to the elemental and inorganic nature of the COPC (silver).

9.3 Potential Risks to Human Health (20 NMAC 4.1.500/40 CFR 264.601[a][8], [b][10], and [c][6])

Sandia/DOE performed a screening human health risk assessment to estimate the potential risk to human receptors that may be exposed to residual COPCs at the TTF under the

Table ~~7~~6
Summary of Fate and Transport Mechanism at the TTF

Fate and Transport Mechanism	Existence at Site	Significance
Wind	Yes	Moderate
Surface runoff	Yes	Low
Migration to groundwater	No	None
Food chain uptake	Yes	Low
Transformation/degradation	No	None

proposed operating conditions. The assessment indicates that exposure to the COPCs at the TTF poses no significant human health risks under current and anticipated future conditions, as discussed in the following sections. The assessment was performed in accordance with the "Risk Assessment Guidance for Superfund" (RAGS) (EPA, 1989) and "Technical Background Document for Development of Soil Screening Levels" (NMED, 2000).

9.3.1 Receptors

Six buildings are occupied on a regular basis within the vicinity of the TTF. The remaining buildings are used sporadically for other tests or research activities, in the same manner as Building 6715. Table ~~8~~7 summarizes the occupants of the TTF and the full-time occupants near the TTF.

Table ~~8~~7
Full-Time Occupants of Buildings Near TTF in TA-III at SNL/NM

Building	Distance From TTF (feet)	Direction From TTF	Number of Full-time Occupants	Percent of Time Downwind from the TTF[a]
6715	20	N	10 [b]	6
6585	1250	E	152	9
6584	950	E	59	9
MO-228	1050	ESE	12	8
6536	795	SE	5	10
6530	820	SE	1	10
6710	1080	SW	8	11

[a] Based on prevailing winds during daylight hours
[b] The TTF is not continuously occupied, but personnel who are present during tests and treatment have the highest potential for exposure

The occupants of surrounding buildings are upwind from the TTF for a large percentage of the time. The wind rose on Figure 5 shows that overall prevailing winds at the TTF are from the east to southeast. However, winds in the area exhibit a diurnal pattern as described in Section 2.6: nighttime winds are from the southeast, and daytime winds are generally from the northwest to southwest (SNL, 2002). The daytime winds are reported in Table ~~8~~7, because the buildings are occupied during the daytime.

9.3.2 Methodology

To evaluate potential human health risk at the TTF, maximum exposure point concentrations of the residual ash COPCs were compared to the corresponding occupational NMED soil screening levels (SSLs) (NMED, 2000). An individual SSL represents the soil concentration below which no significant adverse health effects are expected to occur from the assumed soil exposure pathways. The SSLs are fixed to conservative levels of risk (i.e., a cancer risk of 1×10^{-05} or a hazard quotient of 1.0). For metals and high explosives, the SSL uses three exposure pathways in the risk calculations:

- Incidental ingestion of chemicals in soil
- Dermal contact with chemicals in soil
- Inhalation of fugitive dust from soil.

The modeled duration of exposure assumes a continuous exposure during a 40-hour work week, 50 weeks each year, for a 25-year period.

The proposed current and future land use at the TTF is occupational under operating conditions. In addition, the onsite occupational receptors are not expected to exceed 50 days per year operational use at the TTF (i.e., the actual annual exposure period is less than 20% of the modeled exposure). Therefore, use of the occupational SSLs to calculate potential risk is highly conservative. Groundwater is not considered a viable exposure medium due to due the limited potential fate and transport soil-to-groundwater mechanisms operating at TA-III. Vapors released during treatment operations at the TTF do not to significantly contribute to the operational risk due to the following factors:

- The short duration of TTF treatment operations.
- The majority of the COPCs are incinerated during treatment.
- The treatment takes place outdoors and, therefore, the remaining vapors are quickly dispersed.
- Unit personnel are inside Building 6715 during treatment.
- The nearest continuously-occupied building is 795 feet away from the TTF and upwind most of the time (Table ~~8~~7).

A hazard quotient (HQ) can be estimated using an exposure point concentration and a respective non-carcinogenic SSL, according to the following formula:

$$HQ = THQ \frac{EPC_i}{SSL_i}$$

Where:

- THQ = The target hazard quotient of 1.0
- EPC_i = Maximum exposure point concentration of $COPC_i$ detected in soil (mg/kg)
- SSL_i = Occupational SSL for $COPC_i$ detected in soil (mg/kg) based upon non-carcinogenic effects

None of the COPCs at the TTF are carcinogenic; therefore, no estimation of incremental lifetime cancer risk was conducted.

9.3.3 Results

Table ~~9~~8 summarizes the COPC HQ values, based on comparing the maximum exposure point concentrations with the occupational SSLs.

Table ~~9~~8
Results of the Human Health Risk Screening Analysis for the TTF

COPC	Occupational NMED SSL (mg/kg) [a]	Concentration (mg/kg) [b]	Hazard quotient	Incidental lifetime cancer risk
Silver	1200 n	140	0.12	NA

[a] NMED 2000.
[b] concentration at point of maximum exposure, assuming direct contact
mg/kg milligram per kilogram.
n Non-carcinogenic metal.
NA Not applicable.

This screening human health risk assessment indicates the maximum concentration of silver in residual ash does not pose a potential significant risk to human health. The HQ calculated is 0.12, which is significantly less then the screening criteria of 1.0.

As noted in Section 9.3.2, the actual risks presented by treatment at the TTF and the residual ash are significantly less than those calculated due to the limited actual use of the TTF (i.e., it is only used 50 days per year, and the actual annual exposure is less than 20% of the modeled exposure). Therefore, under current and anticipated future conditions, exposure to COPCs at the TTF poses no significant human health risks.

9.4 Potential Damage to Animals, Vegetation, and Physical Structures (20 NMAC 4.1.500/40 CFR 264.601[a][9], [b][11], and [c][7])

Sandia/DOE evaluated the risk and potential damage to animals and vegetation through a screening ecological assessment, which examines the potential presence of endangered or threatened species at or around the TTF. The assessment indicates the expected impact of the TTF is minimal. No sensitive species have been identified at the TTF. The habitat quality of the TTF is poor (due to industrial land use patterns in the surrounding area), indicating that future habitation by sensitive species is unlikely.

Damage to physical structures (primarily Building 6715) that are in close proximity to the Unit could be caused by detonation of the explosive wastes treated in the TTF. However, the potential for such damage is effectively minimized through the design and operation of the Unit (described in Sections 1.2 and 8.1 of this Module).

9.4.1 Ecological Screening Assessment

The screening ecological assessment is limited to the potential threatened or endangered (T and E) species that may occur within the vicinity of the TTF. It includes: summary of the threatened and endangered (T and E) species survey for SNL/NM; the ecological receptors found at SNL/NM; and a summary of the receptors found at TA-III and, more specifically, the TTF as reported in *Sensitive Species Survey Results* (IT, 1995).

9.4.2 Survey Description

Sandia/DOE conducted biological field surveys and reviewed previously documented surveys to identify the presence of sensitive species and key habitat areas at each of the SNL/NM solid waste management units (being addressed through the Sandia/DOE Environmental Restoration (ER) program) that are located within the boundaries of KAFB.

The term "sensitive species" is used in these surveys refers to all state or federally listed threatened or endangered species, proposed or candidate species, and other species afforded special management consideration, thereby providing that species legal protection from actions that may jeopardize its further existence, by a state or federal resource management agency (e.g., U.S. Forest Service [USFS] Sensitive Species). Both plant and animal species are included under this definition. The actual or potential occurrence of permanent or transient sensitive species populations with the vicinity of the TTF is discussed.

The current list of species that fall under the definition of sensitive and that may occur on KAFB was compiled from information obtained from the U.S. Fish and Wildlife Service (USFWS), the New Mexico Department of Game and Fish (NMDGF), and the New Mexico Forestry and Resource Conservation Division (NMFRCD) of the Energy, Minerals and Natural Resources Department. Federal protection of a species (plant or animal) principally falls under the jurisdiction of the USFWS, although special management status may be granted to a species by other resource management agencies, such as the USFS and the Bureau of Land Management. In New Mexico, the state agencies empowered to identify and protect sensitive

biological resources are the NMDGF (for vertebrate wildlife and some invertebrates) and the NMFRCD (for plants).

Other species designations are also recognized through the listing process. Those that are considered sufficient to warrant inclusion as a sensitive species are proposed species, C1 candidate species, and C2 candidate species. A proposed species is one for which a proposal for listing has been published in the Federal Register, but a final rule on the listing has not yet been made. Candidate species are those that are under review for possible listing. The C1 classification means that the USFWS believes sufficient information exists to support listing. The C2 classification means that insufficient information currently exists to support listing.

Similarly, the New Mexico Wildlife Conservation Act authorizes the NMDGF to designate species of wildlife native to New Mexico as endangered, thereby granting the species protection from further threats to their continued existence in New Mexico. Under this authority, the NMDGF uses two levels of classification, endangered group 1, and endangered group 2, which are equivalent to the endangered and threatened classifications (respectively) of the USFWS. The NMDGF also designates certain species and groups of wildlife (e.g., raptors and horned lizards) as "protected"; however, this designation is directed at protecting individuals of these species from unregulated hunting, killing, trapping, capture, or harassment and does not carry with it the criterion of threat of extinction or extirpation.

The NMFRCD has the authority to designate and protect plant species and varieties that are threatened by extinction or extirpation in New Mexico. The NMFRCD maintains four lists of plant species, each representing a separate level of classification. List 1 plants are designated endangered in New Mexico and are legally protected from unauthorized collection. List 1 plants include all plant species in New Mexico that are listed by the USFS as endangered or threatened as well as other species that may be threatened with extirpation from the state. List 2 plants are either rare throughout their range or have a very restricted range, making them vulnerable to environmental perturbations. Although List 2 plants are monitored for change in status, they are not protected under the New Mexico Endangered Plant Species Act. List 3 plants are rare plants that are currently under review for listing. List 4 plants are those that, after review, have been dropped from consideration at this time. As with the List 2 plants, neither List 3 nor List 4 plants are protected under the New Mexico Endangered Plant Species Act. Plants on the NMFRCD Lists 1, 2, and 3 are considered to be sensitive species because all are either known to be vulnerable to disturbance or are of uncertain sensitivity.

9.4.3 Receptors Found at SNL/NM

There are no federally listed T or E species known to occur within KAFB. The federally endangered peregrine falcon (*Falco peregrinus*) could potentially occur in the mountainous areas of KAFB; however, the likelihood is low due to poor habitat quality for this species. The federally threatened Mexican spotted owl (*Strix occidentalis lucida*) occurs in canyons similar to Sol se Mete and Lurance Canyons in eastern KAFB; however, a special survey of these canyons by Roger W. Skaggs found the habitat conditions to be unsuitable and concluded that the probability of this species occurring in these canyons is low. The federally endangered black-footed ferret (*Mustela nigripes*) was once native to central New Mexico but has not been recorded in the state in recent years. It is probably extinct in New Mexico.

Two candidate species (C2) for federal listing are known to occur on KAFB. These are the grama grass cactus (*Pediocactus papyracanthus*) and the Texas horned lizard (*Phrynosoma cornutum*). The grama grass cactus is also a State-listed endangered plant species (List 1) and a USFS sensitive plant and has been recorded throughout the lower elevations of KAFB, from the base of the Manzanita Mountains to the fence marking the western boundary of the base. The Texas horned lizard has been observed at the North Thunder Range and in Lurance Canyon. As a horned lizard, this species is protected by state law from collection but has no other state-granted special status.

Seven other federal candidate species are considered as potentially occurring on KAFB but have not been recorded on KAFB. These include three birds, three bats, and one rodent species. Three of these species, the southwestern willow flycatcher (*Empidonax traillii extimus*), the spotted bat (*Euderma maculatum*), and the "New Mexican" meadow jumping mouse (*Zapus hudsonius luteus*), are also listed by the NMDGF as endangered (group 2). All three of the birds -- the "Apache" northern goshawk (*Accipiter gentilis apache*), the ferruginous hawk (*Buteo regalis*), and the southwestern willow flycatcher -- are likely to be migrants on KAFB, if they occur at all. The northern goshawk typically nests at higher elevations and in denser coniferous forests than those provided by the Manzanita Mountains, although it winters at lower elevations, usually along riparian zones. Although a ferruginous hawk was observed soaring over the South Thunder Range during surveys, nesting, roosting, or feeding by this species on KAFB has not been observed. The lack of dense willow stands (which are the preferred nesting habitat for the southwestern willow flycatcher), makes it an unlikely breeding species on KAFB. The three species of bats listed as federal candidate species (C2) potentially use the mine shafts in the Manzanita Mountains as roosts, although the small number of records for the greater western mastiff bat (*Eumops perotis californicus*) in New Mexico make it very unlikely to occur in these mine shafts. The "New Mexican" meadow jumping mouse has been recorded along the Rio Grande and in higher montane meadows, but suitable habitat for this species (thick grass with high soil moisture) does not occur on KAFB.

Two species of birds, the gray vireo (*Vireo vicinior*) and Baird's sparrow (*Ammodramus bairdii*), are listed by the NMDGF as endangered (group 2) but have no federal status. A gray vireo was observed in Sol se Mete Canyon but was probably a migrant. Past observational records indicate that the Baird's sparrow is unlikely in the area of KAFB.

Three State-listed endangered plants (List 1) are known to occur on KAFB. These are the grama grass cactus, the Wright's pincushion cactus (*Mammillaria wrightii*), and the visnagita cactus (*Neolloydia intertexta*). Two other State-listed endangered plants, Simpson's cactus (*Pediocactus simpsonii*) and Great Plains lady tresses (*Spiranthes magnicamporum*), are possible but have not been recorded on KAFB. The latter, an orchid, is unlikely due to the rarity of moist habitats required for this species.

One State-listed rare and sensitive plant (List 2) is known to occur on KAFB, and two others may potentially occur. The Santa Fe milkvetch (*Astragalus feensis*) has been recorded in the North Thunder Range area. The cyanic milkvetch (*Astragalus cyaneus*) and Plank's catchfly (*Silene plankii*) are sporadic but locally common on dry slopes along the Rio Grande Valley. Neither has been observed on KAFB.

Finally, only one species under review by the NMFRCD (List 3) may potentially occur on KAFB. The strong prickly pear (*Opuntia valida*) occurs along the foothills of the Sandia Mountains and

has typically been treated as a form of the common and highly varied Engelmann or "sprawling" prickly pear (*Opuntia phaeacantha*). Its taxonomic elevation to species is not widely accepted and requires further study. It has not been recorded on KAFB but may be easily overlooked due to the prevalence of Engelmann prickly pear.

9.4.4 Sensitive Species Found at TA-III

TA-III was surveyed for sensitive species during the spring and summer of 1992 and 1993. This survey effort included all ER Project sites that are within TA-III, as well as an area northwest of TA-III. Portions of the west central part of TA-III have been identified as Priority 1 habitat for grama grass cacti, indicating that the species occurs in vigorous populations in the area of TA-III.

Although no other sensitive species have been recorded on SNL/NM ER Project sites in TA-III, the potential occurrence of some cannot be ruled out. Among the plants, both the Santa Fe milkvetch and Simpson's cactus are possible in the habitats of the lower foothills and may have eluded detection. The Texas horned lizard, which has been recorded in Lurance Canyon, could occur in the grassland sites within this canyon and on the mesa. Finally, the abandoned mines in the eastern part of KAFB may contain bats, among which both the spotted bat and occult little brown bat are possible occupants. However, none of these are expected to occur at the TTF.

No sensitive species have been identified at the TTF. Additionally the habitat quality of the TTF is poor, indicating that future habitation by sensitive species is unlikely to occur. Therefore, a quantitative assessment of potential risk to ecological receptors at the TTF is not warranted at this time.

~~9.3~~9.5 Monitoring (20 NMAC 4.1.500/40 CFR 264.601 ~~and 264.~~602)

~~This section is provided to satisfy the requirements of 20 NMAC 4.1.500/40 CFR 264.601 and 264.602 [6-14-00].~~ Sandia/DOE do not routinely perform environmental monitoring at the TTF because of the sporadic nature of the operations and the minimal effect of the operations on human health and the surrounding environment (discussed in Sections 9.3 and 9.4 of this module). However, as discussed in Sections 2.6 and 9.0, Sandia/DOE perform routine environmental monitoring in the vicinity of the TTF. ~~There are no monitoring stations at the TTF. Data from the stations closest to the TTF will be used to demonstrate compliance with environmental monitoring requirements. The SNL/NM Environmental Monitoring Program collects data from routine environmental surveillance activities on an ongoing basis.~~ The results of the activities are provided in annual environmental monitoring reports (SNL/NM 2002). Contamination attributable to the TTF has not been detected during environmental monitoring activities at SNL/NM.

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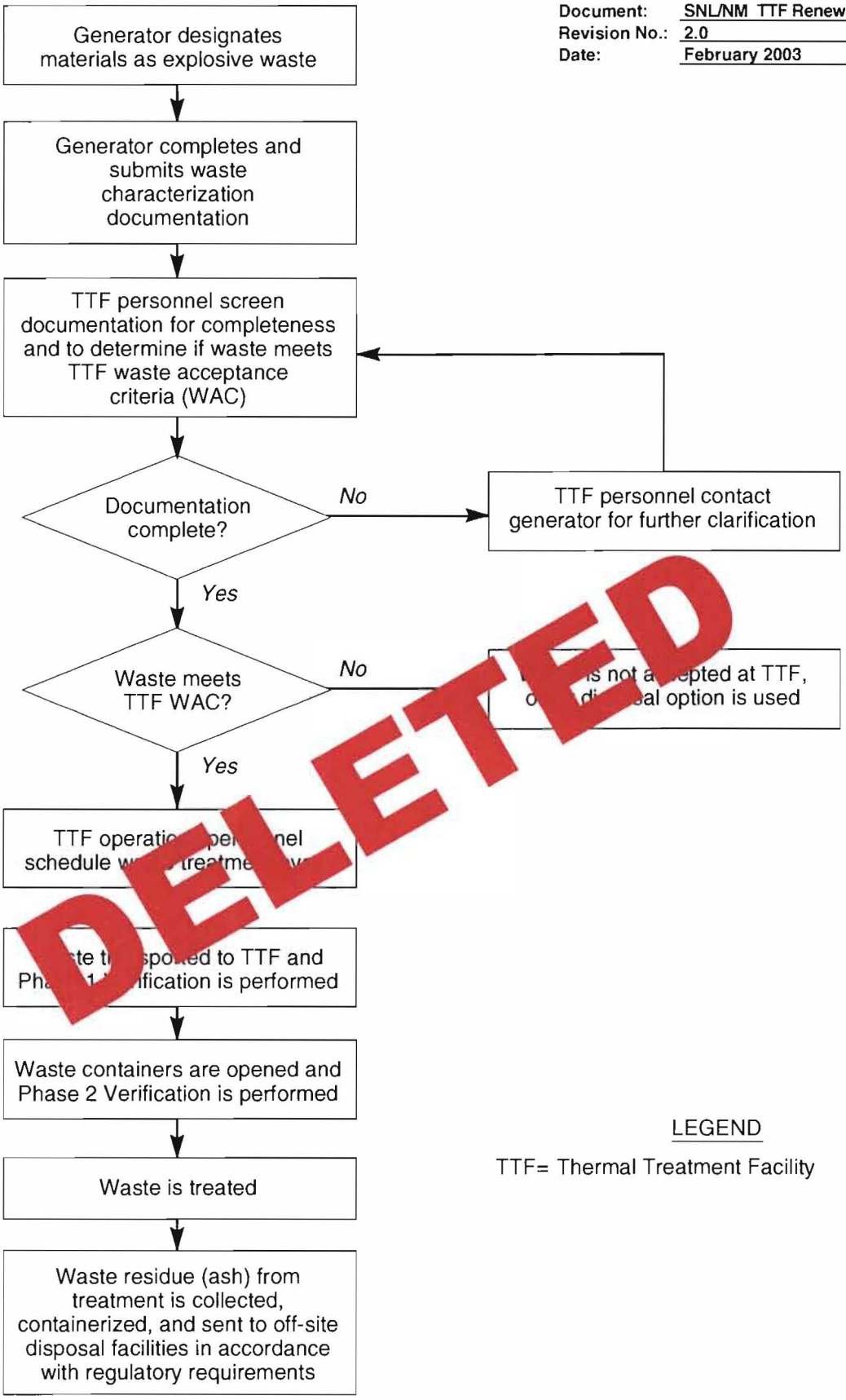

Figure B-1

Overview of Waste Screening and Verification Process

Explosive Waste Disposal Request

TUDR 0000052216

TO: Hazardous Waste Management Facility, MS 1117
Sandia National Laboratories
Albuquerque, New Mexico 87185-1117

A: Generator Information

	Name	Org #	Phone	Mailstop
Owner	OWNER, OWNER	3122	(505)845-2222	1037
Generator	OWNER, OWNER	3122	(505)845-2222	1037

C. RMMA Disclaimer
Was any material on this form generated or stored within a Radioactive Materials Management Area (RMMA)?
☐ Yes ☒ No

B: Location SNL/NM ECF 905 1100D

D: Waste Characterization Information Bulk explosive substance
TNT

Tot Qty 30.0000

Classification UNCLASSIFIED Type BULK POWDER Manf

UOM GRAMS

Physical/Chemical Constituents of Waste

☐ Wetted with

Constituents In Waste		N.E.	Non-Explosive Wt
TNT		[illegible]	

Total NEW per UOM	1.0000g	Total weight, le[illegible]W[illegible]ticle	N/A
Total NEW for waste	30.0000g	Total weig[illegible]n-explo[illegible]tuents	0.0000 g
Total weight of waste	30.0000g		

E: Shipping Info
Shipping Name Trinitrotoluene DOT Ex
FSN/NSN

F: Container Info
Transportation Contain[illegible] A/N [illegible]
Inner Container V[illegible]

G: Classification Code

UNO Hazard Class	Bare	1.1	Packaged	1.1
Compatibility Code	Bare	D	Packaged	D

"L" Reason:
Self Determination

H: Generator Certification
I certify that the above information is true and correct to the best of my knowledge. The waste is properly packaged and labeled for safe handling. Based upon process knowledge and operational procedures, or radiological analysis, this waste meets all release criteria established by the DOE for certifying (see ES&H Manual, RMMA) the waste does not contain any DOE added radioactivity.

Signature of Generator _____ Date _____
OWNER, OWNER Proj # Task #

I: Disposition Information

Container Type		Manifest No.	Line TSDF
Container No		Ship Date / /	EPA Waste Code:
Container Quantity	0.0000	DOT Shipping Description	
Shipped Weight	0.00 kg		
Source			

DELETED

Figure B-2
Example of Explosive Waste Disposal Request Form

Module III - RMWMF

Sandia National Laboratories/New Mexico Radioactive and Mixed Waste Management Facility Part B Permit Application

Module III

Revision 2.0

April ~~February~~ 2003

Prepared by
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185

Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2XX, Section 2*XX.XX*
CMU	concrete masonry unit
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ft	foot/feet
ft^2	square foot/feet
HSWA	Hazardous and Solid Waste Amendments
in.	inch(es)
lb/ft^2	pound(s) per square foot/feet
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
RMWMF	Radioactive and Mixed Waste Management Facility
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	solid waste management unit
TA	Technical Area
TSDF	treatment, storage, and disposal facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

SANDIA NATIONAL LABORATORIES/NEW MEXICO RADIOACTIVE AND MIXED WASTE MANAGEMENT FACILITY PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Radioactive and Mixed Waste Management Facility (RMWMF) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage and treatment operations at the RMWMF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared~~are providing~~ and revised this module to provide Unit-specific ~~address~~ details ~~and/or requirements~~ that supplement the information ~~those~~ provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," ~~(SNL/NM, 2003a),~~ hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, ~~and~~ in the ~~SNL/NM~~ General Part B, ~~(SNL/NM, 2003a)~~ and in the appendices to the General Part B meet the applicable requirements for the RMWMF that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00], and 20 NMAC 4.1.900/40 CFR 270 [6-14-00].

Sandia/DOE also prepared ~~submitted~~ the "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" (SNL/NM, 2003~~2~~), hereinafter referred to as the SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The ~~SNL/NM~~ General Part A ~~(SNL/NM, 2002)~~ serves as a companion document to the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ and Unit-specific Part B modules, including this RMWMF Part B Permit Application.

In ~~both~~ the ~~SNL/NM~~ General Part A, ~~(SNL/NM, 2002) and~~ the ~~SNL/NM~~ General Part B, its appendices, ~~(SNL/NM, 2003a) submittals~~ and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Radioactive and Mixed Waste Management Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The RMWMF occupies 3.11 acres in the southeast corner of Technical Area (TA)-III. It is a fenced compound with several buildings and waste management areas (WMAs). Operations include storage of RCRA-regulated wastes in containers, repackaging wastes, and treating the wastes as needed to render them more suitable for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A ~~(SNL/NM, 2002)~~ may be managed at the RMWMF. Sandia/DOE currently operate the RMWMF under interim status in accordance with the terms of the Part A ~~(SNL/NM, 2002)~~ approved by the New Mexico Environment Department (NMED) (May 2002) and the most recent Part B permit request submitted to NMED (April 16, 2003~~February 6, 2002~~).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the RMWMF waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

Specific information in this section regarding ~~includes:~~

~~-~~Unit operations~~,~~ includes~~ing~~: containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and

~~-~~ c~~C~~ontainer storage of RCRA-regulated wastes.~~; and~~

~~-~~Treatment ~~of RCRA-regulated wastes in containers and through mechanical processing~~ practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [6-14-00].

1.1 Designated Waste Management Areas

The location of the RMWMF at SNL/NM is shown on Figure 1. The location of the RMWMF within TA--III is shown on Figure 2. The RMWMF has six designated WMAs (Figure 3): Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence to the north, east, and west of Building 6920).

In each RMWMF WMA (except where noted), containers holding RCRA-regulated liquid wastes are stored on portable spill pallets and pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives, solvents, and other liquids. The containers of liquids (typically 5- to 55-gallon capacity) are stored on the grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [6-14-00] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3) [6-14-00].

Each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are not stacked on each other on the pallets. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

RCRA-regulated wastes are typically stored inside one of the buildings or inside transportainers in the outdoor storage area. The containers are protected from precipitation by the buildings and transportainers, and by the slope of the asphalt pavement and concrete pads outside the buildings that direct storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(4).

The following sections provide descriptions of the storage structure, location, and capacity of each WMA.

1.1.1 Building 6920

The principal structure at the RMWMF is Building 6920. The floor plan for Building 6920 is presented on Figure 4. The WMAs in Building 6920 include waste staging and storage areas and waste treatment areas. Building 6920 is a single-story concrete and steel structure with a total RCRA-regulated waste management area of approximately 5,000 square feet (ft^2) with a maximum capacity of approximately 13,420 gallons. The floors are 6-inch (in.) reinforced, sealed concrete on compacted subgrade sloped to sumps~~catch basins~~ with no outlets. Walls are 8-in. load-bearing concrete masonry unit (CMU) with prefinished metal building panels in some areas. Nongrouted cells of the 8-in. CMU exterior walls are filled with vermiculite insulation~~.~~. The ~~shielded~~ staging area at the east end of the building has 14-foot (ft) high reinforced concrete walls. The exterior walls are 2-ft thick, interior walls are 1-ft thick, and the shared wall between the north and south parts of the building is 1.5-ft thick. Inner partitions are 8-in. reinforced CMU.

The roof consists of 24-in. deep steel joists with a 1.5 in. metal deck with 3-in. rigid insulation and a single-ply roof membrane. The roof system is a single-ply fully adhered elastomeric system, installed over rigid insulation with factory-laminated fiberglass-coated skin on both sides, and attached to the deck with metal fasteners. Ceilings are exposed and painted. ~~The interior airlock has a painted concrete ceiling.~~

Building 6920 consists of two bays (north and south) isolated from each other by an interior airlock at the west end of the building. Waste treatment is performed in certain portions of Building 6920 (Figure 4). There are six exterior personnel doors and four cargo entrances to the building, as well as separate entrances to the exterior mechanical and electrical rooms. The seven personnel doors include: three at the eastern side of the building, one on the northern side, and three at the western side. There is a cargo entrance (i.e., roll-up door) at each end of each bay. Rollup doors enclose the airlocks on the south bay. Both bays in Building 6920 are equipped with secondary containment. The floor in each bay slopes from the doorways toward one or more shallow (6-in.-deep) blind sumps covered with grating. Containers of liquid RCRA-regulated wastes are typically stored over or near the sumps in the south bay. In the north bay and other areas of Building 6920, containers of liquid RCRA-regulated wastes are stored on portable spill pallets and pans covered with grating. Floors, (including the sumps), and the walls~~, and ceilings~~ in the WMAs of Building 6920 are sealed with a chemical-resistant epoxy, which withstands degradation by chemical substances and resists wear from forklift traffic. The sumps and pallets meet the requirements of 20 NMAC 4.1.500/ 40 CFR 264.175(b)(1-4).

1.1.2 Building 6921

The Waste Assay Facility (Building 6921) is located east of Building 6920 (Figure 3). The Building 6921 floor plan is presented on Figure 5. Building 6921 is a single-story structure constructed with interior walls of 8-in. CMU and metal studs. The roof is comprised of steel bar joists with metal decking, rigid insulation, and single-ply membrane roofing. The floors are 6-in.-thick concrete slab-on-grade. The floors in the assay area on the south side of the building are sealed with a chemical-resistant epoxy that extends up the walls for 6 in. The total RCRA-regulated waste management area is approximately 1,450 ft^2 with a maximum capacity of approximately 7,810 gallons. ~~The assay area is used for treatment and storage of RCRA-regulated wastes.~~

1.1.3 Buildings 6925 and 6926

Buildings 6925 and 6926 are used for storage and some treatment of RCRA-regulated waste at the RMWMF. The floor plans for Buildings 6925 and 6926 are presented on Figure 6. Building 6925 has a total storage area of approximately 4,000 ft^2 with a maximum capacity of approximately 83,160 gallons. Building 6926 also has a total storage area of approximately 4,000 ft^2 with a maximum capacity of approximately 83,160 gallons. Each is a prefabricated steel building ~~is prefabricated steel~~ erected on a concrete slab floor and foundation. The concrete floors are covered with chemical-resistant epoxy coating. Steel rollup doors are located on the southern wall of each building, on the eastern wall of Building 6925, and on the western wall of Building 6926. Personnel doors are located on the east, south, and west sides of each building.

1.1.4 Modular Storage Buildings (TP150 and TP153)

There are two modular storage buildings located west of Building 6920 that are used for storage of RCRA-regulated reactive and ignitable/flammable wastes (Figure 3).

The exterior dimensions of each modular storage building are 23-ft long, 9-ft wide, and 8.6-ft high. The structures are constructed for a snow loading of 40 pounds per square foot (lb/ft^2), Uniform Building Code seismic Zone 3, and a wind loading with exposure C open area at 110 miles per hour. The walls and roof of each structure are rated for a 2-hour fire. Each building has two 5-ft wide doors, and each door has a single-point locking mechanism with inside safety release. Each building is vented. The inside walls and ceiling of each building are covered with an epoxy coating which is resistant to reactive wastes.

Each modular storage building has a 5.5-inch-deep integral spill containment reservoir under the entire building; the capacity is 650 gallons. The secondary containment capacity is 10% of the stored volume of the contents of the largest container; thus, the storage capacity based on secondary containment is 6500 gallons. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4). The reservoirs are constructed of 10-gauge American Society for Testing and Materials A36 steel and are coated with a chemical-resistant epoxy. The building floors are epoxy-coated steel grating. Each building rests on structural supports that elevate it and allow visual inspections of the underside of the spill containment

reservoir. The maximum storage capacity at each building is not based on secondary containment. It is approximately 1,100 gallons.

1.1.5 Outdoor Waste Storage Area

The outdoor waste storage area consists of the asphalt paved areas to the north, east, and west of Building 6920 and within the RMWMF fence (Figure 3). The outdoor waste storage area may be used for containerized RCRA-regulated waste storage. It has an area of approximately 48,500 ft^2 with a total storage capacity of approximately 19,800 gallons. The area is curbed and paved with berms on the east end of the site, and slopes toward the water retention pond. In the event of any releases of liquids in the outdoor storage area, the curbing and berms and the retention pond would capture released liquids, including precipitation ~~stormwater run-on~~ so that any contaminants would not exit the site.

Containers of RCRA-regulated wastes are typically stored inside enclosed steel transportainers, which are ~~large~~ 10- to 40-cubic-yard transportable containers. A transportainer typically has doors at one end and can be lifted onto a large flatbed truck for transportation.

1.2 Unit Operations

The RMWMF WMAs are used to store and/or treat any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency Hazardous Waste Numbers listed in the SNL/NM General Part A ~~(SNL/NM, 2002)~~.

~~General~~ Iinformation regarding operation of all RCRA-regulated Units at SNL/NM is included ~~: containment systems; management of ignitable, reactive, and incompatible wastes;; preparedness and prevention; and, hazards prevention requirements applicable to the RMWMF WMAs are addressed~~ in Section 1.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14 [b][8][ii] and 270.15[a] and [b]; 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Liquid wastes released from individual containers will accumulate in the spill pallets. Unit personnel begin taking action to evaluate and remove accumulated liquids in the spill pallets and sumps (in Building 6920) upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.~~Personnel attempt to identify the source if possible. Accumulated liquid containing RCRA-regulated wastes may be sampled and analyzed as needed before removal to determine the most appropriate method of removing the liquid from the containment. The liquid is then pumped into containers or collected onto absorbent material, picked up, and placed in containers. Containerized liquids are characterized in accordance with the Waste Analysis Plan provided as Appendix B of the SNL/NM General Part B (SNL/NM, 2003b).~~

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 270.15[d]; and 20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177)

Any of the ignitable or reactive wastes listed in the General Part A ~~(SNL/NM, 2002)~~ may be managed at the RMWMF. Unit personnel employ the practices described in Section 1.1.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Additional RMWMF-specific features, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes and typically stored in the modular storage buildings. They may also be stored in Building 6925. Water-reactive wastes are not stored in areas equipped with water sprinklers for fire suppression.

- Forklifts are not used for waste movement near treatment operations involving ignitable or reactive wastes in Building 6920 to minimize potential sources of ignition while containers are or may be open.

- The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. They are ~~and~~ equipped with a dry chemical fire suppression system to assure that water-reactive wastes will not be exposed to water during fire emergencies.

- Wastes are mixed together on a very limited basis during the treatment and repackaging operations at the Unit. Ignitable and reactive wastes are treated or mixed on a case-by-case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences. ~~as described in Section B.5.~~ Personnel use waste characterization data and/or published chemical information (e.g., "NIOSH Pocket Guide to Chemical Hazards" [DHHS, 1994] or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions. Treatment operations are described in Section 8.0 of this module~~Appendix G of the General Part B (SNL/NM, 2003b)~~.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas; each row or area containing only compatible wastes.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.5.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the RMWMF.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

General information about fire hydrants is provided in Section 1.1.3.1 of the General Part B ~~(SNL/NM, 2003a)~~. The fire hydrants at the RMWMF are shown in Figure 12.

The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. All buildings at the RMWMF are equipped with automatic fire suppression systems~~,~~: summarized below:

Table 1
Fire Suppression Systems at the
Radioactive and Mixed Waste Management Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
6920 (general area)	13	Ordinary/Group 2	Automatic sprinkler, wet pipe	GB/FS
6920 (small rooms)	13	Extra/Group 1	Automatic sprinkler, wet pipe	GB/FS
HEPA filters	15	N/A	Deluge, dry/open	Detection
6921	13	Ordinary/Group 2	Automatic sprinkler, wet pipe	GB/FS
6925	13	Storage	Automatic sprinkler, dry pipe	GB/FS
6926	13	Storage	Automatic sprinkler, dry pipe	GB/FS
TP150	17	N/A	Dry chemical	
TP153	17	N/A	Dry chemical	

[a] National Fire Protection Association (NFPA), 2000, 2002~~see references~~
[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.

Information on other required equipment located at the RMWMF is provided in Section 6.0 and Table 2 of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the RMWMF is provided in Appendix C of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the RMWMF is provided in Section 1.1.3.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ and in Section 6.0 of this module.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the RMWMF to prevent hazards. Additional information applicable to the RMWMF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

RMWMF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ to prevent hazards in unloading. Loading and unloading activities take place on the paved areas, typically immediately outside the buildings. The surface is sloped gently toward ~~the~~ shallow ~~concrete~~ drainage ditches, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Drums and other ~~larger~~ containers of RCRA-regulated waste are typically strapped together on a pallet before being loaded onto vehicles. Containers are typically transported within the Unit with drum dollies or pallet jacks.

Unit personnel typically use the loading dock for loading and unloading wastes from trucks. The ramp on the west side of Building 6926 slopes gently up to the dock, allowing forklift operators to drive onto trailers of trucks parked at the dock. The dock and ramp are in good condition and are~~is~~ covered with a corrugated metal roof to provide protection from weather.

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

The area around the Unit slopes gently toward the west. Sheet-flow run-on of surface water from surrounding areas outside the Unit is prevented from entering the WMAs by several features. The elevated gravel road located outside the east fence of the Unit serves to divert water flowing from areas farther to the east. An 8-in. curb at the east edge of the asphalt pavement and an asphalt-lined drainage swale along the eastern edge of the Unit (inside the fence) divert run-on from the gravel road toward the south away from the Unit. On the south and west sides, the Unit is higher than the surrounding land. On the north side, the Unit and a narrow ledge of land outside the fence are higher than the surrounding land. Thus, run-on from all directions is prevented from entering the Unit.

The asphalt-paved areas within the Unit are surrounded by an 8-inch curb, further preventing run-on and run-off. The outside storage area slopes toward the south and west. The concrete pads outside the doors and the asphalt pavement surrounding Buildings 6920, 6921, 6925, and 6926 all slope away from the doors and toward shallow ~~concrete~~ drainage channels that run between buildings 6920, 6925, and 6926. The channels lead to the synthetic-lined water retention pond at the southwest corner of the Unit, providing controlled drainage of storm water from roof downspouts and the paved areas in the RMWMF into the water retention pond. During normal operations, the water retention pond collects only storm water. The water retention pond does not provide secondary containment for RCRA-regulated waste.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the RMWMF will affect water supplies, as described in Section 1.1.4.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B ~~(SNL/NM, 2003a)~~. RCRA-regulated waste management activities at the RMWMF will be suspended in response to equipment failures of power outages affecting those WMAs.

The RMWMF is equipped with an auxiliary diesel generator that can provide backup power to Building 6920. The generator maintains containment ventilation, alarm systems, heating equipment, and controls necessary to keep water in pipes from freezing should the main power supply fail.

Equipment and/or power failures at Buildings 6920, 6921, 6925, 6926; the outdoor waste storage area; or the two modular storage buildings will not result in a loss of RCRA-regulated waste containment.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

RMWMF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ to prevent undue exposure. In addition, a negative pressure ventilation system in Building 6920 is provided for the RCRA-regulated waste storage, staging/packaging, and treatment areas. The ventilation air flow from these areas passes through high-efficiency particulate air filters before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

RMWMF personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ to prevent releases to the atmosphere during storage.

Subpart AA

RMWMF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated~~hazardous~~ wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service at the RMWMF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [6-14-00]. The equipment list ~~use~~ will be maintained ~~noted~~ in the RMWMF records. Equipment use will also be noted in the records~~operating log~~.

Subpart CC

Unit personnel follow the practices described in Section 1.1.4.6 of the SNL/NM General Part B and maintain compliance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B of the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00].
~~The WMAs at the RMWMF are typically used solely for the storage and/or treatment of "radioactive mixed waste" or "remediation waste" and are therefore not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements in accordance with 20 NMAC 4.1.500/40 CFR 264.1080 [6-14-00]. Non-radioactive, non-remediation RCRA-regulated wastes that are managed at the RMWMF will be managed in separate WMAs, if possible. If these wastes cannot be segregated into separate WMAs, they will be segregated from other containers within the WMA.~~

~~Non-radioactive, non-remediation RCRA-regulated wastes containing less than 500 parts per million by weight volatile organics are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]. The process for establishing the exemption is described in Section 1.1.4.6 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~Containers of non-radioactive, non-remediation RCRA-regulated wastes that are not identified as being exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] are stored in primary containers that 1) have a design capacity of less than or equal to 0.1 cubic meter (m^3) or 2) are U.S. Department of Transportation-approved and have a design capacity of greater than 0.1 m^3 but less than 0.46 m^3. Container covers are maintained in closed and sealed conditions but may be opened for the purposes described in 20 NMAC 4.1.500/40 CFR 264.1086(c)(1)–(3) [6-14-00].~~

~~In addition, a negative pressure ventilation system in Building 6920 is provided for the RCRA-regulated waste storage, staging/packaging, and treatment areas. The ventilation air flow from these areas passes through high-efficiency particulate air filters before being released to the environment through a 30-ft stack above the building roofline. The filters effectively remove particulates entrained in the air flow.~~

1.3 Container Storage (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264, Subpart I)

Container storage practices applicable to the RMWMF are presented in the following sections.

1.3.1 Container Types and Labeling

RMWMF personnel use the containers types and labeling practices described in Section 1.2.1 of the SNL/NM General Part B ~~(SNL/NM, 20023a)~~.

1.3.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

RMWMF personnel employ the container handling practices described in Section 1.2.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.1 Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)

The condition of containers at the RMWMF is maintained as indicated in Section 1.2.2.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

RMWMF personnel employ the aisle space and storage configuration as described in Section 1.2.2.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

In Buildings 6920, 6921, 6925, and 6926, drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than three pallets high. Box-shaped containers may be stacked three high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are not stacked.

Containers of liquids are not stacked when stored in the modular buildings.

1.3.2.3 Compatibility of Waste with Containers (20 NMAC 4.1.500/40 CFR 264.172)

RMWMF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

RMWMF personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the SNL/NM General Part B before storing containers in areas that are not equipped with secondary containment.

1.4 Treatment Operations

Treatment practices applicable to the RMWMF are presented in Section 8.0 of this module.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.5~~1~~00 and~~-~~ .900/~~-[6-14-00].~~ 40 CFR 264~~0-266, 268,~~ and 270 [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

2.1 Security Procedures And Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the RMWMF.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The RMWMF is completely surrounded by an 8-ft-high chain-link and barbed-wire fence. A single personnel entrance door adjacent to the main vehicle entrance gate is located on the south side of the RMWMF. Another personnel entrance door and vehicle gate are located on the north side of the RMWMF. The gates and doors in the RMWMF fence are maintained in closed and locked positions. As noted in Appendix A of the General Part B ~~(SNL/NM, 2003b)~~, Sandia security personnel periodically monitor the RMWMF gates during non-operational hours.

During work hours, RMWMF employees may enter the area through the locked personnel doors by entering the appropriate code into a keypad on the RMWMF fence near each ~~the~~ personnel door~~s~~. Emergency and service vehicles may enter the RMWMF through the electronically-controlled main vehicle gate if RMWMF personnel enter the appropriate code into a keypad

inside the office trailer or on the keypads located near the personnel doors on the RMWMF fence. Signs instruct personnel and visitors to report to the office trailer for site entry privileges and instructions. Resident personnel have Sandia-issued badges. Individuals who do not have a Sandia-issued badge are escorted. These procedures limit access to the RMWMF RCRA-regulated WMAs in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The RMWMF is located inside TA-III (Figures 1 and 2). TA-III is surrounded by a barbed wire fence with designated access gates. TA-III access control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-III.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The permanent perimeter fence surrounding the RMWMF and the entrance to the RMWMF are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, are legible from a distance of 25 ft, and can be seen from any approach to the RMWMF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b~~.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated waste to the RMWMF include Wyoming Boulevard, Hardin Boulevard (formerly "O" Street), and Pennsylvania Avenue. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved road to TA-III turns southwestward off of Pennsylvania Avenue at a point just over 5 miles south of the Wyoming Boulevard entrance gate as shown on Figure A-4 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

Within TA-III, traffic access to and from the RMWMF is along 2-lane asphalt-paved roads shown on Figure A-6 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. Vehicles entering the RMWMF travel on an asphalt-paved 2-lane drive from the road through the south vehicle gate, as shown on Figure 7. Within the RMWMF, waste is transported on asphalt-paved surfaces ~~(Figure 7)~~.

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard and Hardin Boulevard are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Traffic volumes within TA-III are light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Approximately 10 to 30 vehicles per week travel into and out of the RMWMF. These include flatbed trucks and trailers carrying supplies, RCRA-regulated wastes from initial generators, and wastes to off-site TSDFs~~disposal facilities~~.

2.2.3 Traffic Control Signals

Vehicles must stop at a gate prior to entering or leaving TA-III. Only authorized personnel are permitted into TA-III. Speed limit signs (i.e., "30 mph Unless Otherwise Posted") are located at several locations in TA-III.

There are no traffic control signals or signs within the RMWMF fenced area. A speed limit sign (i.e., "Max. Speed 5 mph On Site") is posted on the fence adjacent to the RMWMF entrance gate (Figure 7). Vehicle presence within the RMWMF fenced area is limited to official and waste transport vehicles. Therefore, signals or signs are not necessary to control traffic within the RMWMF fenced area.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i] and [ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMAs at the RMWMF are not located within 3,000 ft of any faults with Holocene displacements (see Section A.4.2 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the RMWMF are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).

- Surface waters, including intermittent streams, near the RMWMF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [6-14-00]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [6-14-00]). The area surrounding the RMWMF is occupied by test areas and Sandia-controlled operations (industrial land use).

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 8 of this module (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][v] [6-14-00]).

- Legal boundaries of SNL/NM (including the RMWMF) are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][vii] [6-14-00]).

- Access control features at the RMWMF (e.g., fences, gates) are shown on Figure 8 and 9 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the RMWMF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 8 of this module (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][ix] [6-14-00]).

- The location of the RMWMF and associated WMA structures, loading and unloading areas, roads, and sanitary sewers are shown on Figures 8 and 9 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [6-14-00]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 10 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00]).

- Locations of the RMWMF and the RMWMF WMAs are shown on Figures 3 and 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the RMWMF. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to the NMED at these scales and contour intervals due to the size of the RMWMF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of this comprehensive Part B permit request. The RMWMF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the RMWMF likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

Waste analysis requirements applicable to all Units, including the RMWMF, are addressed in Appendix B of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ as required by 20 NMAC 4.1.900/40 CFR 270.14[b][2], 20 NMAC 4.1.500/40 CFR 264.13, "General Waste Analysis.~~,~~" ~~and 20 NMAC 4.1.800/40 CFR 268.7 [6-14-00], "Waste Analysis and Record-Keeping."~~

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] require that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the "Site-Wide Inspection Plan", provided as Appendix C of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. RMWMF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 2, with the inspection criteria and frequency. The items listed in the table are inspected in each RMWMF WMA.

Automatic fire suppression systems are included in Table 2. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems in accordance with the requirements of NFPA 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems~~,~~" (NFPA,2002), as described in Section 1.1.3.2 of the General Part B ~~(SNL/NM, 2003a)~~.

~~Equipment subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00] will be used less than 300 hours per year. Equipment use will be documented during inspections, as appropriate.~~

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B ~~(SNL/NM, 2003b)~~. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained at the RMWMF. Inspection records for previous calendar years are maintained at the RMWMF or the SNL/NM Records Center.

Table 2
Radioactive and Mixed Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Eye wash / safety shower	Operational, accessible, in good condition	Monthly
Spill control equipment	Present, accessible, quantities per inventory, in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when wastes are managed. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when wastes are managed. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when wastes are managed. Monthly otherwise.
Treatment area	Good condition, clean, uncluttered, no spills	Daily when wastes are managed. Monthly otherwise.
Treatment equipment	Good condition (i.e., no releases or deterioration); fume hood, drum, and room ventilation flows within established parameters	Daily when wastes are managed. Monthly otherwise.
Monitoring equipment	Instruments in good condition, operational, calibrated	Daily when wastes are managed. Monthly otherwise.

Table 2 (Concluded)
Radioactive and Mixed Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
STORED CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Daily for individual containers that were handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Daily for individual containers that were handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Daily for individual containers that were handled. Weekly otherwise.
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Daily for individual containers that were handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Daily for individual containers that were handled. Weekly otherwise.
Location	Correct aisle space, correct stacking (3 maximum)	Daily for individual containers that were handled. Weekly otherwise.

5.0 PERSONNEL TRAINING

Training Requirements for Unit personnel are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][12] and 20 NMAC 4.1.500/40 CFR 264.16 [6-14-00], "Personnel Training."

The Sandia/DOE training program is designed and implemented to prepare personnel to safely operate and maintain those areas used for managing RCRA-regulated wastes. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the RMWMF.

RMWMF personnel receive training in accordance with the "Site-Wide Personnel Training Plan," ~~for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units"~~ provided as Appendix D of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

All job descriptions identified in Appendix D, Table D-2 of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ are applicable at the RMWMF. ~~Unit personnel perform periodic inspections to identify any malfunctions, signs of deterioration, operator errors, and discharges or spills that may cause or lead to a release of RCRA-regulated waste constituents that may threaten or harm human health or the environment.~~

Training records for RMWMF personnel are maintained at the RMWMF.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia/DOE Site-Wide Contingency Plan is included in as Appendix E of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. Supplemental RMWMF-specific information is included in this section, in Figures 11 and 12, and in Tables 3 and 4 of this module. Current copies of the Site-wide Contingency Plan (Appendix E of the SNL/NM General Part B) and this supplemental information are maintained at the RMWMF and at the SNL/NM Emergency Operations Center.

The RMWMF is located in the southeastern corner ~~portion~~ of TA-III at SNL/NM. It is used for treatment and storage of RCRA–regulated wastes. The RCRA-regulated WMAs at the RMWMF include Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence and north, east, and west of Building 6920). All are surrounded by a fence.

- Building 6920 is a single-story concrete masonry unit (CMU) and steel building with approximately 5,000 square feet of space used for RCRA-regulated storage and treatment activities. Inside the building are two bays (north and south), separated by an interior airlock. The south bay includes four small rooms used for treatment and storage. The building also includes a control room, restrooms, and electrical and mechanical rooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored over a sump in the south bay or on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other~~larger~~ containers for shipment to off-site facilities. RCRA-regulated wastes ~~Contents~~ may ~~also~~ be treated by chemical deactivation, macroencapsulation, stabilization, thermal deactivation, or physical treatment~~mechanical processing~~. Up to 13,~~-~~420 gallons of waste may be stored in this building. ~~Eave height????~~

- Building 6921 is a single-story CMU building with approximately 1450 square feet of space used for RCRA-regulated storage and treatment activities. The building also includes office space and restrooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other ~~larger~~ containers for shipment to off-site facilities. RCRA-regulated wastes ~~Contents~~ may ~~also~~ be treated by chemical deactivation, macroencapsulation, ~~or~~ stabilization, or physical treatment. Up to 7,810 gallons of waste may be stored in this building.

- Buildings 6925 and 6926 are each 4000-square-foot prefabricated steel buildings on concrete foundations. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are segregated into different areas. The containers and contents may be repackaged into other ~~larger~~ containers for shipment to off-site facilities. RCRA-regulated wastes may also be treated by chemical deactivation,

macroencapsulation, stabilization, and physical treatment. Up to 83,160 gallons of waste may be stored in each building.

- Two modular, prefabricated safety storage structures located west of Building 6920 are used for the storage of reactive and ignitable wastes. Each structure is constructed of 10- and 12-gauge welded steel with supporting structural steel sections, and includes a welded steel containment pan covered by grating. Each structure may contain up to 1,100 gallons of waste.

- The outdoor waste storage area consists of 48,500 square feet of asphalt-paved areas to the north, east, and west of Building 6920 within the RMWMF fence that may be used for storage of containers of RCRA-regulated wastes. Containers of RCRA-regulated wastes are typically stored inside enclosed transportainers. Containers with liquids are stored on portable spill containment pallets inside the transportainers. Up to 19, 800 gallons of wastes may be stored in these areas.

RCRA-regulated wastes bearing the U.S. EPA Hazardous Waste Numbers listed in the SNL/NM General Part A ~~Permit (SNL/NM, 2002)~~ may be stored and/or treated at the RMWMF WMAs, which may be used for RCRA-regulated waste storage and treatment.

Figure 11 presents evacuation routes for the RMWMF. Figure 12 presents emergency response and access information for the RMWMF. Table 3 lists the emergency equipment typically available at the RMWMF. Table 4 lists the emergency coordinators for the RMWMF.

~~Current copies of the Site-wide Contingency Plan (SNL/NM, 2002b) and this supplemental information are maintained at the RMWMF and at the SNL/NM Emergency Operations Center.~~

Table 3
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6920

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Eyewash Stations/ Showers	• On north wall in south bay • Near office in north bay
	Absorbent	In hallway between north and south bays
	Miscellaneous PPE (protective suits, goggles, gloves)	In hallway between north and south bays
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southeast corner of south bay • In southwest corner of southwest airlock • By personnel door in west mechanical room • By personnel door on north wall of north bay • By personnel door in entryway west of office
	Audible fire alarms	Located throughout the building

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6920

Category	Description/Capabilities	Location
External Communication System	Telephones	Control room, south and north bays
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southeast corner of south bay • In southwest corner of southwest airlock • By personnel door in west mechanical room • By personnel door on north wall of north bay • By personnel door in entryway west of office
Fire Extinguishers	Portable (A-B-C)	• By personnel door in northeast corner of building • By personnel door in southeast corner of south bay • By personnel door in southwest corner of south bay • In hallway between north and south bays • By personnel door in west mechanical room •
	Portable (D)	In northwest corner of north bay
	Portable (A-B-C)(D)	By personnel door on north wall of north bay
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

PPE personal protective equipment
KAFB ~~=~~Kirtland Air Force Base

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6921

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Eyewash Station/Shower	On north wall of assay area
	Absorbent	By north wall of assay area
	Miscellaneous PPE (protective suits, goggles, gloves)	By north wall of assay area
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in electrical/mechanical room • In central hallway outside restrooms • In northwest corner of assay area • By east personnel door in southeast counting room • By east personnel door in middle east office area
	Audible fire alarms	Located throughout the building
External Communication System	Telephones	Office and lab areas
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in electrical/mechanical room • In central hallway outside restrooms • In northwest corner of assay area • By east personnel door in southeast counting room • By east personnel door in middle east office area
Fire Extinguishers	Portable (A-B-C)	• By north personnel door in electrical/mechanical room • In hallway between assay area and north office area • By northwest personnel door of assay area • By east personnel door in southeast counting room
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

PPE personal protective equipment
KAFB =Kirtland Air Force Base

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6925

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Portable Eyewash	By personnel door near center of south wall
	Absorbent	By personnel door near center of south wall
	Miscellaneous PPE (protective suits, goggles, gloves)	By personnel door near center of south wall
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southwest corner of building • By personnel door near center of south wall
	Audible fire alarms	Located on east and west wall
External Communication System	Telephone	By personnel door in southwest corner of building
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southwest corner of building • By personnel door near center of south wall
Fire Extinguishers	Portable (A-B-C)	• By personnel door in northeast corner of building • By personnel door in southwest corner of building
	Portable (A-B-C)(D)	By personnel door near center of south wall
Fire Suppression	Automatic dry-pipe sprinkler system with heat-actuated sprinklers	Sprinklers located throughout building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

PPE personal protective equipment
KAFB =Kirtland Air Force Base

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6926

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Eyewash Station/Shower	In southeast area of building
	Absorbent	In southeast area of building
	Miscellaneous PPE (protective suits, goggles, gloves)	In southeast area of building
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door on west wall of building • By personnel door on south wall of building
	Audible fire alarms	Located on east wall and west wall
External Communication System	Telephone	In southeast area of building
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door on west wall of building • By personnel door on south wall of building
Fire Extinguishers	Portable (A-B-C)	• By personnel door in northeast corner of building • By personnel door on west wall of building
	Portable (A-B-C)(D)	By personnel door on south wall of building
Fire Suppression	Automatic dry-pipe sprinkler system with heat-actuated sprinklers	Sprinklers located throughout building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

PPE personal protective equipment
KAFB ~~=~~Kirtland Air Force Base

Table 3 (Concluded)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Modular Storage Buildings

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Absorbent	Buildings 6920 and 6926
	Miscellaneous PPE (protective suits, goggles, gloves)	Buildings 6920 and 6926
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)	Buildings 6920, 6921, 6925, and 6926
	Audible fire alarms	
External Communication System	Telephones	Buildings 6920 and 6926
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)	Buildings 6920, 6921, 6925, and 6926
Fire Suppression	Automatic dry chemical system	Coverage throughout the building

PPE personal protective equipment
KAFB ~~=~~Kirtland Air Force Base

Table 4
Radioactive and Mixed Waste Management Facility, Emergency Coordinator List

April 16~~February 18~~, 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Jeff Jarry Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3080 (office) (505) 561-1138 (pager)	(505) 452-3337
First Alternate	Mike Spoerner Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2813 (office) (505) 540-5296 (pager)	(505) 828-3441
Second Alternate	Phil Zelle Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2486 (office) (505) 540-7437 (pager)	(505) 292-5097
Third Alternate	Mary Ann Krauss Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-9997 (office) (505) 540-5228 (pager)	(505) 299-0793

One or more of these personnel are routinely available during operating hours (7:00 am to 5:30 pm, Monday through Thursday).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13] and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I [6-14-00]. General closure information applicable to all RCRA-regulated Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. The site-wide Closure Plan~~general closure information~~ includes a description of the SNL/NM facility; waste description; closure performance standards, ~~an SNL/NM facility description,~~ closure methods; sampling and analysis plan; closure schedule; procedures for amendment of the Closure Plan, closure certification and report, survey plat, and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The Radioactive and Mixed Waste Management Facility (RMWMF) is located in the southeastern corner of TA-III at SNL/NM. It is used for treatment and storage of RCRA-regulated wastes. The RCRA-regulated WMAs at the RMWMF include Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence and north, east, and west of Building 6920).

- Building 6920 is a single-story concrete masonry unit (CMU) and steel building with approximately 5,000 square feet of space used for RCRA-regulated storage and treatment activities. Inside the building are two bays (north and south), separated by an interior airlock. The south bay includes four small rooms used for treatment and storage. The building also includes a control room, restrooms, and electrical and mechanical rooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored over a sump in the south bay or on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. Contents may also be treated by chemical deactivation, macroencapsulation, stabilization, thermal deactivation, or mechanical processing.

- Building 6921 is a single-story CMU building with approximately 1450 square feet of space used for RCRA-regulated storage and treatment activities. The building also includes office space and restrooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. Contents may also be treated by chemical deactivation, macroencapsulation, or stabilization.

- Buildings 6925 and 6926 are each 4000-square-foot prefabricated steel buildings on concrete foundations. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are segregated into different areas. The containers and contents may be repackaged into other containers for shipment to off-site facilities.

- Two modular, prefabricated safety storage structures located west of Building 6920 are used for the storage of reactive and ignitable wastes. Each structure is constructed of 10- and 12-gauge welded steel with supporting structural steel sections, and includes a welded steel containment pan covered by grating.

- The outdoor waste storage area consists of 48,500 square feet of asphalt-paved areas to the north, east, and west of Building 6920 within the RMWMF fence that may be used for storage of containers of RCRA-regulated wastes. Containers of RCRA-regulated wastes are typically stored inside enclosed transportainers. Containers with liquids are stored on portable spill containment pallets inside the transportainers

~~7.1~~7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total inventory of RCRA-regulated waste in storage and/or treatment at any time at the RMWMF is estimated at approximately 209,550 gallons of liquids and/or solids. The maximum total waste inventory is broken down as follows:

• Building 6920:	13,420 gallons
• Building 6921:	7,810 gallons
• Building 6925:	83,160 gallons
• Building 6926:	83,160 gallons
• Modular storage building:	1,100 gallons
• Modular storage building:	1,100 gallons
• Outdoor waste storage areas:	19,800 gallons

~~7.2~~7.3 Closure Conditions

In addition to the general assumptions listed in Section F.54 in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~, closure activities specified in this plan assume the following conditions were met during the operational life of the RMWMF:

- RCRA-regulated waste handling and treatment activities involving the opening of waste containers were confined to the RMWMF RCRA-regulated WMAs. If contamination occurred, it would have been confined to those areas; and

- The interior walls and floors of WMAs were maintained to retain their integrity by following established maintenance and inspection procedures and breaches of protective coatings did not occur.

~~7.3~~7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan in Appendix F provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an

estimated date of closure for the RMWMF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the RMWMF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan in Appendix F presents sample collection equipment and techniques applicable to all RCRA-regulated Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the RMWMF. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the RMWMF.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan in Appendix F presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the RMWMF.

~~APPENDIX G~~

~~SITE-WIDE TREATMENT PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS~~

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~~Table No.~~ ~~Title~~

~~G-1 Regulatory References and Corresponding Permit Renewal Request/ Application Location~~

~~ACRONYMS AND ABBREVIATIONS~~

~~20 NMAC 4.1.*X*00~~	~~New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*~~
~~40 CFR 2*XX.XX*~~	~~Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*~~
~~AHCF~~	~~Auxiliary Hot Cell Facility~~
~~DOE~~	~~U.S. Department of Energy~~
~~LDR~~	~~land disposal restriction~~
~~RCRA~~	~~Resource Conservation and Recovery Act~~
~~RMWMF~~	~~Radioactive and Mixed Waste Management Facility~~
~~Sandia~~	~~Sandia Corporation~~
~~SNL/NM~~	~~Sandia National Laboratories/New Mexico~~
~~TA~~	~~Technical Area~~
~~TSDF~~	~~treatment, storage, or disposal facility~~
~~TTF~~	~~Thermal Treatment Facility~~
~~Unit~~	~~RCRA-regulated waste management unit~~

~~SITE-WIDE TREATMENT PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO~~

~~This appendix presents the requirements applicable to the treatment of Resource Conservation and Recovery Act (RCRA)-regulated wastes in containers or miscellaneous units. Regulatory requirements are found in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), adopting by reference the Code of Federal Regulations, Title 40, Part 264 (40 CFR 264), Subparts I, X, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.15 and 270.23, revised June 14, 2000 [6-14-00]. This appendix provides a description of the treatment technologies used at Sandia National Laboratories/New Mexico (SNL/NM) RCRA-regulated waste management units (Units), co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE).~~

~~Table G-1 summarizes applicable Subpart X miscellaneous unit and Subpart I regulatory references and the corresponding section location where the requirement is addressed in this permit renewal request/application. Unit-specific treatment information is provided in Attachment G of Unit-specific modules. Together, the information in this appendix and in each Unit-specific Part B module meets the applicable regulatory requirements.~~

~~Table G-1~~
~~Regulatory References and Corresponding Permit Renewal Request/Application Location~~

~~Regulatory Citation(s)~~	~~Description of Requirement~~	~~Location in this Document~~
~~§264.601(a)~~	~~Prevention of release of contaminants to groundwater~~	~~G.3.1~~
~~§264.601(a)(1)~~	~~Volume and characteristics of waste considering potential for migration through containing structures~~	~~G.3.1~~
~~§264.601(a)(2)~~	~~Hydrologic/geologic characteristics~~	~~G.3.1~~
~~§264.601(a)(3)~~	~~Quality of groundwater including other sources of contamination and their cumulative impact on groundwater~~	~~G.3.1~~
~~§264.601(a)(4)~~	~~Quantity and direction of groundwater flow~~	~~G.3.1~~
~~§264.601(a)(5)~~	~~Proximity to and withdrawal rates of potential groundwater users~~	~~G.3.1~~
~~§264.601(a)(6)~~	~~Regional patterns of land use~~	~~G.3.1~~
~~§264.601(a)(7)~~	~~Potential for deposition and migration of waste constituents~~	~~G.3.1~~
~~§264.601(a)(8)~~	~~Potential for health risks caused by human exposure to waste constituents~~	~~G.3.1~~
~~§264.601(a)(9)~~	~~Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents~~	~~G.3.1~~
~~§264.601(b)~~	~~Prevention of release of contaminants to surface water~~	~~G.3.2~~
~~§264.601(b)(1)~~	~~Volume and characteristics of the waste~~	~~G.3.2~~
~~§264.601(b)(2)~~	~~Effectiveness and reliability of containment, confinement, and collection systems and structures~~	~~G.3.2~~
~~§264.601(b)(3)~~	~~Hydrologic characteristics of the unit and local area~~	~~G.3.2~~

~~Refer to footnote at end of table.~~

~~Table G-1 (Continued)~~
~~Regulatory References and Corresponding Permit Renewal Request/Application Location~~

~~Regulatory Citation(s)~~	~~Description of Requirement~~	~~Location in this Document~~
~~§264.601(b)(4)~~	~~Regional precipitation patterns~~	~~G.3.1~~
~~§264.601(b)(5)~~	~~Quantity, quality, and direction of groundwater flow~~	~~G.3.1~~
~~§264.601(b)(6)~~	~~Proximity of the unit to surface water~~	~~G.3.2~~
~~§264.601(b)(7)~~	~~Current and potential uses of nearby surface waters and water quality standards for those waters~~	~~G.3.2~~
~~§264.601(b)(8)~~	~~Quality of surface waters and soils including other sources of contamination and their cumulative impact on surface waters and soils~~	~~Appendix A~~
~~§264.601(b)(9)~~	~~Regional patterns of land use~~	~~Appendix A~~
~~§264.601(b)(10)~~	~~Potential for health risks caused by human exposure to waste constituents~~	~~G.3.2~~
~~§264.601(b)(11)~~	~~Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents~~	~~G.3.2~~
~~§264.601(c)~~	~~Prevention of release of contaminants to air~~	~~G.3.4~~
~~§264.601(c)(1)~~	~~Volume and characteristics of waste including its potential for emission~~	~~G.3.4~~
~~§264.601(c)(2)~~	~~Effectiveness and reliability of systems/structures to reduce/prevent emissions of hazardous constituents to the air~~	~~G.3.4~~
~~§264.601(c)(3)~~	~~Operating characteristics of the unit~~	~~G.3.4~~
~~§264.601(c)(4)~~	~~Characteristics of the unit and the surrounding area~~	~~G.3.4~~
~~§264.601(c)(5)~~	~~Existing quality of the air including other sources of contaminants and their cumulative impact on the air~~	~~G.3.4~~
~~§264.601(c)(6)~~	~~Potential health risks caused by human exposure to waste constituents~~	~~G.3.4~~
~~§264.601(c)(7)~~	~~Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents~~	~~G.3.4~~
~~§264.602~~	~~Monitoring, analysis, inspection, response, reporting, and corrective action~~	~~1.0, 3.0, Appendix H~~
~~§264.603~~	~~Post-closure care~~	~~Appendix F~~
~~§264.13~~	~~General waste analysis~~	~~Appendix B~~
~~§264.14~~	~~Security~~	~~Appendix A~~
~~§264.15~~	~~General inspection requirements~~	~~Appendix C~~
~~§264.16~~	~~Personnel training~~	~~Appendix D~~
~~§264.17~~	~~General requirements for ignitable, reactive, or incompatible wastes~~	~~1.1.3~~
~~§264.18~~	~~Location standards~~	~~Appendix A~~
~~Subpart C~~	~~Preparedness and Prevention~~	~~1.1.5, 1.1.6~~
~~Subpart D~~	~~Contingency Plan and Emergency Procedures~~	~~Appendix E~~

~~Refer to footnote at end of table.~~

~~Table G-1 (Continued)~~
~~Regulatory References and Corresponding Permit Renewal Request/Application Location~~

~~Regulatory Citation(s)~~	~~Description of Requirement~~	~~Location in this Document~~
~~§264.73~~	~~Operating record~~	~~Appendix H~~
~~§264.74~~	~~Availability, retention, and disposition of records~~	~~Appendix H~~
~~§264.75~~	~~Biennial report~~	~~Appendix H~~
~~§264.76~~	~~Unmanifested waste report~~	~~Appendix H~~
~~§264.77~~	~~Additional reports~~	~~Appendix H~~
~~§264.101~~	~~Corrective action for solid waste management units~~	~~3.0~~
~~§264.1064(k)~~	~~Information for use in determining exemptions from Subpart BB~~	~~G.5~~
~~Subpart G~~	~~Closure and post-closure~~	~~Appendix F~~
~~Subpart I~~	~~Use and management of containers~~	~~1.1~~
~~§270.15~~	~~Specific Part B information requirements for containers~~	~~1.1~~
~~Subpart J~~	~~Tank systems~~	~~NA~~
~~§270.23(a)(1-2)~~	~~Detailed unit description~~	~~Appendix A~~
~~§270.23(b)~~	~~Regional hydrologic, geologic, and meteorologic assessments and land use maps~~	~~General Part A~~
~~§270.23(c)~~	~~Potential exposure pathways~~	~~G.3.0~~
~~§270.23(d)~~	~~Demonstration of treatment effectiveness~~	~~G.2.0~~
~~§270.23(e)~~	~~Any additional information for evaluation of unit compliance with the environmental performance standards~~	~~NA~~

~~NA = Not applicable.~~

~~G.1 TREATMENT TECHNOLOGY DESIGN, CONSTRUCTION, AND OPERATION (20 NMAC 4.1.900/40 CFR 270.23[A]; 20 NMAC 4.1.500/40 CFR 264.101)~~

8.0 TREATMENT PLAN

~~The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.900/40 CFR Part 270, [6-14-00].~~ Treatment operations for ~~the RMWMF~~ RCRA-regulated wastes treated at the RMWMF ~~RCRA-regulated wastes~~ are described in this section. ~~Appendix G of the SNL/NM General Part B Permit (SNL/NM, 2003b).~~
~~Waste analysis procedures are provided in Section 3.0 of this module and in Appendix B (the ite-ide) of this permit renewal request.~~
The following treatment technologies ~~listed below and described in Appendix G~~ may be used to ~~to meet land disposal restrictions (LDRs); allow for the safe storage of the waste; or to meet treatment, storage or disposal facility (TSDF) requirements:~~
treat RCRA-regulated wastes at the RMWMF:

- Chemical deactivation,
- Macroencapsulation,
- Physical treatment~~Mechanical processing~~,
- Stabilization, and
- Thermal deactivation.

Treatment at the RMWMF may ~~be performed~~occur in Buildings 6920, 6921, 6925, and 6926. ~~Each t~~Treatment will be conducted in containers; therefore, it is not subject to ~~process and the associated equipment meet~~ the miscellaneous unit and environmental performance standards ~~described~~ in 20 NMAC 4.1.500/40 CFR 264, Subpart X [6-14-00]~~Appendix G of the SNL/NM General Part B (SNL/NM, 2003b)~~.

Treatment effectiveness for each waste stream is discussed in Section 8.2.~~will be determined through analysis and verification as described in Appendix B of the SNL/NM General Part B (SNL/NM, 2003b) and Section 3 of this module.~~

8.1 Treatment Operations

Waste treatment is performed at the RMWMF to meet land disposal restrictions (LDRs); allow for the safe storage of the waste; or to meet treatment, storage, or disposal facility (TSDF) requirements. Each type of treatment will be performed on batches of 500 pounds of waste or less. Liquid wastes will be treated in batches of 60 gallons or less.

Waste treatment may generate secondary waste streams (treatment residues). RCRA-regulated treatment residues may undergo additional on-site treatment to meet LDRs and/or be sent to an appropriate off-site TSDF.

The waste treatment processes described in this section are effective in addressing RCRA-regulated characteristics in RCRA-regulated wastes, including the following:

- Solid items ~~waste forms~~ exhibiting the RCRA-regulated ~~hazardous~~ characteristics of ignitability or reactivity may be chemically or thermally deactivated to eliminate the ~~hazardous~~ characteristic.

- Debris containing RCRA-regulated constituents~~toxicity characteristic metals~~ (excluding elemental and high mercury subcategories defined in 20 NMAC 4.1.800/40 CFR 268) may be macroencapsulated to reduce or eliminate the leaching potential.

- Liquid waste exhibiting the characteristics of ignitability, corrosivity, and/or reactivity may be chemically or thermally deactivated to remove the RCRA-regulated characteristic(s).

- Liquid waste containing toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) may be stabilized to reduce or eliminate the leaching potential.

- Reactive (e~~E~~xplosive) ~~waste, solid or liquid waste forms containing organic compounds, and metal-containing~~ wastes may be treated using thermal deactivation ~~treatment~~ techniques.

- Elemental mercury may undergo amalgamation to reduce or eliminate the leaching potential.

In accordance with LDRs, the following are managed as RCRA-regulated waste: treatment residue derived from the treatment of listed RCRA-regulated wastes, treated waste containing listed RCRA-regulated waste, and treated waste which continues to exhibit RCRA-regulated waste characteristics and/or does not meet treatment standards for underlying hazardous constituents.

Each waste treatment technology or process listed above is described in the following sections. ~~below. Waste analysis and inspection procedures are provided in Appendices B and C, respectively, of this permit renewal request/application. Unit-specific treatment information is included in Attachment G of each Unit-specific module.~~

8.1.1 ~~G.1.1~~ Chemical Deactivation

Sandia/DOE perform chemical deactivation in containers at the RMWMF. Chemical deactivation ~~is a concept that~~ refers to a number of chemical ~~processes which~~processes that can eliminate the RCRA-regulated waste characteristics of ignitability, corrosivity, and/or reactivity. Deactivation can be accomplished by several technologies (e.g., neutralization, chemical oxidation, or stabilization). However, the intent of this section is to identify and describe specific methods or treatment trains which may be used at the RMWMF ~~SNL/NM Units~~ to deactivate ignitable wastes defined in 20 NMAC 4.1.200/40 CFR 261.21(a)(2) and (4) [6-14-00], corrosive and reactive wastes defined in 20 NMAC 4.1.200/40 CFR 261.23 [6-14-00]. Deactivation may or may not result in a final waste form, depending on the process, and may be used as the first in a series of treatment steps.~~in pretreatment.~~

Deactivation processes are conducted under carefully controlled conditions so that RCRA-regulated waste with the characteristic of reactivity is allowed to react in a slow, nonviolent manner. Allowing the reactive potential of the waste to be dissipated in this manner reduces or eliminates the reactive characteristic of the waste. Hydrides, deuterides, and tritides are deactivated by slow addition to an ice water bath. Deactivation of water reactive metals such as

elemental sodium and lithium involves the slow and controlled addition of an appropriate alcohol/water solution. Alcohol/water addition is maintained until the water reactive potential of the waste has been eliminated. Deactivation of pyrophoric metal powders and particulates may be achieved by mixing waste in a portland cement matrix. Deactivation of reactive wastes is typically conducted in small batches under laboratory conditions such that process control can be easily maintained.

Chemical deactivation to remove the characteristic of corrosivity is the process of removing excess acidity or alkalinity from a liquid waste. Other uses may include pH adjustment to facilitate subsequent treatment; such pretreatment through deactivation may be necessary to prevent corrosive damage to equipment, deter undesirable reactions, and preclude the formation of unwanted byproducts.

Reagents added to achieve a desired pH are ~~may be~~ combined with liquid waste inside a mixing vessel or directly in the waste container. Common deactivating reagents include, but are not limited to, caustic soda, lime, phosphine, calcium or sodium carbonate, sodium hydroxide, and limestone for acid wastes; and hydrochloric, phosphoric, or nitric acids for alkaline wastes. The selection of reagents is dependent on the quantity of reagent required, cost, availability, and the potential byproduct(s).

8.1.2 ~~G.1.2~~ Macroencapsulation

Sandia/DOE perform macroencapsulation in containers at the RMWMF. Macroencapsulation is generally applicable to debris, whereas stabilization (see Section 8.1.4) is generally applicable to liquids, sludges, and particulate-type wastes. Macroencapsulation is the process of encasing waste within a polymer coating or concrete. The primary use of macroencapsulation is to immobilize wastes such as debris-type solids containing RCRA-regulated constituents ~~toxicity characteristic metals~~ by surrounding the waste material with a leach-resistant coating. ~~Macroencapsulation is typically more suitable for immobilizing larger debris-type wastes.~~

Performing macroencapsulation involves coating waste with polymer agents within a mold or encasing the waste in concrete. Polymers typically used for macroencapsulation include, but are not limited to, asphalt, polyethylene, thermosetting plastics, and resins that can be polymerized under ambient temperatures in the presence of a catalyst. Equipment used for macroencapsulation may include molds, polymer extrusion equipment, and resin mixing equipment. In-drum macroencapsulation may also be performed with the drum acting as the mold. Temperature control of polymer macroencapsulation processes is critical and carefully maintained to assure that adequate coating occurs.

8.1.3 ~~G.1.3~~ Physical Treatment ~~Mechanical Processing~~

Sandia/DOE perform physical treatment (volume reduction through separation) at the RMWMF. The treatment consists of reducing waste volume by using tools to separate items with RCRA-regulated constituents from larger items. In some cases, the RCRA-regulated waste item may undergo further treatment in containers. Physical treatment also includes puncturing aerosol cans within a container to allow recovery of the contents. ~~Mechanical processing treatment methods may include, but are not limited to, compaction, shredding, segregation, crushing, and~~

~~dissolution. The intent of mechanical processing is to change the physical character of the waste to make it more amenable to additional treatment, storage, or to reduce waste volume.~~

8.1.4 ~~G.1.4~~ Stabilization

Sandia/DOE perform stabilization in containers at the RMWMF. Stabilization is a process of binding RCRA-regulated metals so that the metals become chemically part of the matrix or are physically bound within the matrix. The primary use of stabilization is to immobilize toxicity characteristic metals but many stabilization agents also eliminate free liquids. Typical waste forms suitable for stabilization include liquids, soils, and particulate-type wastes.

Process equipment for mixing waste and binder materials depends on the type of reagents used and the volume of waste to be treated. In-drum mixing is typically used for large volume waste streams. Once waste and binder have been thoroughly mixed and placed in a container, the mass is allowed to cure and/or set. Smaller batches may be mixed by hand and allowed to cure in smaller containers.

Development of appropriate formulas is waste specific. Stabilization agents for toxic metals may include portland cement, pozzolanic, thermoplastics, organic polymers, and clays. However, other waste forms may require proprietary reagents ~~which~~that are available for specific applications. Additional reagents may be added to reduce contaminant leachability, reduce cure and/or set time, and increase strength.

~~The stabilization process begins with waste characterization.~~ Waste characteristics that are important to the success of the stabilization process for liquids may include ~~pH;~~ volume percent of water, oil, solvents, or other organics; pH; and RCRA-regulated waste constituents. Waste characterization data are used to determine whether the waste is amenable to stabilization, ~~the applicability of stabilization for the waste,~~ any necessary pretreatment requirements, and the appropriate binding agent.

Once stabilization is selected, the binding agent is identified based on chemical compatibility with the waste form and contaminants present. Pretreatment may be required to assure compatibility between the waste and the binding agent (e.g., neutralization of liquid wastes to an acceptable pH range of 5.0 to 11.0). Once the proper binding agent(s) have been identified, bench-scale testing is performed to determine optimum amounts of each agent. In the case of low volume waste streams (e.g., less than approximately 0.26 gallons), bench-scale testing may not be practical and treatment is performed without bench-scale testing using the manufacturer's suggested quantities or by estimating binding agent quantities from previous experience.

The stabilization process is ~~then~~ performed by combining the predetermined quantities of binding agent(s) with the waste and thoroughly mixing, if appropriate. The resulting mixture is staged to allow an appropriate cure time. ~~The final step of the stabilization process involves analyzing a sample of the cured mixture by toxicity characteristic leaching procedure.~~

8.1.5 ~~G.1.8~~ Thermal Deactivation

Sandia/DOE ~~also~~ perform~~s other~~ thermal ~~deactivation. Thermal deactivation of~~deactivation of static-sensitive explosive and explosive components ~~is performed~~ in a Sandia-designed and tested portable deactivation device that meets the definition of a container in 20 NMAC 4.1.100/40 CFR 260.10. The device is a thick-walled stainless steel vacuum apparatus equipped with a heated plate and sensors to measure temperature and pressure. The explosive deactivation device was designed to contain a detonation of 25 grams TNT-equivalents of explosive waste.

Explosive waste is placed into the cold unit, the unit is sealed and filled with an inert atmosphere (e.g., nitrogen), and the temperature of the heated plate is slowly raised until reaching a temperature at which the explosive being treated decomposes. The unit is then cooled and decomposition gases are vented to a chemical fume hood with a high-efficiency particulate air filtration system.

8.1.6 Amalgamation

Sandia/DOE perform amalgamation of small quantities of elemental mercury in containers at the RMWMF. The amalgamation process for liquid elemental mercury involves mixing liquid mercury waste with a powdered base metal. The amalgamation process immobilizes elemental mercury into a solid leach-resistant form that has minimal potential for emission of mercury vapor.

The two important operating parameters for effective treatment are: (1) the ratio of base metal to mercury, and (2) the efficiency of mixing. Copper or zinc are typically used as base metals, but tin, nickel, gold, and sulfur may also be used. The base metal may be pretreated with acid to improve the effectiveness of the amalgamation reaction. For the small quantities of mercury that will be treated at the RMWMF, hand mixing the mercury and base metal using a mortar and pestle is sufficient to create an amalgam with uniform properties.

~~G.4 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES (20 NMAC 4.1.900/40 CFR 270.14[B][9])~~

~~Special requirements for ignitable, reactive, or incompatible wastes at SNL/NM Units are described in Section 1.0 of this permit renewal request/application and each Unit-specific module. This information is provided to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14(b)(9) [6-14-00].~~

8.1.7 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

RMWMF personnel employ the practices described in Section 8.2 of the General Part B to prevent releases to the atmosphere during treatment.

Subpart AA

The RMWMF treatment operations do not employ processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA.

~~**G.5 Air Emission Standards for Process Vents (20 NMAC 4.1.500/ 40 CFR 264, Subpart AA)**~~

~~Sandia/DOE do not manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight using process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or stream stripping operations. Therefore, Sandia/DOE are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00].~~

Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service at the RMWMF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [6-14-00]. The equipment location will be noted in the RMWMF records. Equipment use will also be noted in the records.

~~**g.6 AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS (20 NMAC 4.1.500/ 40 CFR 264, SUBPART BB)**~~

~~Units in this permit renewal request/application are not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00], air emission standards for equipment leaks, with the exception of the reporting requirements specified in 20 NMAC 4.1.500/40 CFR 264.1064(k) [6-14-00]. Sandia/DOE do not routinely treat RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 264.1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 1050(f) [6-14-00].~~

Subpart CC

Unit personnel follow the practices described in Section 8.2 of the SNL/NM General Part B. Unit personnel do not perform any treatment subject to Container Level 3 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]).

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00].

~~**G.7 Air emission standards for tanks, surface impoundments, and containers (20 NMAC 4.1.500/40 CFR 264, Subpart CC)**~~

~~Sandia/DOE may treat RCRA-regulated wastes (i.e., radioactive mixed wastes) with average volatile organic concentrations at the point of waste origin of ≥500 parts per million by weight in containers. However, WMAs or process areas used "solely" for the treatment of "radioactive mixed waste" or "remediation waste" are not subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]. If hazardous waste and radioactive mixed waste/remediation waste are managed in the same Unit, the wastes are segregated into separate WMAs or process areas, if possible. WMA(s) and process areas used solely for "radioactive mixed waste" or "remediation waste" management are not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements while the WMA(s) or process area(s) used for hazardous waste management are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements. If waste types cannot be segregated into separate WMAs, all of the waste containers within a WMA are managed as though they are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements.~~

8.2 ~~G.2~~ Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

As required in 20 NMAC 4.1.900/40 CFR 270.23(d) [6-14-00], treatment effectiveness considerations and demonstrations are provided for the treatment technologies used or proposed for use at ~~SNL/NM~~ the RMWMF. ~~Extant or proposed treatment technology effectiveness is based on best demonstrated available technology considerations or treatment-unit specific data.~~ Treatment effectiveness ~~verification~~ will be verified through evaluation of the treated waste ~~performed~~ in accordance with Appendix B (Section B.3.3.2) of the SNL/NM General Part B.

~~G.3 ENVIRONMENTAL PERFORMANCE STANDARDS (20 NMAC 4.1.500/40 CFR PART 264, SUBPART X)~~

~~The following information is provided to address the applicable hydrologic, geologic, and meteorological requirements of 20 NMAC 4.1.900/40 CFR 270.23(b) and (c) [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.60 [6-14-00], for the treatment technologies at SNL/NM. All of the treatment operations are located well within the boundaries of SNL/NM. With the exception of the TTF, all are located inside buildings that serve as secondary containment. Secondary containment at the TTF is described in Module II. The location of the treatment operations, the waste management practices identified in Section 1.0 of this permit renewal request/application and in each Unit-specific module, and the containment features described in the following sections will prevent the deposition or migration of RCRA-regulated constituents into the groundwater, surface water, soil surface, or the atmosphere and will ensure that the treatment operations do not violate the environmental performance standards of 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00]. Section G.1 provides general information about the treatment technologies that may be used at SNL/NM Units. Attachment F of each Unit-specific module provides closure information.~~

~~G.3.1 Protection of the Groundwater (20 NMAC 4.1.500/40 CFR 264.601[a])~~

~~Units will be operated in a manner that prevents releases that may have adverse effects on human health or the environment due to deposition or migration of waste constituents to the groundwater. The treatment operations are located inside buildings (except for the TTF), provided with secondary containment as needed, and inspected each working day in accordance with the inspection requirements addressed in Appendix C of this permit renewal request/application. The treatment operations will be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment.~~

~~The conditions outlined in 20 NMAC 4.1.500/40 CFR 264.601(a) [6-14-00], were considered and there is little or no potential for deposition or migration of waste constituents into the groundwater. The treatment operations will be operated and maintained in accordance with waste management procedures described in Section 1.0 of this permit renewal request/application, and closed in accordance with the procedures described in Appendix F of this permit renewal request/application and Attachment F of each Unit-specific module; therefore, adverse effects on human health or the environment due to the treatment operations are unlikely.~~

~~Hydrogeologic Assessment and Potential Pathways and Exposure Routes~~

~~SNL/NM Units are located in a semiarid, temperate, high desert climate. The average annual precipitation in the area is 8.4 inches (21.4 centimeters). The evaporation of free-standing water exceeds the annual precipitation. In addition, it is estimated that the depth to the regional aquifer and the annual moisture deficit significantly limit the potential for contaminants to migrate to the groundwater in the unlikely event that contaminants reach the ground surface. Current maps of the piezometric surface indicate that the groundwater flow direction is from the north to the northwest (from the mountains to the Rio Grande).~~

~~The only aquifer capable of municipal and industrial water supply is the regional aquifer. Figure A-2 of this permit renewal request/application shows the locations of water supply wells in the SNL/NM area. No water supply wells are located within any SNL/NM Unit.~~

~~Sandia/DOE have an established groundwater monitoring program to assess and protect the quality of groundwater in the SNL/NM facility. The monitoring network includes test wells, supply wells, gauging stations, observation wells, and other hydrogeologic devices located within KAFB boundaries. Routine samples are analyzed for toxic constituents, basic water quality, and resource depletion. The results are published annually in the Environmental Monitoring Report for SNL/NM. A more complete description of SNL/NM hydrologic and geologic characteristics is provided in Sections A.3 and A.4 of Appendix A of this permit renewal request/application.~~

~~Land uses within and surrounding the boundaries of KAFB are shown on Figures A-9 and A-10 in Appendix A of this permit renewal request/application. Based on the surrounding land uses and the waste management practices described in Section 1.0 of this permit renewal request/application, the potential for damage to human health, domestic animals, wildlife, crops, vegetation, or physical structures due to exposure to hazardous waste constituents is unlikely.~~

~~G.3.2 Protection of Surface Water (20 NMAC 4.1.500/40 CFR 264.601[b])~~

~~Units will be operated in a manner that prevents releases that may have adverse effects on human health or the environment due to deposition or migration of waste constituents to surface water or wetlands. Hydrologic characteristics are described in Appendix A of this permit renewal request/application. Units will be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment.~~

~~The conditions outlined in 20 NMAC 4.1.500/40 CFR 264.601(b) [6-14-00], were considered and there is little or no potential for deposition or migration of waste constituents into surface water or wetlands. Treatment operations (except at the TTF) will be located inside buildings, provided with secondary containment as needed, operated and maintained in accordance with waste management procedures described in Section 1.0 of this permit renewal request/application, and closed in accordance with the procedures described in Appendix F of this permit renewal request/application and Attachment F of each Unit-specific module. The TTF also meets these conditions as described in Module II.~~

~~Hydrogeologic Assessment and Potential Pathways and Exposure Routes~~

~~The annual precipitation that occurs at SNL/NM is low. Surface water at SNL/NM is ephemeral and exists primarily in arroyos. Surface water drainage from SNL/NM Units will not reach ephemeral surface water bodies during normal operations. Drainage from the TTF is contained within a catchment basin.~~

~~Based on surrounding land uses, Unit locations, and waste management practices, the potential for damage to human health, domestic animals, wildlife, crops, vegetation, or physical structure due to exposure to hazardous waste constituents is unlikely.~~

~~G.3.3 Protection of Soil Surface (20 NMAC 4.1.500/40 CFR 264.601[b])~~

~~The location of Units and the waste management practices and containment features discussed in Section G.3.1 will effectively prevent the migration of RCRA-regulated waste constituents to the soil surface. Therefore, adverse affects on human health or the environment due to a migration of RCRA-regulated waste or constituents to the soil surface as a result of the treatment operations conducted at any Unit are unlikely.~~

~~Geological Assessment and Potential Pathways and Exposure Routes~~

~~The texture of the soils at SNL/NM Units ranges from fine sandy loam to loamy fine sand. In the unlikely event that a release from any Unit reaches the soil surface, soil erosion by storm water or winds could potentially transport these contaminants to the surrounding area. Additional information for the TTF is included in Module II.~~

~~G.3.4 Protection of the Atmosphere (20 NMAC 4.1.500/40 CFR 264.601[c])~~

~~The location of Units and the waste management practices and containment features discussed in Section G.3.1 will effectively prevent the migration of RCRA-regulated waste or constituents to the atmosphere. Therefore, adverse affects on human health or the environment due to a migration of RCRA-regulated waste or constituents to the atmosphere as a result of treatment operations conducted at any Unit are unlikely.~~

~~Meteorologic Assessment and Potential Pathways and Exposure Routes~~

~~The surface winds at SNL/NM are generally light, averaging about 4 miles per hour. Under normal conditions, resuspension of particulates is limited. The predominant prevailing wind direction is from the east/southeast to the west/northwest. Figure A-8 of Appendix A of this permit renewal request/application depicts wind roses for the Chemical Waste Landfill in Technical Area (TA) III (near the RMWMF) and TA-V (near the TTF and AHCF). Additional information for the TTF is included in Module II.~~

9.0 REFERENCES

DHHS, see US Department of Human Health Services

National Fire Protection Association (NFPA), 2001, "Standard for Water Spray Fixed Systems for Fire Protection", NFPA 15, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Installation of Sprinkler Systems," NFPA 13, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, " Standard for Dry Chemical Extinguishing Systems," NFPA 17, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," NFPA 25, National Fire Protection Association, Quincy, Massachusetts.

~~NIOSH Pocket Guide to Chemical Hazards, 1994. U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health.~~
NFPA, see National Fire Protection Association

Sandia National Laboratories/New Mexico (SNL/NM), 2003~~2~~, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 5~~3~~.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003a, "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003b, Appendices A - F (Site-Wide Waste Analysis Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units) in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

SNL/NM, see Sandia National Laboratories/New Mexico.

U.S. Department of Health and Human Services (DHHS), 1994. "NIOSH Pocket Guide to Chemical Hazards", National Institute for Occupational Safety and Health.

Module IV – Reserved ~~(HBWSF)~~

Sandia National Laboratories/New Mexico
~~High Bay Waste Storage Facility~~
~~Part B Permit Application~~

Module IV
Reserved

~~Revision 2.0~~

April ~~February~~ 2003

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~~ACRONYMS AND ABBREVIATIONS~~

~~20 NMAC 4.1.*X*00 New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*~~

~~40 CFR 2*XX.XX* Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*~~

~~DOE U.S. Department of Energy~~

~~ft foot/feet~~

~~HBWSF High Bay Waste Storage Facility~~

~~HSWA Hazardous and Solid Waste Amendments~~

~~m^3 cubic meter~~

~~NMED New Mexico Environment Department~~

~~RCRA Resource Conservation and Recovery Act~~

~~Sandia Sandia Corporation~~

~~SNL/NM Sandia National Laboratories/New Mexico~~

~~SWMU solid waste management unit~~

~~TA Technical Area~~

~~Unit RCRA-regulated waste management unit~~

~~WMA waste management area~~

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~~SANDIA NATIONAL LABORATORIES/NEW MEXICO~~
~~HIGH BAY WASTE STORAGE FACILITY~~
~~PART B PERMIT APPLICATION~~

~~This Sandia National Laboratories/New Mexico (SNL/NM) High Bay Waste Storage Facility (HBWSF) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage operations at the HBWSF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).~~

~~Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, are providing this module to address details and/or requirements that supplement those provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," (SNL/NM, 2003a), hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module and in the SNL/NM General Part B (SNL/NM, 2003a) meet the applicable requirements specified in 20 NMAC 4.1.500/ 40 CFR 264 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270 [6-14-00].~~

~~Sandia/DOE also submitted a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application" (SNL/NM, 2002), hereinafter referred to as the SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The SNL/NM General Part A (SNL/NM, 2002) serves as a companion document to the SNL/NM General Part B (SNL/NM, 2003a) and Unit-specific Part B modules, including this HBWSF Part B Permit Application.~~

~~In both the SNL/NM General Part A (SNL/NM, 2002) and SNL/NM General Part B (SNL/NM, 2003a) submittals and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., High Bay Waste Storage Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.~~

~~The HBWSF occupies 5670 square feet in Building 6596 in Technical Area (TA)-V and is used for storage of RCRA-regulated wastes in containers. All of the RCRA-regulated wastes listed in the General Part A (SNL/NM, 2002) may be managed at the HBWSF. Sandia/DOE currently operate the HBWSF under interim status in accordance with the terms of the Part A (SNL/NM, 2002) approved by the New Mexico Environment Department (NMED) (May 2002) and the most recent Part B permit request submitted to NMED (February 6, 2002).~~

~~1.0 GENERAL UNIT OPERATIONS~~

~~This section provides descriptions of the HBWSF waste management area (WMA) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~Specific information in this section includes:~~

~~□Unit operations, including: containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and~~

~~□Container storage of RCRA-regulated wastes.~~

~~The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B (SNL/NM, 2003a), address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [6-14-00].~~

~~1.1Designated Waste Management Areas~~

~~The location of the HBWSF at SNL/NM is shown on Figure 1. The location of the HBWSF within TA-V is shown on Figure 2. The HBWSF has one designated WMA in the main wing of Building 6596 (Figure 3). The following paragraphs provide descriptions of the storage structure, location, and capacity of the WMA.~~

~~Building 6596 is a pre-engineered metal building with a sloped-steel corrugated roof constructed on a concrete slab. Access for equipment and cargo is provided by a 20-foot (ft) wide steel rollup door at the western end of the building and a 12-ft wide steel rollup door on the southern side. Personnel may also enter or leave the HBWSF by means of hinged steel personnel doors located on the western and southern sides of the HBWSF.~~

~~The building western, southern, and northern interior walls in the WMA are constructed of galvanized sheet metal with a baked enamel finish. The eastern wall is constructed of 8-inch filled concrete block and coated with a chemical-resistant epoxy. The WMA floor is sealed with a chemical-resistant epoxy, which withstands degradation by chemical substances and resists wear from forklift traffic.~~

~~The HBWSF WMA is 40 ft by 145 ft with an eave height of 30 ft. The total storage area is approximately 4,900 square ft with a maximum storage capacity of 100,320 gallons.~~

~~Containers holding RCRA-regulated liquid wastes are stored on portable spill pallets and pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives, solvents, and other liquids. The containers of liquids (typically 5- to 30-gallon capacity) are stored on the grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard~~

~~containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [6-14-00] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3).~~

~~Each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are not stacked on each other on the pallets. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.~~

~~The containers are stored indoors and are protected from precipitation by the building, and by the slope of the asphalt pavement and gravel-covered soil surface outside the building that directs storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/ 40 CFR 264.175(b)(4).~~

~~Building 6956 is also equipped with a system of floor trenches covered with grating. These trenches are not used to provide secondary containment.~~

~~1.2Unit Operations~~

~~The HBWSF WMA is used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency Hazardous Waste Numbers listed in the SNL/NM General Part A (SNL/NM, 2002).~~

~~The HBWSF is not continuously occupied. All personnel sign in on a log upon entering the Unit and sign out when they leave. Waste handling personnel work in pairs and maintain contact with each other. All personnel are trained to check that everyone has signed out and left before turning off the lights and closing and locking the doors.~~

~~General information regarding: containment systems; management of ignitable, reactive, and incompatible wastes; preparedness and prevention; and, hazards prevention requirements applicable to the HBWSF WMA are addressed in Section 1.1 of the SNL/NM General Part B (SNL/NM, 2003a). Additional Unit-specific information is provided in the following sections.~~

~~1.2.1Operation of Containment Systems (20 NMAC 4.1.500/40 CFR 264.175[b][5]; 20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.15)[a] and [b]~~

~~Liquid wastes released from individual containers will accumulate in the spill pallets. Unit personnel begin taking action to evaluate and remove accumulated liquids in the spill pallets upon discovery. Personnel attempt to identify the source if possible. Accumulated liquid containing RCRA-regulated wastes may be sampled and analyzed as needed before removal to determine the most appropriate method of removing the liquid from the containment. The liquid is then pumped into containers or collected onto absorbent material, picked up, and placed in containers. Containerized liquids are characterized in accordance with the Waste Analysis Plan provided as Appendix B of the SNL/NM General Part B (SNL/NM, 2003b).~~

~~The floor trenches are not used for secondary containment, and Sandia/DOE do not anticipate that liquid RCRA-regulated wastes would enter the trenches. RCRA-regulated waste liquids~~

~~would only be released from containers of stored liquid wastes, and the largest single container would contain 122 gallons. The liquid would be contained in the trench, and would be handled as described above upon discovery.~~

~~1.2.2Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177; 20 NMAC 4.1.900/40 CFR 270.14[b][9] and 270.15[c] and [d])~~

~~Any of the ignitable or reactive wastes listed in the General Part A (SNL/NM, 2002) may be managed at the HBWSF. Unit personnel employ the practices described in Section 1.1.2 of the SNL/NM General Part B (SNL/NM, 2003a). Additional HBWSF-specific features, precautions, and practices include:~~

~~□Ignitable and reactive wastes are segregated from other wastes. Water-reactive wastes are not routinely stored in the Unit.~~

~~□Containers are kept closed during storage at the Unit.~~

~~□Containers of wastes are labeled and segregated according to compatibility criteria in 40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas; each row or area containing only compatible wastes.~~

~~1.2.3Preparedness and Prevention (20 NMAC 4.1.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])~~

~~The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the HBWSF.~~

~~1.2.3.1Required Equipment (20 NMAC 4.1.500/40 CFR 264.32 and 264.34)~~

~~General information about fire hydrants at each Unit is provided in Section 1.1.3.1 of the General Part B (SNL/NM, 2003a). The fire hydrant closest to the HBWSF is shown in Figure 9.~~

~~The HBWSF is equipped with an automatic fire suppression system, which is summarized below in Table 1.~~

~~Table 1~~
~~Fire Suppression System at the High Bay Waste Storage Facility~~

~~Building~~	~~Applicable NFPA Standard[a]~~	~~Sprinkler Design Occupancy Classification~~	~~System Type~~	~~Sprinkler Actuation[b]~~
~~6956~~	~~13~~	~~Ordinary/Group 2~~	~~Automatic sprinkler, wet pipe~~	~~GB/FS~~

~~[a] see references~~
~~[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.~~

~~Information on the required equipment located at the HBWSF is provided in Section 6 and Table 2 of this module.~~

~~1.2.3.2Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)~~

~~Information on equipment testing and maintenance at the HBWSF is provided in Appendix C of the SNL/NM General Part B (SNL/NM, 2003b) and in Section 4 of this module.~~

~~1.2.3.3Access to Communications or Alarm Systems (20 NMAC 4.1.500/ 40 CFR 264.34)~~

~~Information about the types and locations of communications or alarm systems at the HBWSF is provided in Section 1.1.3.3 of the SNL/NM General Part B (SNL/NM, 2003a) and in Section 6 of this module. Personnel at the Unit typically maintain contact with the emergency coordinator and other Radioactive and Mixed Waste Management Facility (RMWMF) personnel through 2-way radios.~~

~~1.2.4Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])~~

~~The following sections address the procedures, equipment, and structures used at the HBWSF to prevent hazards. Additional information applicable to the HBWSF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~1.2.4.1Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])~~

~~HBWSF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B (SNL/NM, 2003a) to prevent hazards in unloading. Unit personnel typically perform loading and unloading activities just inside the rollup door on the south side of the building (Figure 6). The floor is level and in good condition, and there is sufficient room for operating the vehicle and equipment.~~

~~Drums and other larger containers are typically strapped together on a pallet before being loaded onto vehicles. Containers are typically transported within the Unit with drum dollies or pallet jacks.~~

~~Waste handling personnel work in pairs at the Unit, and maintain contact with one another. Because the Unit is not routinely occupied, personnel are trained to be particularly aware of weather conditions and other operations that could affect waste movement, and to exercise caution in operating equipment such as forklifts.~~

~~1.2.4.2Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])~~

~~The land surrounding the HBWSF slopes gently toward the west. Sheet-flow runon of surface water from surrounding areas outside the TA is prevented from entering the TA by a diversion berm east of TA-V that diverts storm water to the north and south.~~

~~The floor of Building 6596 is higher than the surrounding ground, serving to direct storm water away from the building and WMA. The pavement and gravel-covered soil around the HBWSF slopes toward a storm drain that directs stormwater toward the west.~~

~~1.2.4.3Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])~~

~~Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the HBWSF will affect water supplies, as described in Section 1.1.4.3 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~1.2.4.4Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])~~

~~General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B (SNL/NM, 2003a). Electrical power is not required for the safe operation of the HBWSF WMA. RCRA-regulated waste management activities at the HBWSF will be suspended in response to equipment failures or power outages.~~

~~1.2.4.5Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])~~

~~HBWSF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B (SNL/NM, 2003a) to prevent undue exposure.~~

~~1.2.4.6Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi]; 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)~~

~~HBWSF personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B (SNL/NM, 2003a) to prevent releases to the atmosphere.~~

~~The WMA at the HBWSF is typically used solely for the storage of "radioactive mixed waste" or "remediation waste" and are therefore not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements in accordance with 20 NMAC 4.1.500/40 CFR 264.1080 [6-14-00]. Non-radioactive, non-remediation RCRA-regulated wastes that are managed at the HBWSF will be segregated from mixed radioactive waste and remediation waste, and will be managed separately.~~

~~Non-radioactive, non-remediation RCRA-regulated wastes containing less than 500 parts per million by weight volatile organics are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]. The process for establishing the exemption is described in Section 1.1.6.6 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~Containers of non-radioactive, non-remediation RCRA-regulated wastes that are not identified as being exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] are stored in primary containers that 1) have a design capacity of less than or equal to 0.1 cubic meter (m^3) or 2) are U.S. Department of Transportation-approved and have a design capacity of greater than 0.1 m^3 but less than 0.46 m^3. Container covers are maintained in closed and sealed conditions but may be opened for the purposes described in 20 NMAC 4.1.500/40 CFR 264.1086(c)(1)–(3) [6-14-00].~~

~~In addition, a modular containment system may be used when RCRA-regulated wastes require overpacking or repackaging. A modular containment system can be equipped with an air filtration system to prevent the release of particulates.~~

~~1.3Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR, Subpart I)~~

~~Container storage practices applicable to the HBWSF are presented in the following sections.~~

~~1.3.1Container Types and Labeling~~

~~HBWSF personnel use the containers types and labeling practices described in Section 1.2.1 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~1.3.2Container Handling (20 NMAC 4.1.400/40 CFR 264.173)~~

~~HBWSF personnel employ the container handling practices described in Section 1.2.2 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~The only time RCRA-regulated waste containers are opened are when the wastes are added, sampled, or transferred to another container. These activities are only done within Building 6596.~~

~~1.3.2.1Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)~~

~~The condition of containers at the HBWSF is maintained as indicated in Section 1.2.2.1 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~1.3.2.2Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)~~

~~HBWSF personnel employ the aisle space and storage configuration as described in Section 1.2.2.2 of the SNL/NM General Part B (SNL/NM, 2003a). Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.~~

~~Drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than three pallets high. Box-shaped containers may be stacked three high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are not stacked.~~

~~1.3.2.3Compatibility of Waste with Containers (20 NMAC 4.1.500/40 CFR 264.172)~~

~~HBWSF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~2.0 Unit Description and information~~

~~The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.100–.900/ [6-14-00]. 40 CFR 260–266, 268, and 270.The following subject areas are addressed in this section:~~

~~□Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);~~

~~□Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);~~

~~□Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]);~~

~~□Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]);~~

~~□Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).~~

~~An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of the SNL/NM General Part B (SNL/NM, 2003b).~~

~~2.1Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)~~

~~The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the HBWSF.~~

~~2.1.1Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])~~

~~The doors to the WMA in Building 6596 are kept locked except when personnel are present. As noted in Appendix A of the General Part B (SNL/NM, 2003b), Sandia security personnel periodically monitor the SNL/NM Technical Area gates during non-operational hours.~~

~~Unit personnel have Sandia-issued badges. Individuals who do not have Sandia-issued badges are escorted. These procedures limit access to the HBWSF in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].~~

~~The HBWSF is located inside TA-V (Figures 1 and 2). TA-V is enclosed by 8-ft-high standard security chain-link fences topped with barbed wire. Regular entries into and exits from TA-V are through Building 6577, the Perimeter Access Building, or through the adjoining vehicle gate. TA-V access control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-V.~~

~~2.1.2Warning Signs (20 NMAC 4.1 .500/40 CFR 264.14[c])~~

~~The entrances to the HBWSF (on the western and southern sides of Building 6596) are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. Signs on the northern side are not necessary because employees or visitors do not approach nor is there access to the HBWSF from that direction. The signs contain the warning in English and Spanish and are legible from a distance of 25 ft and can be seen from any approach to the HBWSF WMA.~~

~~2.2Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])~~

~~General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B (SNL/NM, 2003b).~~

~~2.2.1Traffic Patterns~~

~~The primary traffic routes used to transport RCRA-regulated wastes to the HBWSF include Wyoming Boulevard, Hardin Boulevard (formerly O Street), P Street, and Pennsylvania Avenue. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved road to TA-V turns southwestward off Pennsylvania Avenue at a point just over 5 miles south of the Wyoming entrance gate.~~

~~Waste transport vehicles travel along a 2-lane asphalt-paved drive to enter TA-V from the two-lane paved road as shown on Figures A-4 and A-6 in Appendix A of the SNL/NM General Part B (SNL/NM, 2003b). Vehicles must stop at the vehicle gate prior to entering or leaving TA-V. Within TA-V, waste is transported on asphalt- or concrete-paved surfaces (Figure 4).~~

~~2.2.2Traffic Volumes~~

~~Traffic volumes on Wyoming Boulevard, Hardin Boulevard, and P Street are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.~~

~~Fewer than 5 vehicles typically travel to the HBWSF per week. These include flatbed trucks and trailers carrying supplies and containers of RCRA-regulated waste to and from the HBWSF.~~

~~2.2.3Traffic Control Signals~~

~~Within TA-V, there are no traffic control signals or signs. Vehicles must stop at the vehicle gate prior to entering or leaving TA-V. Vehicle presence within TA-V is limited to waste transport~~

~~vehicles and other work vehicles. Therefore, signals or signs are not necessary to control traffic within TA-V.~~

~~2.3Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])~~

~~2.3.1Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i] and [ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])~~

~~The WMA at the HBWSF is not located within 3,000 feet of any faults with Holocene displacements (see Section A.4.2 in Appendix A [SNL/NM, 2002c] of the SNL/NM General Part B).~~

~~2.3.2Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11] [iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])~~

~~The WMA at the HBWSF is not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).~~

~~2.4Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])~~

~~Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi]) [6-14-00]. The maps and figures used to fulfill these regulatory requirements include the following:~~

~~□An SNL/NM-wide 100-year floodplain map is provided on Figure A-2 in Appendix A of the SNL/NM General Part B (SNL/NM, 2003b) (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).~~

~~□Surface waters, including intermittent streams, near the HBWSF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B (SNL/NM, 2003b) and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [6-14-00]).~~

~~□Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B (SNL/NM, 2003b) and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [6-14-00]). The area surrounding the HBWSF is occupied by other Sandia-controlled operations (industrial land use).~~

~~□Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B (SNL/NM, 2003b) and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).~~

~~□Legal boundaries of SNL/NM (including the HBWSF) are shown on Figure A-2 in Appendix A of the SNL/NM General Part B (SNL/NM, 2003b) (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][vii] [6-14-00]).~~

~~□Access control features at the HBWSF (e.g., fences, gates) are shown on Figures 5 and 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).~~

~~□Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the HBWSF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B (SNL/NM, 2003b) and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).~~

~~□The location of the HBWSF and associated WMA structures, loading and unloading areas, roads, and sanitary sewers are shown on Figures 5 and 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [6-14-00]).~~

~~□Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figures 5 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00]).~~

~~□The location of the HBWSF WMA is shown on Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).~~

~~Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the HBWSF. As provided in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to NMED at these scales and contour intervals due to the size of the HBWSF, the extent of the SNL/NM facility, and the topographic relief in the area.~~

~~2.5Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])~~

~~Groundwater monitoring information is provided in Part 3 of this comprehensive Part B permit request. The HBWSF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the HBWSF likely to affect groundwater quality during normal operations or during unusual events.~~

~~3.0 WASTE ANALYSIS PLAN~~

~~In accordance with 20 NMAC 4.1.900/ 40 CFR 270.14[b][2]; 20 NMAC 4.1.500/40 CFR 264.13, "General Waste Analysis"; and 20 NMAC 4.1.800/40 CFR 268.7, "Waste Analysis and Record-Keeping," [6-14-00], waste analysis requirements applicable to all Units, including the HBWSF, are addressed in Appendix B of the SNL/NM General Part B (SNL/NM, 2003b).~~

~~4.0 INSPECTION PLAN~~

~~20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] require that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.~~

~~Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.~~

~~The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the "Site-Wide Inspection Plan", provided as" Appendix C of the SNL/NM General Part B (SNL/NM, 2003b). Unit personnel conduct inspections in accordance with the site-wide plan.~~

~~Specific items and areas that are inspected are listed in Table 2, which includes the inspection criteria and frequency.~~

~~Automatic fire suppression systems are included in Table 2. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems in accordance with the requirements of NFPA 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," as described in Section 1.1.3.2 of the General Part B (SNL/NM, 2003a).~~

~~The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B (SNL/NM, 2003b). The inspection plan (Appendix C and this section) is maintained at the RMWMF. Inspection records for the current calendar year are maintained at the HBWSF. Inspection records for previous calendar years are maintained at the RMWMF or the SNL/NM Records Center.~~

~~Table 2~~
~~High Bay Waste Storage Facility Inspection Criteria and Frequency~~

~~Inspected Item~~	~~Inspection Criteria~~	~~Inspection Frequency~~
~~SAFETY AND EMERGENCY EQUIPMENT~~		
~~Eye wash / safety shower~~	~~Operational, accessible, in good condition~~	~~Monthly~~
~~Spill control equipment~~	~~Present, accessible, quantities per inventory, and in good condition~~	~~Monthly~~
~~Personal protective equipment~~	~~Present, quantities per inventory, and in good condition~~	~~Monthly~~
~~Fire alarm pull station(s)~~	~~Present, accessible, and in good condition~~	~~Monthly~~
~~Fire alarm(s)~~	~~Present~~	~~Monthly~~
~~Fire extinguisher(s)~~	~~Present, charged, accessible, and in good condition~~	~~Monthly~~
~~Fire sprinklers and system~~	~~Present, appears to be in good condition, sprinklers not obstructed~~	~~Monthly~~
~~OPERATING AND STRUCTURAL EQUIPMENT~~		
~~Building / storage area floor~~	~~Clean, no spills, cracks, or excessive wear~~	~~Weekly when wastes are managed. Monthly otherwise.~~
~~Building walls~~	~~Not leaking or spalling, in good condition~~	~~Weekly when wastes are managed. Monthly otherwise.~~
~~Building ceiling~~	~~Not leaking or spalling, and in good condition~~	~~Weekly when wastes are managed. Monthly otherwise.~~
~~Building lights~~	~~Operational and in good condition~~	~~Weekly when wastes are managed. Monthly otherwise.~~
~~Loading and unloading areas~~	~~Good condition, safe working surface, free of cracks, no spills~~	~~Daily when wastes are managed. Monthly otherwise.~~
~~Waste handling equipment~~	~~Good condition, in good repair, operational~~	~~Daily when wastes are managed. Monthly otherwise.~~
~~SECURITY DEVICES~~		
~~Warning signs~~	~~Present and in good condition~~	~~Monthly~~
~~Doors~~	~~Present, operational, in good condition~~	~~Monthly~~
~~Locks~~	~~Present, operational, in good condition~~	~~Monthly~~
~~STORED CONTAINERS~~		
~~Integrity~~	~~Good condition (i.e., no bulging, leaks, corrosion, or deterioration)~~	~~Daily for individual containers that were handled. Weekly otherwise.~~
~~Closed~~	~~Correct lid/cover placement (i.e., properly closed and sealed)~~	~~Daily for individual containers that were handled. Weekly otherwise.~~
~~Labeling~~	~~Correct information, correct location, legible~~	~~Daily for individual containers that were handled. Weekly otherwise.~~
~~Secondary Containment (liquid waste)~~	~~Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)~~	~~Daily for individual containers that were handled. Weekly otherwise.~~
~~Storage Conditions~~	~~Waste compatible with container, container located with compatible wastes~~	~~Daily for individual containers that were handled. Weekly otherwise.~~
~~Location~~	~~Correct aisle space, correct stacking (3 maximum)~~	~~Daily for individual containers that were handled. Weekly otherwise.~~

~~5.0 PERSONNEL TRAINING~~

~~Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/ 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [6-14-00] "Personnel Training." The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the HBWSF.~~

~~HBWSF personnel receive training in accordance with the "Site-Wide Personnel Training Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" provided as Appendix D of the SNL/NM General Part B (SNL/NM, 2003b).~~

~~All job descriptions identified in Appendix D, Table D-2 are applicable at the HBWSF.~~

~~Training records for HBWSF personnel are maintained at the Radioactive and Mixed Waste Management Facility at SNL/NM.~~

~~6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE FOR THE HIGH BAY WASTE STORAGE FACILITY~~

~~Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia /DOE Site-Wide Contingency Plan is included as Appendix E of the SNL/NM General Part B (SNL/NM, 2003b). Supplemental HBWSF-specific information is included in this section, in Figures 8 and 9, and in Tables 3 and 4 of this module.~~

~~The HBWSF is the western portion of the main wing of Building 6596 in TA -V at SNL/NM and is used for storage of RCRA-regulated wastes. Building 6596 is a pre-engineered metal building with a 30-foot eave height, constructed on a concrete pad. It has approximately 4,900 square feet of space used for storage of RCRA-regulated wastes. The building western, southern, and northern interior walls in the WMA are constructed of galvanized sheet metal with a baked enamel finish. The eastern wall is constructed of 8-inch filled concrete masonry units.~~

~~RCRA-regulated wastes bearing the U.S. EPA Hazardous Waste Numbers listed in the General Part A (SNL/NM, 2002) may be stored at the HBWSF. Within the HBWSF, waste is segregated based on compatibility groups.~~

~~During an emergency, Unit personnel will evacuate the Unit as described in Section E.5.2 of the Site-wide Contingency Plan. In addition, Unit personnel may choose to implement a coordinated evacuation of all of TA-V. To notify all TA-V personnel, Unit personnel would activate the TA-V alarm by activating any fire alarm pull station.~~

~~During an emergency, Sandia security officers provide unimpeded access to the facility for authorized personnel as directed by the IC. Security officers also provide additional emergency assistance as required by the IC. Personnel who are authorized to enter TA-V in case of emergencies are members of the SNL/NM Emergency Response Organization, including medical personnel, the KAFB fire department, and Air Force security police.~~

~~Figure 8 presents evacuation routes for the HBWSF. Figure 9 presents emergency response and access information for the HBWSF. Table 3 lists the emergency equipment typically available at the HBWSF. Table 4 lists the emergency coordinators for the HBWSF.~~

~~The emergency coordinators are informed of planned work activities at the beginning of each work day; this includes activities at Units that are not routinely staffed (such as the HBWSF).~~

~~Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained at the Radioactive and Mixed Waste Management Facility, in the TA-V emergency control room, and at the SNL/NM Emergency Operations Center.~~

~~Table 3~~
~~High Bay Waste Storage Facility~~
~~Emergency Equipment and Locations~~

~~Building 6596 High Bay~~

~~Category~~	~~Description/Capabilities~~	~~Location~~
~~Spill Control and Decontamination Equipment~~	~~Eyewash Station/Shower~~	~~On south wall of high bay near southwest corner~~
	~~Absorbents~~	~~□In storage area behind north wall of high bay~~ ~~□By personnel door in south wall of high bay~~
	~~Miscellaneous PPE (protective suits, goggles, gloves)~~	~~□In storage area behind north wall of high bay~~ ~~□By personnel door in south wall of high bay~~
~~Internal Communication and Alarm System~~	~~Voice command~~	~~Operating personnel typically carry radios~~
	~~Portable 2-way radio~~	
	~~Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)~~	~~□By personnel door in southwest corner of high bay~~ ~~□By personnel door in south wall of high bay~~
	~~Audible fire alarm~~	~~By personnel door in south wall of high bay~~
~~External Communication System~~	~~Mobile telephone or portable radio~~	~~Taken to the High Bay Waste Storage Facility by personnel~~
~~Fire Extinguishers~~	~~Portable (A-B-C)~~	~~□By personnel door in southwest corner of high bay~~ ~~□In storage area behind north wall of high bay~~ ~~□By personnel door in south wall of high bay~~
	~~Portable (A-B-C)(D)~~	~~By personnel door in southeast corner of high bay~~
~~Fire Suppression~~	~~Automatic wet-pipe sprinkler system with heat-actuated sprinklers~~	~~Coverage throughout the building.~~
	~~Water supplied by fire hydrant~~	~~One hydrant, location shown in Figure X~~

~~PPE = personal protective equipment~~
~~KAFB = Kirtland Air Force Base~~

~~Table 4~~
~~High Bay Waste Storage Facility,~~
~~Emergency Coordinator List~~

~~February 18, 2003~~

~~Facility Emergency Coordinator~~		~~Office Phone~~	~~Home Phone~~
~~Primary:~~	~~Jeff Jarry~~ ~~Sandia National Laboratories~~ ~~P. O. Box 5800~~ ~~Albuquerque, NM 87185~~	~~(505) 284-3080 (office)~~ ~~(505) 561-1138 (pager)~~	~~(505) 452-3337~~
~~First Alternate:~~	~~Mike Spoerner~~ ~~Sandia National Laboratories~~ ~~P.O. Box 5800~~ ~~Albuquerque, NM 87185~~	~~(505) 844-2813 (office)~~ ~~(505) 540-5296 (pager)~~	~~(505) 828-3441~~
~~Second Alternate~~	~~Phil Zelle~~ ~~Sandia National Laboratories~~ ~~P.O. Box 5800~~ ~~Albuquerque, NM 87185~~	~~(505) 844-2486 (office)~~ ~~(505) 540-7437 (pager)~~	~~(505) 292-5097~~
~~Third Alternate~~	~~Mary Ann Krauss~~ ~~Sandia National Laboratories~~ ~~P.O. Box 5800~~ ~~Albuquerque, NM 87185~~	~~(505) 845-9997 (office)~~ ~~(505) 540-5228 (pager)~~	~~(505) 299-0793~~

~~One or more of these personnel are routinely available at the Radioactive and Mixed Waste Management Facility during operating hours (7:00 am to 5:30 pm, Monday through Thursday) and can be contacted by radio or telephone during those hours.~~

~~7.0 CLOSURE PLAN~~

~~Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13], and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, [6-14-00]. General closure information applicable to all RCRA-regulated Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B (SNL/NM, 2003b). The general closure information includes closure performance standards; an SNL/NM facility description; amendment of the Closure Plan; closure certification and report; and survey plat and post-closure requirements. Unit-specific information is included in this section.~~

~~7.1Estimate of Maximum Waste in Storage~~

~~The maximum total inventory of RCRA-regulated waste in storage at any time at the HBWSF is estimated at 100,320 gallons of liquids and/or solids.~~

~~7.2Closure Conditions~~

~~In addition to the general assumptions listed in Section F.4 in Appendix F of the SNL/NM General Part B (SNL/NM, 2003b), closure activities specified in this plan assume the following conditions were met during the operational life of the HBWSF:~~

~~□RCRA-regulated waste handling activities involving the opening of waste containers were confined to the interior of the HBWSF WMA. If contamination occurred, it would have been confined to that area; and~~

~~□The interior walls and floors of the WMA were maintained to retain their integrity by following established maintenance and inspection procedures, and breaches of protective coatings did not occur.~~

~~7.3Closure Schedule~~

~~8.0 TREATMENT PLAN~~

~~Sandia/DOE do not perform treatment of RCRA-regulated wastes requiring a permit at the HBWSF.~~

~~9.0 REFERENCES~~

~~National Fire Protection Association (NFPA), 2002, "Standard for the Installation of Sprinkler Systems," NFPA 13, National Fire Protection Association, Quincy, Massachusetts.~~

~~National Fire Protection Association (NFPA), 2002, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," NFPA 25, National Fire Protection Association, Quincy, Massachusetts.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), 2002, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 3.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003a, "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003b, Appendices A-F in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

~~SNL/NM, see Sandia National Laboratories/New Mexico.~~

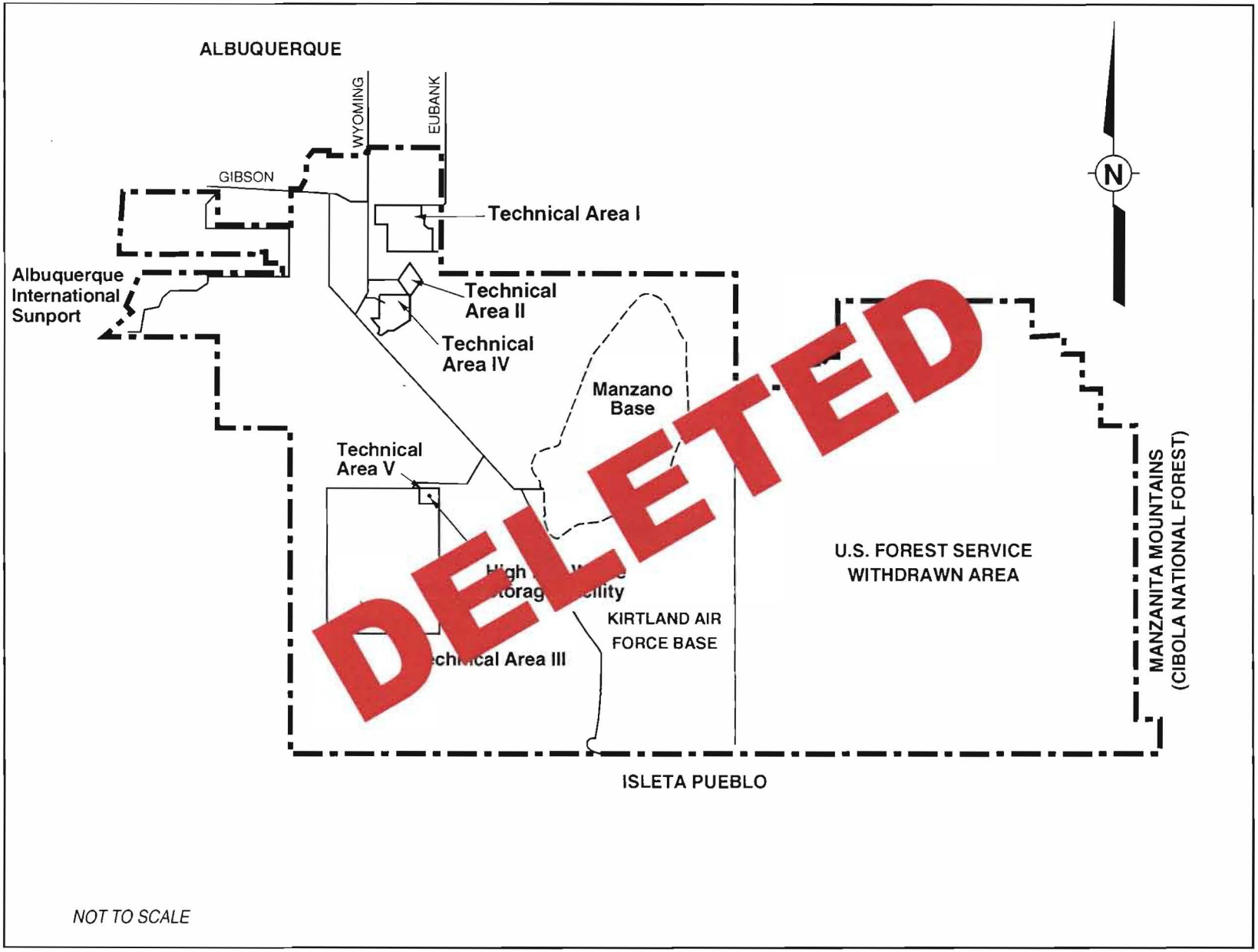


Figure 1
Location Map of the High Bay Waste Storage Facility at Sandia National Laboratories/New Mexico

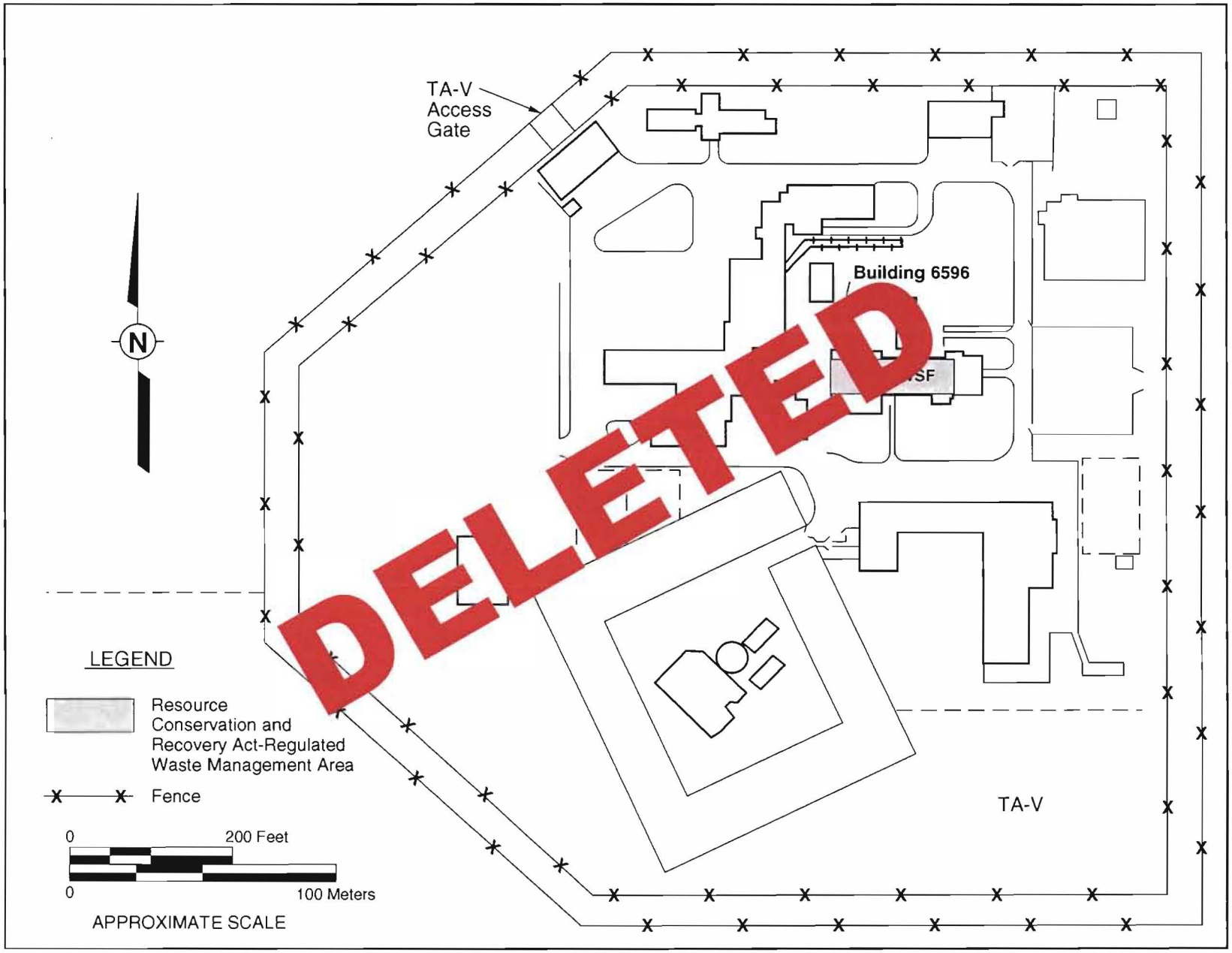


Figure 2
Location of the High Bay Waste Storage Facility (HBWSF) in Technical Area (TA) V

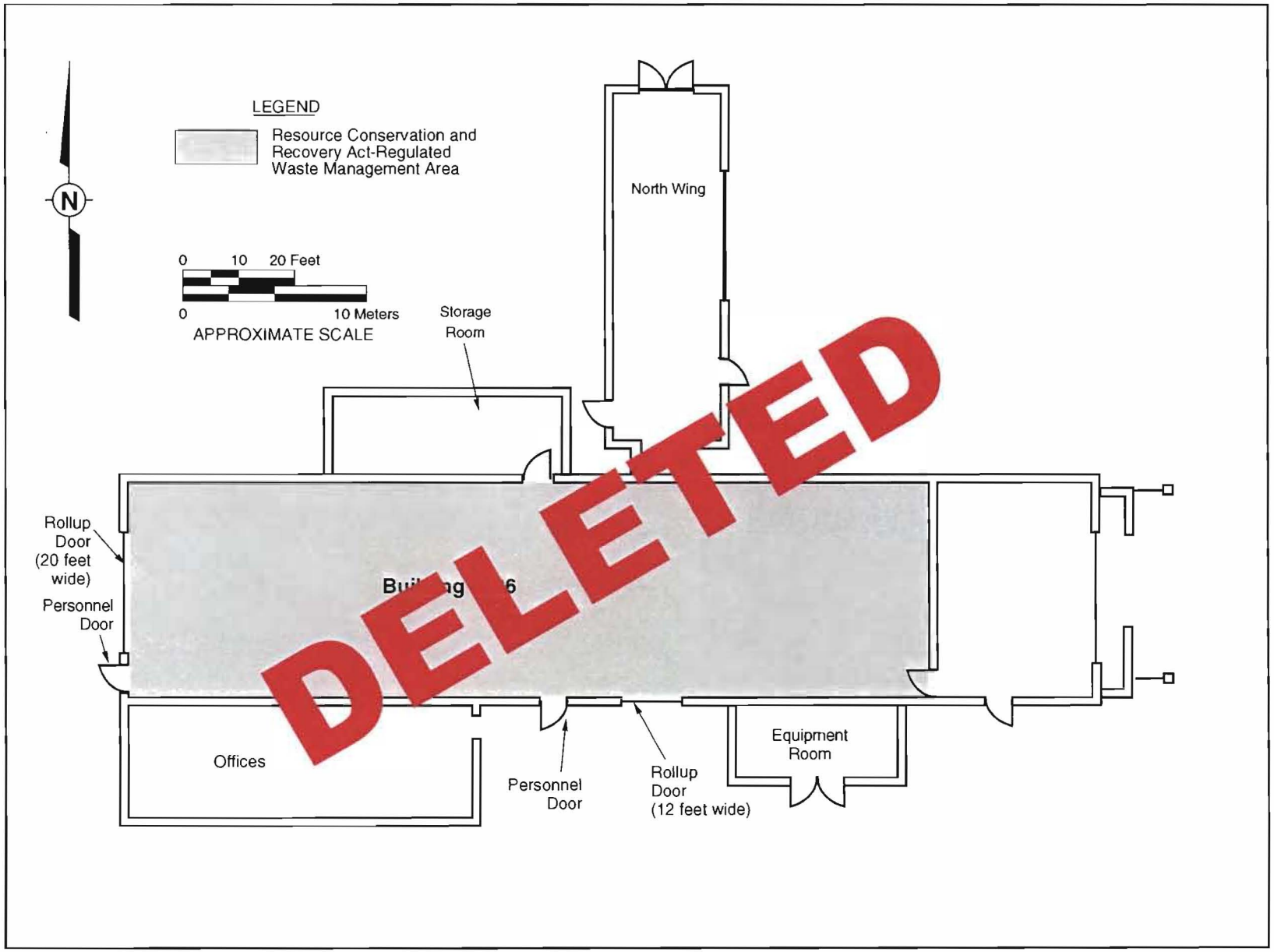


Figure 3
High Bay Waste Storage Facility,
Resource Conservation and Recovery Act-Regulated Waste Management Area

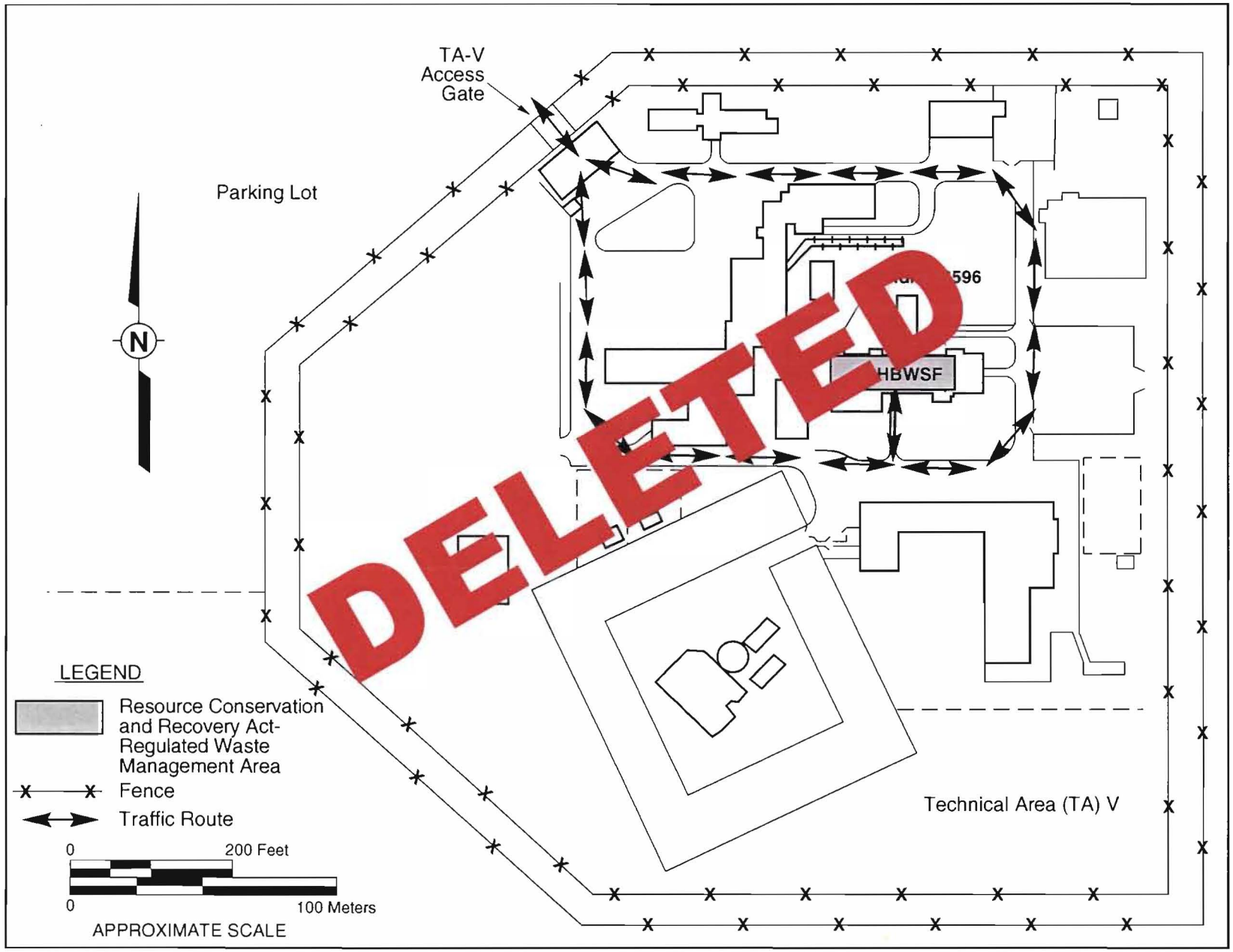


Figure 4
High Bay Waste Storage Facility, Traffic Routes and Controls

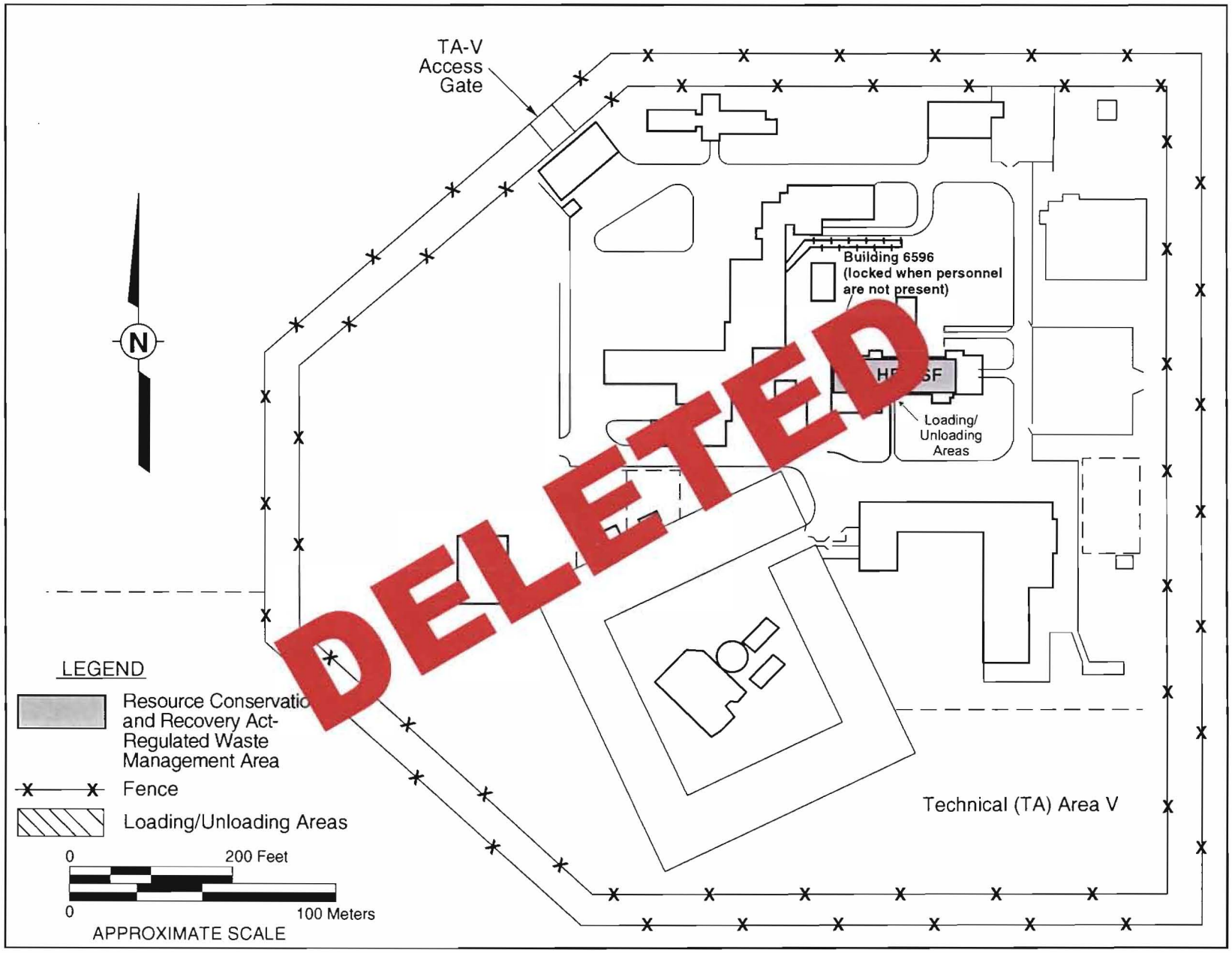


Figure 6
High Bay Waste Storage Facility, Access Control Features

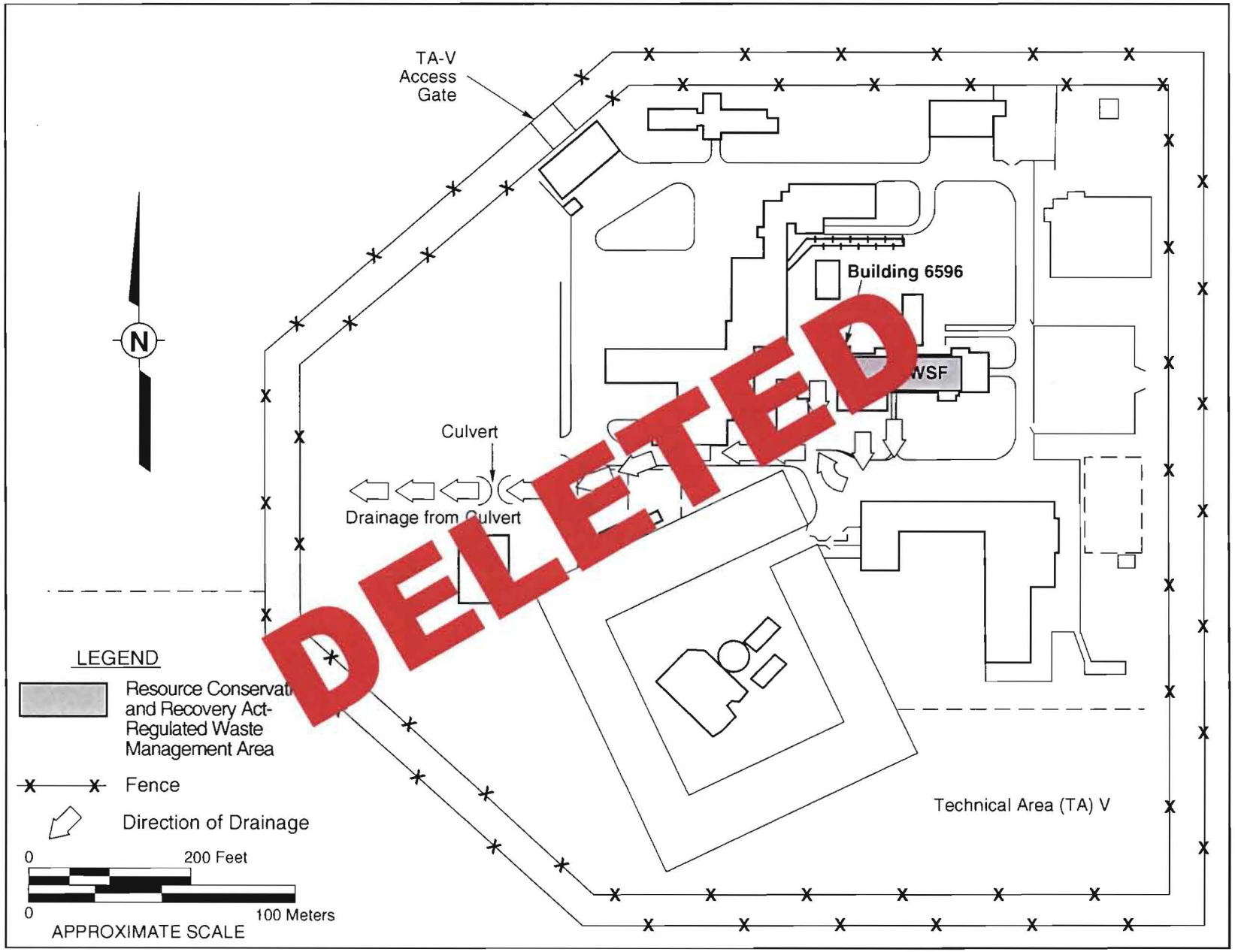


Figure 7
High Bay Waste Storage Facility, Drainage Control Features

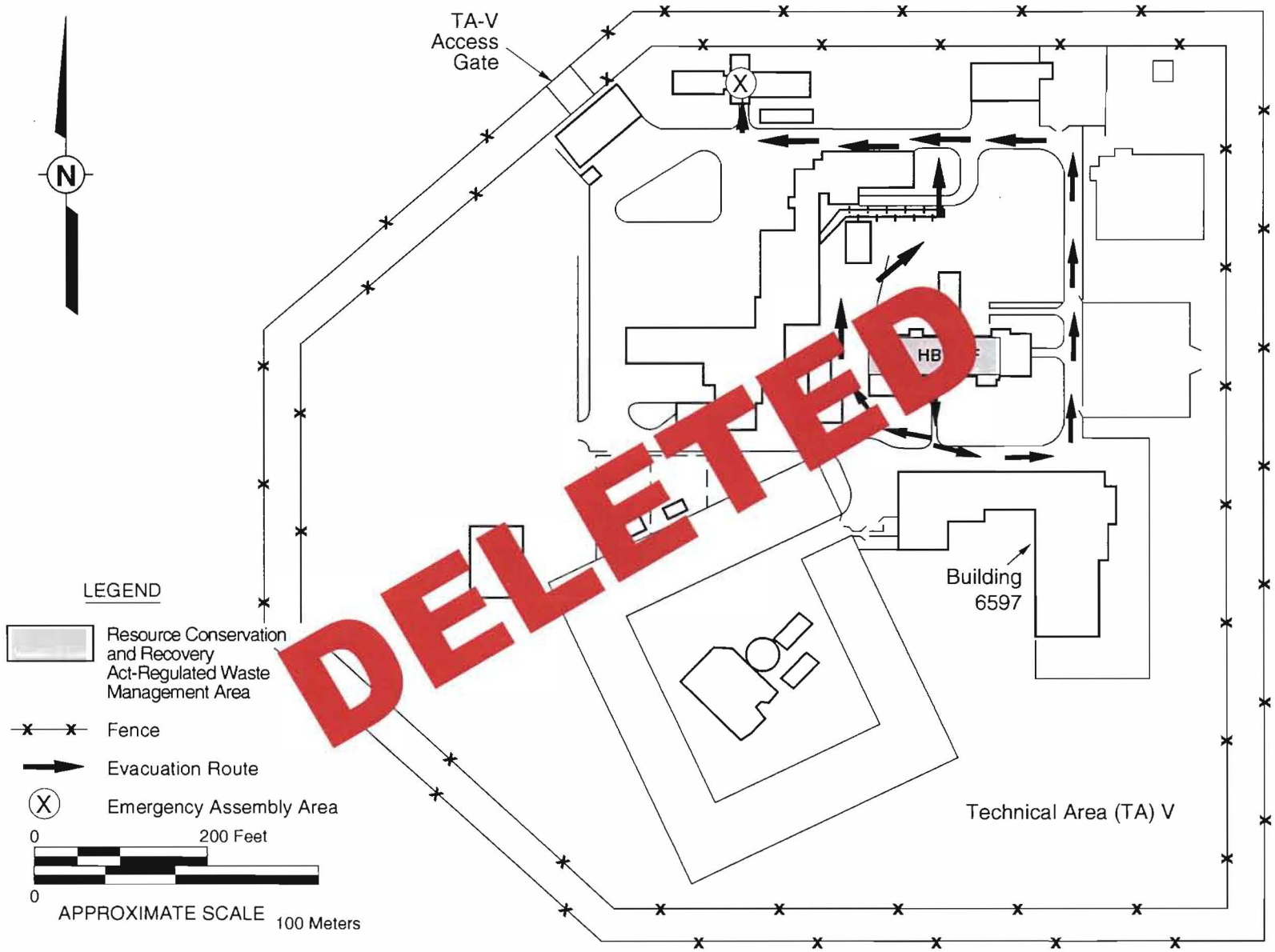
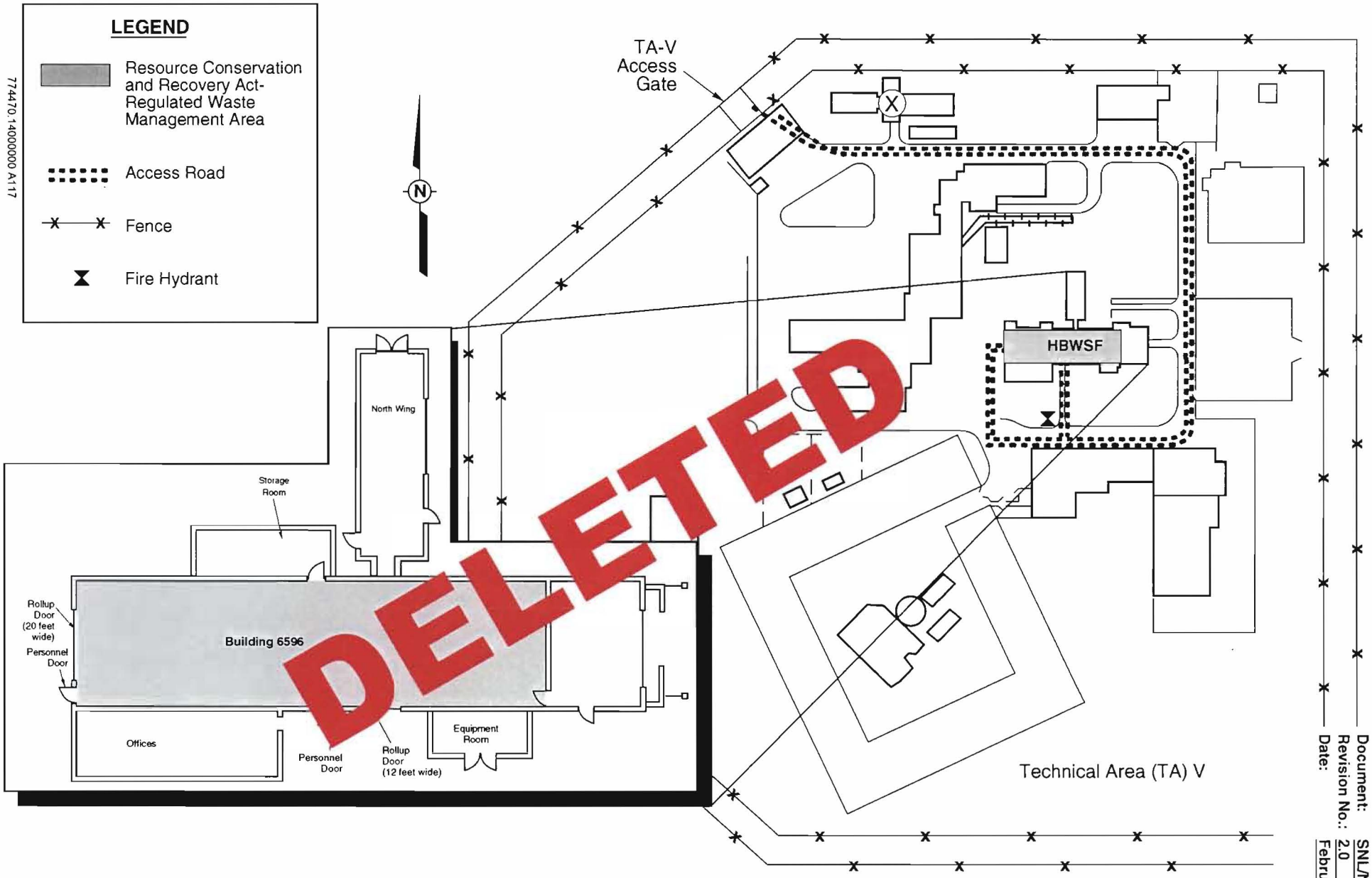


Figure 8
High Bay Waste Storage Facility, Evacuation Routes



774470.14000000 A117

Not to Scale

Figure 9
High Bay Waste Storage Facility, Emergency Response and Access Information

Module V - AHCF

Sandia National Laboratories/New Mexico
Auxiliary Hot Cell Facility
Part B Permit Application

Module V

Revision 2.0

~~February~~ April 2003

Prepared by
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Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
AHCF	Auxiliary Hot Cell Facility
DOE	U.S. Department of Energy
ft	foot/feet
HEPA	high-efficiency particulate air
HSWA	Hazardous and Solid Waste Amendments
ID	inner diameter
in.	inch(es)
m^3	cubic meter
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	solid waste management unit
TA	technical area
TSDF	treatment, storage, and disposal facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

SANDIA NATIONAL LABORATORIES/NEW MEXICO
AUXILIARY HOT CELL FACILITY
PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Auxiliary Hot Cell Facility (AHCF) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage and treatment operations at the AHCF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared and revised ~~are providing~~ this module to provide Unit-specific~~address~~ ~~details and/or requirements that~~details that supplement the information ~~those~~ provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application" ~~(SNL/NM, 2003a)~~, hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, ~~and~~ in the SNL/NM General Part B, and in appendices to the General Part B ~~(SNL/NM, 2003a)~~ meet the applicable requirements for the AHCF that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00] and 20 NMAC 4.1.900/ 40 CFR 270 [6-14-00].

Sandia/DOE also prepared ~~submitted~~ a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" (SNL/NM, 2003~~2~~), hereinafter referred to as the SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The SNL/NM General Part A ~~(SNL/NM, 2002)~~ serves as a companion document to the ~~SNL/NM~~ General Part B ~~(SNL/NM, 2003a)~~ and Unit-specific Part B modules, including this AHCF Part B Permit Application.

In ~~both~~ the ~~SNL/NM~~ General Part A, ~~(SNL/NM, 2002) and SNL/NM~~ the General Part B, ~~(SNL/NM, 2003a) submittals~~ its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Auxiliary Hot Cell Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The AHCF occupies 5578 square feet in Building 6597 in Technical Area (TA)-V. Operations include storage of RCRA-regulated wastes in containers, repackaging wastes, and treating the wastes as needed to render them more suitable for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A ~~(SNL/NM, 2002)~~ may be managed at the AHCF. Sandia/DOE currently operate the AHCF under interim status in accordance with the terms of the Part A ~~(SNL/NM, 2002)~~ approved by New Mexico Environment Department (NMED) (May 2002) and the most recent Part B permit request submitted to NMED (April 16, 2003~~February 6, 2002~~).

1.0 GENERAL UNIT OPERATIONS

This section provides general descriptions of the AHCF waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

Specific information in this section regarding ~~includes:~~

~~B~~Unit operations~~,~~ includes~~ing:~~ containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and

~~B~~c~~C~~ontainer storage practices. ~~; and~~

~~B~~Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [6-14-00].

1.1 Designated Waste Management Areas

The location of the AHCF at SNL/NM is shown on Figures 1 and 2. The location of the AHCF within TA-V is shown on Figure 2. The AHCF will have five designated WMAs: the hot cell; the work area around the hot cell; the fume hood; the storage silos; and container storage in the High Bay (Figure 3). The following sections provide descriptions of the storage structure, location, and capacity of each WMA.

1.1.1 Hot Cell

Outside overall dimensions of the hot cell are 16 feet (ft), 8 inches (in.) square and 16 ft, 2 in. high. Inside space dimensions are 100 square feet with a height of 13-ft, 10-in. The inside surfaces are lined with stainless steel. An 18-in. thick concrete foundation mat supports the hot cell. The hot cell walls are constructed of inner and outer~~,~~ precast ~~, 8-in. reinforced~~ concrete panels that are held apart by t~~. T~~hreaded rods. ~~maintain the separation between inner and outer hot cell walls. The inner and outer wall~~ The space between the panels ~~are separated by a 24-in. space~~ is filled with ~~common construction grade~~ sand. The roof sections are also ~~is~~ constructed of ~~two~~ ~~8-in. thick~~ reinforced concrete panels with ~~12 in. of~~ sand between them. Each individual roof panel is designed to structurally support one 5,000-pound point load. Each roof section supports a roof port and roof plug.

1.1.2 Work Area

The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. From time to time, a temporary tent-like room may be erected in the work area north of the hot cell and east of the permanent shield wall to accommodate large RCRA-regulated waste items and containers.~~packages.~~ If the RCRA-regulated item or container~~package~~ must be handled remotely, the temporary room will be built directly against the permanent shield wall to allow the use of the manipulators. Each time the temporary room is erected, package-specific considerations will determine details of the design; however, basic construction will consist of polyvinyl chloride or metal framing, clear or translucent plastic roof and walls, and plastic doors. The temporary room will operate at a slight negative pressure. ~~A motorized control damper will be opened to allow airflow to the temporary room.~~

1.1.3 Fume Hood

The 6-ft-wide walk-in fume hood, located north and east of the hot cell, can accommodate two 55-gallon drums placed side by side.

1.1.4 Storage Silos

Four 10-in. inside diameter (ID), 15-ft deep floor silos and two 30-in. ID, 15-ft deep floor silos are located in the work area north of the hot cell and east of the permanent shield wall (Figure 3). These silos have removable locking-type shield plugs. The tops of the silos are raised slightly above the general floor level to reduce the possibility for the entry of water into the silo.

Two additional storage silos are located within the hot cell. Each silo is 10-in. ID. One silo is 15-ft deep and the other is 11-ft, 8-in. deep.

The maximum waste storage capacity of the silos is 1,456 gallons.

1.1.5 Container Storage (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/ 40 CFR, Subpart I)

Containers of RCRA-regulated waste will be stored in the High Bay. Containers holding RCRA-regulated liquid wastes will be stored on portable spill pallets and pans covered with grating. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives and other liquids. The containers of liquids (typically 5- to 30-gallon capacity) will be stored on the grating. Any liquids released from the containers will drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [6-14-00] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3) [6-14-00].

Each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are not stacked on each other on the pallets. Because the spill pallets are

designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

The containers are stored indoors and are protected from precipitation by the building, and by the slope of the asphalt pavement and gravel-covered soil surface outside the building that directs storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/ 40 CFR 264.175(b)(4).

The High Bay is also equipped with a system of floor trenches covered with grating. These trenches are not used to provide secondary containment.

The waste storage capacity is 2,200 gallons.

1.2 Unit Operations

The AHCF WMAs will be used to store and/or treat any of the wastes bearing U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers listed in the SNL/NM General Part A ~~(SNL/NM, 2002). RCRA-regulated waste constituents are typically solvents, and toxic metals. The RCRA-regulated wastes managed at the AHCF will be primarily those whose characteristics (e.g., exceeding size or weight limitations at other Units, requiring remote handling for personnel protection) make that waste unsuitable for management at the SNL/NM Radioactive and Mixed Waste Management Facility.~~

~~General~~ Information regarding operation of all RCRA-regulated Units at SNL/NM is included ~~: containment systems; management of ignitable, reactive, and incompatible wastes; preparedness and prevention; and, hazards prevention requirements are addressed~~ in Section 1.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.500/40 CFR 270.14[b][8][ii] and 270.15[a] and [b]; 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Liquid wastes released from individual containers will accumulate in the spill pallets. Unit personnel will begin taking action to evaluate and remove accumulated liquids in the spill pallets upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.~~Personnel will attempt to identify the source if possible. Accumulated liquid containing RCRA-regulated wastes may be sampled and analyzed as needed before removal to determine the most appropriate method of removing the liquid from the containment. The liquid is then pumped into containers or collected onto absorbent material, picked up, and placed in containers. Containerized liquids are characterized in accordance with the Waste Analysis Plan provided as Appendix B of the SNL/NM General Part B (SNL/NM, 2003b).~~

The floor trenches are not used for secondary containment, and Sandia/DOE do not anticipate that liquid RCRA-regulated wastes would enter the trenches. RCRA-regulated waste liquids would only be released from containers of stored liquid wastes, and the largest single container would contain 122 gallons. The liquid would be contained in the trench, and would be handled as described above upon discovery.

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177; 20 NMAC 4.1.900/ 40 CFR 270.14[b][9] and 270.15[c] and [d])

Any of the ignitable or reactive wastes listed in the General Part A ~~(SNL/NM, 2002)~~ may be managed at the AHCF. Unit personnel employ the practices described in Section 1.1.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Additional AHCF-specific features, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes. Water-reactive wastes are not routinely stored in the Unit.

- Forklifts are not used for waste movement near treatment operations involving ignitable or reactive wastes to minimize potential sources of ignition while containers are or may be open.

- Wastes are mixed together on a very limited basis during the treatment and repackaging operations at the Unit. Ignitable and reactive wastes are treated or mixed on a case-by-case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences~~, as described in Section B.5.~~ Personnel use waste characterization data and/or published chemical information (e.g., "NIOSH Pocket Guide to Chemical Hazards" [DHHS, 1994], or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions. Treatment operations are described in Section 8.0 of this module~~Appendix G of the General Part B (SNL/NM, 2003b)~~.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas; each row or area containing only compatible wastes.

1.2.3 Preparedness and Prevention (20NMAC 4.1.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the AHCF.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

Information about fire hydrants is provided in Section 1.1.3.1 of the General Part B ~~(SNL/NM, 2003a)~~. The fire hydrants closest to the AHCF are shown in Figure 11.

The high bay of Building 6597 is equipped with an automatic fire suppression system; summarized below.~~:~~

Table 1
Fire Suppression System at the Auxiliary Hot Cell Facility

Building	Applicable NFPA , Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
6597	13	Storage	Automatic sprinkler, wet pipe	GB/FS

[a] ~~See references~~ National Fire Protection Association (NFPA), 2002
[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.

Information on other required equipment located at the AHCF is provided in Section 6.0 and Table 3 of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the AHCF is provided in Appendix C of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the AHCF is provided in Section 1.1.3.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ and in Section 6.0 of this module.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the AHCF to prevent hazards. Additional information applicable to the AHCF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

AHCF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B ~~(SNL/NM, 2002b)~~ to prevent hazards in unloading. Unit personnel will typically perform loading and unloading activities just outside the rollup door on the north side of the WMA (Figure 6)~~.~~. The pavement is level and in good condition, and there is sufficient room for operating vehicles and equipment.

Drums and other ~~larger~~ containers of RCRA-regulated waste will typically be strapped together on a pallet before being loaded onto vehicles. Containers will typically be transported within the Unit with drum dollies or pallet jacks.

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

The land surrounding the AHCF slopes gently toward the west. Sheet-flow runon of surface water from surrounding areas outside the TA is prevented from entering the TA by a diversion berm east of TA-V that diverts storm water to the north and south.

The floor of the high bay in Building 6597 is slightly higher than the surrounding ground, serving to direct storm water away from the building. The asphalt and concrete pavement around the AHCF slopes toward a storm drain that directs stormwater toward the west.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the AHCF will affect water supplies, as described in Section 1.1.4.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B ~~(SNL/NM, 2003a)~~.

The AHCF is equipped with a minimum of 90 minutes of general emergency lighting along the paths of egress. With respect to RCRA-regulated waste management operations, backup power to the chain hoist will be required only during the short periods that the bridge crane is being used for an in-air transfer of RCRA-regulated waste. The bridge crane locks in place and is inoperable during a power outage. Portable generators can provide backup power to the chain hoist whenever the bridge crane is in use. The chain hoist, and tethers if necessary, will be used to lower any suspended packages to a safe configuration until power is restored. No other AHCF systems require redundant power supplies.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

AHCF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B ~~(SNL/NM, 2002b)~~ to prevent undue exposure. In addition, a negative pressure ventilation system is provided for the waste management area. The ventilation air flow from these areas passes through a two-stage high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

~~The exhaust system for Building 6597 (Zone 2) is separate from that of the Hot Cell, the Fume Hood, and the Temporary Room (Zone 1). The Zone 1 AHCF ventilation system is a stand-alone system. It does not tie into Building 6597 mechanical systems.~~

~~The ventilation system shown on Figure 3 serves the Zone 1 components. The system is designed to accommodate air flow from the process areas: The fume hood, the hot cell, and the Temporary Room (if one is set up) through a two-stage high-efficiency particulate air (HEPA) filter train (Figure 3). The ventilation system will maintain airflow from Zone 2 to Zone 1.~~

~~Balancing dampers, and flow and pressure instrumentation have been installed for proper airflow balancing to ensure ventilation-system function and worker safety. The dampers will set the airflow at the design set point. Instrumentation allows workers to monitor airflow during operations. The exhaust fan discharges to a vertical exhaust stack.~~

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

AHCF personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B ~~(SNL/NM, 2002b)~~ to prevent releases to the atmosphere during storage.

Subpart AA

AHCF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated ~~hazardous~~ wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service at the AHCF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [6-14-00]. The equipment list ~~use~~ will be maintained ~~noted~~ in the AHCF records. ~~operating log~~Equipment use will also be noted in the records.

Subpart CC

Unit personnel follow the practices described in Section 1.1.4.6 of the SNL/NM General Part B and maintain compliance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00].

~~The WMAs at the AHCF are typically used solely for the storage and/or treatment of "radioactive mixed waste" or "remediation waste" and are therefore not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements in accordance with 20 NMAC 4.1.500/40 CFR 264.1080 [6-14-00]. Non-radioactive, non-remediation RCRA-regulated wastes that are managed at the AHCF will be segregated from mixed radioactive waste and remediation waste, and will be managed separately.~~

~~Non-radioactive, non-remediation RCRA-regulated wastes containing less than 500 parts per million by weight volatile organics are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]. The process for establishing the exemption is described in Section 1.1.4.6 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~Containers of non-radioactive, non-remediation RCRA-regulated wastes that are not identified as being exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] are stored in primary containers that 1) have a design capacity of less than or equal to 0.1 cubic meter (m^3) or 2) are U.S. Department of Transportation-approved and have a design capacity of greater than 0.1 m^3 but less than 0.46 m^3. Container covers are maintained in closed and sealed conditions but may be opened for the purposed described in 20 NMAC 4.1.500/40 CFR 264.1086(c)(1)–(3) [6-14-00].~~

~~The exhaust system for Building 6597 (Zone 2) is separate from that of the Hot Cell, the Fume Hood, and the Temporary Room (Zone 1). The Zone 1 AHCF ventilation system is a stand-alone system. It does not tie into Building 6597 mechanical systems.~~

~~The ventilation system shown on Figure 3 serves the Zone 1 components. The system is designed to accommodate air flow from the process areas: The fume hood, the hot cell, and the Temporary Room (if one is set up) through a two-stage high-efficiency particulate air (HEPA) filter train (Figure 3). The ventilation system will maintain airflow from Zone 2 to Zone 1.~~

~~Balancing dampers, and flow and pressure instrumentation have been installed for proper airflow balancing to ensure ventilation-system function and worker safety. The dampers will set the airflow at the design set point. Instrumentation allows workers to monitor airflow during operations. The exhaust fan discharges to a vertical exhaust stack.~~

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264 Subpart I)

Container storage practices applicable to the AHCF are presented in the following sections.

1.3.1 Container Types and Labeling

RCRA-regulated waste containers stored at the AHCF are most often strong, tight containers such as steel drums, steel boxes, wooden crates, plastic containers, casks, and cylinders.

1.3.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

AHCF personnel employ the container handling practices described in Section 1.2.1 of the General Part B. ~~Routine container handling will not be conducted at the AHCF. Instead, a preliminary assessment of each package will be made to determine a safe and appropriate handling plan. An initial assessment of package contents will be made using process knowledge. Storage containers may be unpacked either behind the shield wall, in the fume hood, or in the hot cell, depending on the nature of the contents.~~

1.3.2.1 *Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)*

The condition of containers at the AHCF is maintained as indicated in Section 1.2.2.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

AHCF personnel employ the aisle space and storage configuration as described in Section 1.2.2.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than three pallets high. Box-shaped containers may be stacked three high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are not stacked.

1.3.2.3 Compatibility of Waste with Containers (20 NMAC 4.1.500/40 CFR 264.172)

AHCF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

AHCF personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the SNL/NM General Part B before storing containers in areas that are not equipped with secondary containment.

1.4 Treatment Operations

Treatment practices applicable to the AHCF are presented in Section 8.0 of this module.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.5~~100~~ and ~~-~~.900/~~-[6-14-00].~~ 40 CFR 264~~0-266, 268, and~~ 270 [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the AHCF.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The doors to Building 6597 are kept closed and locked. As noted in Appendix A of the General Part B ~~(SNL/NM, 2003b)~~, Sandia security personnel periodically monitor the SNL/NM Technical Area gates during non-operational hours.

Unit personnel have Sandia-issued badges. Individuals who do not have Sandia-issued badges are escorted. These procedures limit access to the AHCF RCRA-regulated WMAs in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The AHCF is located in~~side~~ TA-V (Figures 1 and 2). TA-V is enclosed by an 8-ft-high ~~standard security~~ chain-link fence~~s~~ topped with barbed wire. Regular entries into and exits from TA-V are through Building 6577, the Perimeter Access Building, or through the adjoining vehicle gate.

TA-V access control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-V.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

Building 6597 and the entrance to the AHCF are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish ~~and~~ are legible from a distance of 25 ft, and can be seen from any approach to the part of Building 6597 that houses~~, including~~ the AHCF. ~~WMAs.~~

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes to the AHCF include Wyoming Boulevard, Hardin Boulevard (formerly O Street), P Street, and Pennsylvania Avenue. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved road to TA-V turns southwestward off Pennsylvania Avenue at a point just over 5 miles south of the Wyoming Entrance gate.

Waste transport vehicles travel along a 2-lane asphalt-paved drive to enter TA-V from the two-lane paved road as shown on Figures A-4 and A-6 in Appendix A ~~(SNL/NM, 2002c)~~ of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. Vehicles must stop at a gate prior to entering or leaving TA-V. Within TA-V, waste is transported on asphalt- or concrete-paved surfaces (Figure 4).

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard, Hardin Boulevard, and P Street are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Fewer than 5 vehicles typically travel to the AHCF per week. These include flatbed trucks and trailers carrying supplies and containers of RCRA-regulated waste to and from the AHCF.

2.2.3 Traffic Control Signals

Within TA-V, there are no traffic control signals or signs. Vehicles must stop at the vehicle gate prior to entering or leaving TA-V. Vehicle presence within TA-V is limited to waste transport

and other work vehicles. Therefore, signals or signs are not necessary to control traffic within TA-V.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i and ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMAs at the AHCF are not located within 3,000 ft of any faults with Holocene displacements (see Section A.4.2 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the AHCF are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).

- Surface waters, including intermittent streams, near the AHCF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [6-14-00]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [6-14-00]). The area surrounding the AHCF is occupied by other Sandia-controlled operations (industrial land use).

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).

- Legal boundaries of SNL/NM (including the AHCF) is provided as Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][vii] [6-14-00]).

- Access control features at the AHCF (e.g., fences, gates) are shown on Figures 5 and 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the AHCF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).

- The location of the AHCF and associated WMA structures, loading and unloading areas, roads, and sanitary sewers at the AHCF are shown on Figures 5 and 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [6-14-00]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00].

- Locations of the AHCF and AHCF WMAs are shown on Figures 3 and~~,~~ 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the AHCF. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to the New Mexico Environment Department at these scales and contour intervals due to the size of the AHCF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of the Sandia/DOE comprehensive Part B permit request. The AHCF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the AHCF likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

In accordance with 20 NMAC 4.1.900/ 40 CFR 270.14[b][2]~~;~~ and 20 NMAC 4.1.500/40 CFR 264.13, "General Waste Analysis"~~; and 20 NMAC 4.1.800/40 CFR 268.7, "Waste Analysis and Record-Keeping,"~~ [6-14-00], waste analysis requirements applicable to all Units, including the AHCF, are addressed in Appendix B of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] require that waste management areas (WMAs) and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the "Site-Wide Inspection Plan", provided as Appendix C of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. AHCF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 2, with the inspection criteria and frequency. The items listed in the table are inspected in each AHCF WMA.

Automatic fire suppression systems are included in Table 2. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems in accordance with the requirements of NFPA 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems~~,~~" (NFPA, 2002) as described in Section 1.1.3.2 of the General Part B ~~(SNL/NM, 2003a)~~.

Performing inspections of all areas at the AHCF where RCRA-regulated wastes are handled may expose Unit personnel to unnecessary radiation. In order to maintain the radiation exposure to levels as low as reasonably achievable (ALARA), Sandia/DOE will conduct alternative inspections of the storage silos. Instead of inspecting the silos directly, Unit personnel will visually inspect RCRA-regulated waste containers or packages before they are placed in the silos and when they are removed from the silos. If Unit personnel do not observe any indications of damage to or release from the RCRA-regulated waste items as they are removed from the silos, that will be considered sufficient to determine that there have not been releases of RCRA-regulated wastes. The visual inspection may be conducted from a remote area to maintain ALARA conditions for the Unit personnel.

~~Equipment subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00] will be used less than 300 hours per year. Equipment use will be documented during inspections, as appropriate.~~

Table 2
Auxiliary Hot Cell Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Eye wash / safety shower	Operational and in good condition	Monthly
Spill control equipment	Present, quantities per inventory, and in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when wastes are managed. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when wastes are managed. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when wastes are managed. Monthly otherwise.
Treatment area	Good condition, clean, uncluttered, no spills	Prior to treatment. ~~event.~~ Monthly otherwise.
Treatment equipment	Good condition (i.e., no releases or deterioration); fume hood, drum, and room ventilation flows within established parameters	Prior to treatment ~~event~~. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly

Table 2 (Concluded)
Auxiliary Hot Cell Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
STORED CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Daily for individual containers that were handled.* Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Daily for individual containers that were handled.* Weekly otherwise.
Labeling	Correct information, correct location, legible	Daily for individual containers that were handled.* Weekly otherwise.
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Daily for individual containers that were handled.* Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Daily for individual containers that were handled.* Weekly otherwise.
Location	Correct aisle space, correct stacking (3 maximum)	Daily for individual containers that were handled. Weekly otherwise.

* Containers will be inspected prior to placement into and immediately following removal from a storage silo.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained in Building 6597 or in the TA-V electronic facility documentation system. Inspection records for previous calendar years are maintained in department offices of AHCF personnel or the SNL/NM Records Center.

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/ 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [6-14-00] "Personnel Training." The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the AHCF.

AHCF personnel receive training in accordance with the "Site-Wide Personnel Training Plan" ~~for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act Regulated Waste Management Units"~~ provided as Appendix D of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

Only the following job descriptions identified in Appendix D, Table D-2 are applicable at the AHCF: Training Director, Project Leader, Emergency Coordinator, Chemist, Field Technician, Special Projects Staff, Inspector, and Unit Operations Support Staff.

Training records for AHCF personnel are maintained in the department offices of AHCF personnel.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia /DOE Site-Wide Contingency Plan is included as Appendix E of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. Supplemental AHCF-specific information is included in this section, in Figures 8, 9, and 10, and in Tables 3 and 4 of this module. Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained in department offices of AHCF personnel, in the TA-V emergency control room, and at the SNL/NM Emergency Operations Center.

The AHCF is located in the northeast (high bay) part of Building 6597 in TA-V at SNL/NM and is used to repackage, store, and treat RCRA-regulated wastes. Building 6597 is a concrete masonry unit building with a roof height of 35 ~~XXX~~ feet. The AHCF includes five WMAs:

- The hot cell is constructed of precast concrete with a stainless steel lining. A permanent shield wall extends north of the cell. The cell is used for repackaging and treatment.
- The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Waste management activities in the work area include storage and treatment and may require the use of a temporary room.
- A 6-ft-wide walk-in fume hood, located north and east of the hot cell, can be used for storage and treatment.
- Eight floor silos (six in the work area and two in the cell) can be used for storage.
- Containers of RCRA-regulated waste may also be stored in the high bay~~area immediately surrounding the cell~~.

RCRA-regulated wastes bearing the U.S. EPA Hazardous Waste Numbers listed in the General Part A ~~(SNL/NM, 2002)~~ may be stored and/or treated at the AHCF WMAs. Wastes will be segregated according to compatibility groups.

During an emergency, Unit personnel will evacuate the unit as described in Section E.5.2 of the Site-wide Contingency Plan. In addition, Unit personnel may choose to implement a coordinated evacuation of all of TA-V. To notify all TA-V personnel, Unit personnel would activate the TA-V alarm located on the north wall of the high bay area of the building.

During an emergency, Sandia security officers provide unimpeded access to the AHCF for authorized personnel as directed by the IC. Security officers also provide additional emergency assistance as required by the IC. Personnel who are authorized to enter TA-V in case of emergencies are members of the SNL/NM Emergency Response Organization, including medical personnel, the KAFB fire department, and KAFB~~Air Force~~ security police.

Figure 8 presents the evacuation routes for the AHCF. Figures 9 and 10 present emergency response and access information for the AHCF. Table 3 lists the emergency equipment typically available at the AHCF. Table 4 lists the emergency coordinators for the AHCF.

~~Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained in department offices of AHCF personnel, in the TA-V emergency control room, and at the SNL/NM Emergency Operations Center.~~

Table 3
Auxiliary Hot Cell Facility, Emergency Equipment and Locations

Building 6597

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower/eyewash	Near north entrance
	Absorbent	Near north entrance
	Personal protective equipment	Near north entrance
Internal Communication and Alarm System	Voice communication	
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One near each exit door in Building 6597
	Audible fire alarms	
External Communication System	Telephones	~~Building 6597~~Near north entrance
	Emergency public address system	
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One near each exit door
Fire Extinguishers	Portable (A-B-C)	By personnel doors on the east, south, and west walls
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the high-bay in Building 6597
	Manually-operated fire suppression system (Halon replacement)	Hot Cell
	Sprinkler head	Under fume hood
	Branch line from the Building 6597 sprinkler system	Temporary Room
	Water supplied by fire hydrant	One hydrant, location shown on Figure 9

KAFB Kirtland Air Force Base

Table 4
Auxiliary Hot Cell Facility, Emergency Coordinator List

April 16~~February 18~~, 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	John Garcia Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-3538 (office) (505) 540-5194 (pager)	(505) 243-5914
First Alternate	Jim Andazola Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 845-3107 (office) (505) 540-8271 (pager)	(505) 892-5120

One or more of these personnel are routinely available during normal work hours (8:00 am to 4:30 pm, Monday through Friday).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/~~-~~40 CFR 270.14[b][13], and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, [6-14-00]. General closure information applicable to all RCRA-regulated Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. The site-wide Closure Plan ~~general closure information~~ includes a description of the SNL/NM facility; waste description; closure performance standards; ~~an SNL/NM facility description;~~ closure methods; sampling and analysis plan closure schedule; procedures for amendment of the Closure Plan; closure certification and report; and survey plat and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The Auxiliary Hot Cell Facility (AHCF) is located in the northeast (high bay) part of Building 6597 in TA-V at SNL/NM and is used to repackage, store, and treat RCRA-regulated wastes. Building 6597 is a concrete masonry unit building. The AHCF includes five WMAs:

- The hot cell is constructed of precast concrete with a stainless steel lining. A permanent shield wall extends north of the cell. The cell is used for repackaging and treatment.
- The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Waste management activities in the work area include storage and treatment and may require the use of a temporary room.
- A 6-ft-wide walk-in fume hood, located north and east of the hot cell, can be used for storage and treatment.
- Eight floor silos (six in the work area and two in the cell) can be used for storage.
- Containers of RCRA-regulated waste may also be stored in the high bay.

~~7.1~~7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total inventory of RCRA-regulated waste in storage at any time at the AHCF is estimated at 3,6~~5~~46 gallons of liquids and/or solids. The maximum total waste inventory is broken down as follows:

Building 6597 container storage areas:	2,200 gallons
Building 6597 storage silos:	1,456 gallons

~~7.2~~7.3 Closure Conditions

In addition to the general assumptions listed in Section F.54 in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~, closure activities specified in this plan assume the following conditions were met during the operational life of the AHCF:

- RCRA-regulated waste handling and treatment activities involving the opening of waste containers were confined to the interior of the AHCF WMAs. If contamination occurred, it would have been confined to those areas.
- The interior walls and floors of WMAs were maintained to retain their integrity by following established maintenance and inspection procedures and breaches of protective coatings did not occur.

~~7.3~~7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan in Appendix F provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the AHCF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the AHCF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan in Appendix F presents sample collection equipment and techniques applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the AHCF. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the AHCF.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan in Appendix F presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the AHCF.

~~APPENDIX G~~

~~SITE-WIDE TREATMENT PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS~~

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~~Table No.~~ ~~Title~~

~~G-1 Regulatory References and Corresponding Permit Renewal Request/ Application Location~~

~~ACRONYMS AND ABBREVIATIONS~~

~~20 NMAC 4.1.*X*00~~	~~New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*~~
~~40 CFR 2*XX.XX*~~	~~Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*~~
~~AHCF~~	~~Auxiliary Hot Cell Facility~~
~~DOE~~	~~U.S. Department of Energy~~
~~LDR~~	~~land disposal restriction~~
~~RCRA~~	~~Resource Conservation and Recovery Act~~
~~RMWMF~~	~~Radioactive and Mixed Waste Management Facility~~
~~Sandia~~	~~Sandia Corporation~~
~~SNL/NM~~	~~Sandia National Laboratories/New Mexico~~
~~TA~~	~~Technical Area~~
~~TSDF~~	~~treatment, storage, or disposal facility~~
~~TTF~~	~~Thermal Treatment Facility~~
~~Unit~~	~~RCRA-regulated waste management unit~~

~~SITE-WIDE TREATMENT PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO~~

~~This appendix presents the requirements applicable to the treatment of Resource Conservation and Recovery Act (RCRA)-regulated wastes in containers or miscellaneous units. Regulatory requirements are found in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), adopting by reference the Code of Federal Regulations, Title 40, Part 264 (40 CFR 264), Subparts I, X, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.15 and 270.23, revised June 14, 2000 [6-14-00]. This appendix provides a description of the treatment technologies used at Sandia National Laboratories/New Mexico (SNL/NM) RCRA-regulated waste management units (Units), co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE).~~

~~Table G-1 summarizes applicable Subpart X miscellaneous unit and Subpart I regulatory references and the corresponding section location where the requirement is addressed in this permit renewal request/application. Unit-specific treatment information is provided in Attachment G of Unit-specific modules. Together, the information in this appendix and in each Unit-specific Part B module meets the applicable regulatory requirements.~~

~~Table G-1~~
~~Regulatory References and Corresponding Permit Renewal Request/Application Location~~

~~Regulatory Citation(s)~~	~~Description of Requirement~~	~~Location in this Document~~
~~§264.601(a)~~	~~Prevention of release of contaminants to groundwater~~	~~G.3.1~~
~~§264.601(a)(1)~~	~~Volume and characteristics of waste considering potential for migration through containing structures~~	~~G.3.1~~
~~§264.601(a)(2)~~	~~Hydrologic/geologic characteristics~~	~~G.3.1~~
~~§264.601(a)(3)~~	~~Quality of groundwater including other sources of contamination and their cumulative impact on groundwater~~	~~G.3.1~~
~~§264.601(a)(4)~~	~~Quantity and direction of groundwater flow~~	~~G.3.1~~
~~§264.601(a)(5)~~	~~Proximity to and withdrawal rates of potential groundwater users~~	~~G.3.1~~
~~§264.601(a)(6)~~	~~Regional patterns of land use~~	~~G.3.1~~
~~§264.601(a)(7)~~	~~Potential for deposition and migration of waste constituents~~	~~G.3.1~~
~~§264.601(a)(8)~~	~~Potential for health risks caused by human exposure to waste constituents~~	~~G.3.1~~
~~§264.601(a)(9)~~	~~Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents~~	~~G.3.1~~
~~§264.601(b)~~	~~Prevention of release of contaminants to surface water~~	~~G.3.2~~
~~§264.601(b)(1)~~	~~Volume and characteristics of the waste~~	~~G.3.2~~
~~§264.601(b)(2)~~	~~Effectiveness and reliability of containment, confinement, and collection systems and structures~~	~~G.3.2~~
~~§264.601(b)(3)~~	~~Hydrologic characteristics of the unit and local area~~	~~G.3.2~~

~~Refer to footnote at end of table.~~

~~Table G-1 (Continued)~~

~~Regulatory References and Corresponding Permit Renewal Request/Application Location~~

~~Regulatory Citation(s)~~	~~Description of Requirement~~	~~Location in this Document~~
~~§264.601(b)(4)~~	~~Regional precipitation patterns~~	~~G.3.1~~
~~§264.601(b)(5)~~	~~Quantity, quality, and direction of groundwater flow~~	~~G.3.1~~
~~§264.601(b)(6)~~	~~Proximity of the unit to surface water~~	~~G.3.2~~
~~§264.601(b)(7)~~	~~Current and potential uses of nearby surface waters and water quality standards for those waters~~	~~G.3.2~~
~~§264.601(b)(8)~~	~~Quality of surface waters and soils including other sources of contamination and their cumulative impact on surface waters and soils~~	~~Appendix A~~
~~§264.601(b)(9)~~	~~Regional patterns of land use~~	~~Appendix A~~
~~§264.601(b)(10)~~	~~Potential for health risks caused by human exposure to waste constituents~~	~~G.3.2~~
~~§264.601(b)(11)~~	~~Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents~~	~~G.3.2~~
~~§264.601(c)~~	~~Prevention of release of contaminants to air~~	~~G.3.4~~
~~§264.601(c)(1)~~	~~Volume and characteristics of waste including its potential for emission~~	~~G.3.4~~
~~§264.601(c)(2)~~	~~Effectiveness and reliability of systems/structures to reduce/prevent emissions of hazardous constituents to the air~~	~~G.3.4~~
~~§264.601(c)(3)~~	~~Operating characteristics of the unit~~	~~G.3.4~~
~~§264.601(c)(4)~~	~~Characteristics of the unit and the surrounding area~~	~~G.3.4~~
~~§264.601(c)(5)~~	~~Existing quality of the air including other sources of contaminants and their cumulative impact on the air~~	~~G.3.4~~
~~§264.601(c)(6)~~	~~Potential health risks caused by human exposure to waste constituents~~	~~G.3.4~~
~~§264.601(c)(7)~~	~~Potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents~~	~~G.3.4~~
~~§264.602~~	~~Monitoring, analysis, inspection, response, reporting, and corrective action~~	~~1.0, 3.0, Appendix H~~
~~§264.603~~	~~Post-closure care~~	~~Appendix F~~
~~§264.13~~	~~General waste analysis~~	~~Appendix B~~
~~§264.14~~	~~Security~~	~~Appendix A~~
~~§264.15~~	~~General inspection requirements~~	~~Appendix C~~
~~§264.16~~	~~Personnel training~~	~~Appendix D~~
~~§264.17~~	~~General requirements for ignitable, reactive, or incompatible wastes~~	~~1.1.3~~
~~§264.18~~	~~Location standards~~	~~Appendix A~~
~~Subpart C~~	~~Preparedness and Prevention~~	~~1.1.5, 1.1.6~~
~~Subpart D~~	~~Contingency Plan and Emergency Procedures~~	~~Appendix E~~

~~Refer to footnote at end of table.~~

~~Table G-1 (Continued)~~
~~Regulatory References and Corresponding Permit Renewal Request/Application Location~~

~~Regulatory Citation(s)~~	~~Description of Requirement~~	~~Location in this Document~~
~~§264.73~~	~~Operating record~~	~~Appendix H~~
~~§264.74~~	~~Availability, retention, and disposition of records~~	~~Appendix H~~
~~§264.75~~	~~Biennial report~~	~~Appendix H~~
~~§264.76~~	~~Unmanifested waste report~~	~~Appendix H~~
~~§264.77~~	~~Additional reports~~	~~Appendix H~~
~~§264.101~~	~~Corrective action for solid waste management units~~	~~3.0~~
~~§264.1064(k)~~	~~Information for use in determining exemptions from Subpart BB~~	~~G.5~~
~~Subpart G~~	~~Closure and post-closure~~	~~Appendix F~~
~~Subpart I~~	~~Use and management of containers~~	~~1.1~~
~~§270.15~~	~~Specific Part B information requirements for containers~~	~~1.1~~
~~Subpart J~~	~~Tank systems~~	~~NA~~
~~§270.23(a)(1-2)~~	~~Detailed unit description~~	~~Appendix A~~
~~§270.23(b)~~	~~Regional hydrologic, geologic, and meteorologic assessments and land use maps~~	~~General Part A~~
~~§270.23(c)~~	~~Potential exposure pathways~~	~~G.3.0~~
~~§270.23(d)~~	~~Demonstration of treatment effectiveness~~	~~G.2.0~~
~~§270.23(e)~~	~~Any additional information for evaluation of unit compliance with the environmental performance standards~~	~~NA~~

~~NA = Not applicable.~~

8.0 TREATMENT PLAN

~~In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Section 900 (20 NMAC 4.1.900), adopting by reference the Code of Federal Regulations, Title 40, Part 270 including Section 270.23, revised June 14, 2000, t~~Treatment operations for RCRA-regulated wastes treated at the AHCF are described in this section~~ in Appendix G of the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," (SNL/NM, 2003b).~~

The following treatment technologies~~ listed below and described in Appendix G~~ may be used to treat RCRA-regulated wastes at the AHCF:

- Chemical deactivation,
- Macroencapsulation,
- Physical treatment~~Mechanical processing~~, and
- Stabilization.

The waste management areas at the AHCF~~, inside Building 6597,~~ that are used for the treatment of RCRA-regulated wastes include the Hot Cell, the Fume Hood, and the Work Area.

Because treatment at the AHCF will be conducted in ~~containers;~~containers, it is not subject to ~~The areas and treatment operations will meet~~ the miscellaneous unit and environmental performance standards in 20 NMAC 4.1.500/40 CFR 264, Subpart X [6-14-00].~~described in Appendix G of the SNL/NM General Part B (SNL/NM, 2003b).~~

Treatment effectiveness for each waste stream is discussed in Section 8.2.~~will be determined through analysis and verification as described in Appendix B of the SNL/NM General Part B (SNL/NM, 2003b) and Section 3 of this module.~~

~~G.1 TREATMENT TECHNOLOGY DESIGN, CONSTRUCTION, AND OPERATION (20 NMAC 4.1.900/40 CFR 270.23[A]; 20 NMAC 4.1.500/40 CFR 264.101)~~

8.1 Treatment Operations

Waste treatment is performed at the AHCF to meet land disposal restrictions (LDRs); allow for the safe storage of the waste; or to meet treatment, storage, or disposal facility (TSDF) requirements. All of the treatment at the AHCF will be batch treatment performed on single packages of waste (each package is one drum or less, or a package that can be placed in one of the silos). Each type of treatment will be performed on batches of 500 pounds of waste or less. Liquid wastes will be treated in batches of 60 gallons or less.

Waste treatment may generate secondary waste streams (treatment residues). RCRA-regulated treatment residues may undergo additional on-site treatment to meet LDRs and/or be sent to an appropriate off-site TSDF.

The waste treatment processes described in this section are effective in addressing RCRA-regulated characteristics in RCRA-regulated wastes, including the following:

- Solid items ~~waste forms~~ exhibiting the RCRA-regulated ~~hazardous~~ characteristics of ignitability or reactivity may be chemically deactivated to eliminate the ~~hazardous~~ characteristic.

- Debris containing RCRA-regulated constituents~~toxicity characteristic metals~~ (excluding elemental and high mercury subcategories defined in 20 NMAC 4.1.800/40 CFR 268) may be macroencapsulated to reduce or eliminate the leaching potential.

- Liquid waste exhibiting the characteristics of ignitability, corrosivity, and/or reactivity may be chemically deactivated to remove the RCRA-regulated characteristic(s).

- Liquid waste containing toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) may be stabilized to reduce or eliminate the leaching potential.

In accordance with LDRs, the following are managed as RCRA-regulated waste: treatment residue derived from the treatment of listed RCRA-regulated wastes, treated waste containing listed RCRA-regulated waste, and treated waste which continues to exhibit RCRA-regulated waste characteristics and/or does not meet treatment standards for underlying hazardous constituents.

Each waste treatment technology or process listed above is described in the following sections. ~~below. Waste analysis and inspection procedures are provided in Appendices B and C, respectively, of this permit renewal request/application. Unit-specific treatment information is included in Attachment G of each Unit-specific module.~~

8.1.1 ~~G.1.1~~ Chemical Deactivation

Sandia/DOE perform chemical deactivation in containers at the AHCF. Chemical deactivation ~~is a concept that~~ refers to a number of chemical ~~processes which~~processes that can eliminate the RCRA-regulated waste characteristics of ignitability, corrosivity, and/or reactivity. Deactivation can be accomplished by several technologies (e.g., neutralization, chemical oxidation, or stabilization). However, the intent of this section is to identify and describe specific methods or treatment trains which may be used at the AHCF ~~SNL/NM Units~~ to deactivate ignitable wastes defined in 20 NMAC 4.1.200/40 CFR 261.21(a)(2) and (4) [6-14-00], corrosive and reactive wastes defined in 20 NMAC 4.1.200/40 CFR 261.23 [6-14-00]. Deactivation may or may not result in a final waste form, depending on the process, and may be used as the first in a series of treatment steps.~~in pretreatment.~~

Deactivation processes are conducted under carefully controlled conditions so that RCRA-regulated waste with the characteristic of reactivity is allowed to react in a slow, nonviolent manner. Allowing the reactive potential of the waste to be dissipated in this manner reduces or eliminates the reactive characteristic of the waste. Hydrides, deuterides, and tritides are deactivated by slow addition to an ice water bath. Deactivation of water reactive metals such as

elemental sodium and lithium involves the slow and controlled addition of an appropriate alcohol/water solution. Alcohol/water addition is maintained until the water reactive potential of the waste has been eliminated. Deactivation of pyrophoric metal powders and particulates may be achieved by mixing waste in a portland cement matrix. Deactivation of reactive wastes is typically conducted in small batches under laboratory conditions such that process control can be easily maintained.

Chemical deactivation to remove the characteristic of corrosivity is the process of removing excess acidity or alkalinity from a liquid waste. Other uses may include pH adjustment to facilitate subsequent treatment; such pretreatment through deactivation may be necessary to prevent corrosive damage to equipment, deter undesirable reactions, and preclude the formation of unwanted byproducts.

Reagents added to achieve a desired pH are ~~may be~~ combined with liquid waste inside a mixing vessel or directly in the waste container. Common deactivating reagents include, but are not limited to, caustic soda, lime, phosphine, calcium or sodium carbonate, sodium hydroxide, and limestone for acid wastes; and hydrochloric, phosphoric, or nitric acids for alkaline wastes. The selection of reagents is dependent on the quantity of reagent required, cost, availability, and the potential byproduct(s).

8.1.2 ~~G.1.2~~ Macroencapsulation

Sandia/DOE perform macroencapsulation in containers at the AHCF. Macroencapsulation is generally applicable to debris, whereas stabilization (see Section 8.1.4) is generally applicable to liquids, sludges, and particulate-type wastes. Macroencapsulation is the process of encasing waste within a polymer coating or concrete. The primary use of macroencapsulation is to immobilize wastes such as debris-type solids containing RCRA-regulated constituents ~~toxicity characteristic metals~~ by surrounding the waste material with a leach-resistant coating. ~~Macroencapsulation is typically more suitable for immobilizing larger debris-type wastes.~~

Performing macroencapsulation involves coating waste with polymer agents within a mold or encasing the waste in concrete. Polymers typically used for macroencapsulation include, but are not limited to, asphalt, polyethylene, thermosetting plastics, and resins that can be polymerized under ambient temperatures in the presence of a catalyst. Equipment used for macroencapsulation may include molds, polymer extrusion equipment, and resin mixing equipment. In-drum macroencapsulation may also be performed with the drum acting as the mold. Temperature control of polymer macroencapsulation processes is critical and carefully maintained to assure that adequate coating occurs.

8.1.3 ~~G.1.3~~ Physical Treatment ~~Mechanical Processing~~

Sandia/DOE perform physical treatment (volume reduction through separation) at the AHCF. The treatment consists of reducing waste volume by using tools to separate items with RCRA-regulated constituents from larger items. In some cases, the RCRA-regulated waste item may undergo further treatment in containers. ~~Mechanical processing treatment methods may include, but are not limited to, compaction, shredding, segregation, crushing, and dissolution.~~

~~The intent of mechanical processing is to change the physical character of the waste to make it more amenable to additional treatment, storage, or to reduce waste volume.~~

8.1.4 ~~G.1.4~~ Stabilization

Sandia/DOE perform stabilization in containers at the AHCF. Stabilization is a process of binding RCRA-regulated metals so that the metals become chemically part of the matrix or are physically bound within the matrix. The primary use of stabilization is to immobilize toxicity characteristic metals but many stabilization agents also eliminate free liquids. Typical waste forms suitable for stabilization include liquids, soils, and particulate-type wastes.

Process equipment for mixing waste and binder materials depends on the type of reagents used and the volume of waste to be treated. In-drum mixing is typically used for large volume waste streams. Once waste and binder have been thoroughly mixed and placed in a container, the mass is allowed to cure and/or set. Smaller batches may be mixed by hand and allowed to cure in smaller containers.

Development of appropriate formulas is waste specific. Stabilization agents for toxic metals may include portland cement, pozzolanic, thermoplastics, organic polymers, and clays. However, other waste forms may require proprietary reagents ~~which~~that are available for specific applications. Additional reagents may be added to reduce contaminant leachability, reduce cure and/or set time, and increase strength.

~~The stabilization process begins with waste characterization.~~ Waste characteristics that are important to the success of the stabilization process for liquids may include ~~pH;~~ volume percent of water, oil, solvents, or other organics; pH; and RCRA-regulated waste constituents. Waste characterization data are used to determine whether the waste is amenable to stabilization, ~~the applicability of stabilization for the waste,~~ any necessary pretreatment requirements, and the appropriate binding agent.

Once stabilization is selected, the binding agent is identified based on chemical compatibility with the waste form and contaminants present. Pretreatment may be required to assure compatibility between the waste and the binding agent (e.g., neutralization of liquid wastes to an acceptable pH range of 5.0 to 11.0). Once the proper binding agent(s) have been identified, bench-scale testing is performed to determine optimum amounts of each agent. In the case of low volume waste streams (e.g., less than approximately 0.26 gallons), bench-scale testing may not be practical and treatment is performed without bench-scale testing using the manufacturer's suggested quantities or by estimating binding agent quantities from previous experience.

The stabilization process is ~~then~~ performed by combining the predetermined quantities of binding agent(s) with the waste and thoroughly mixing, if appropriate. The resulting mixture is staged to allow an appropriate cure time. ~~The final step of the stabilization process involves analyzing a sample of the cured mixture by toxicity characteristic leaching procedure.~~

~~G.4 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES (20 NMAC 4.1.900/40 CFR 270.14[B][9])~~

~~Special requirements for ignitable, reactive, or incompatible wastes at SNL/NM Units are described in Section 1.0 of this permit renewal request/application and each Unit-specific module. This information is provided to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14(b)(9) [6-14-00].~~

8.1.5 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

AHCF personnel employ the practices described in Section 8.2 of the General Part B to prevent releases to the atmosphere during treatment.

Subpart AA

The AHCF treatment operations do not employ processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA.

~~G.5 Air Emission Standards for Process Vents (20 NMAC 4.1.500/ 40 CFR 264, Subpart AA)~~

~~Sandia/DOE do not manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight using process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or stream stripping operations. Therefore, Sandia/DOE are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00].~~

Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service at the AHCF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [6-14-00]. The equipment location will be noted in the AHCF records. Equipment use will also be noted in the records.

~~g.6 AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS (20 NMAC 4.1.500/ 40 CFR 264, SUBPART BB)~~

~~Units in this permit renewal request/application are not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00], air emission standards for equipment leaks, with the exception of~~

~~the reporting requirements specified in 20 NMAC 4.1.500/40 CFR 264.1064(k) [6-14-00]. Sandia/DOE do not routinely treat RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 264.1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 1050(f) [6-14-00].~~

Subpart CC

Unit personnel follow the practices described in Section 8.2 of the SNL/NM General Part B. Unit personnel do not perform any treatment subject to Container Level 3 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]).

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00].

~~G.7 Air emission standards for tanks, surface impoundments, and containers (20 NMAC 4.1.500/40 CFR 264, Subpart CC)~~

~~Sandia/DOE may treat RCRA-regulated wastes (i.e., radioactive mixed wastes) with average volatile organic concentrations at the point of waste origin of ≥500 parts per million by weight in containers. However, WMAs or process areas used "solely" for the treatment of "radioactive mixed waste" or "remediation waste" are not subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]. If hazardous waste and radioactive mixed waste/remediation waste are managed in the same Unit, the wastes are segregated into separate WMAs or process areas, if possible. WMA(s) and process areas used solely for "radioactive mixed waste" or "remediation waste" management are not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements while the WMA(s) or process area(s) used for hazardous waste management are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements. If waste types cannot be segregated into separate WMAs, all of the waste containers within a WMA are managed as though they are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements.~~

8.2 ~~G.2~~ Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

As required in 20 NMAC 4.1.900/40 CFR 270.23(d) [6-14-00], treatment effectiveness considerations and demonstrations are provided for the treatment technologies used or proposed for use at ~~SNL/NM~~ the AHCF. ~~Extant or proposed treatment technology effectiveness is based on best demonstrated available technology considerations or treatment-unit specific data.~~ Treatment effectiveness ~~verification~~ will be verified through evaluation of the treated waste ~~performed~~ in accordance with Appendix B (Section B.3.3.2) of the SNL/NM General Part B.

~~G.3 ENVIRONMENTAL PERFORMANCE STANDARDS (20 NMAC 4.1.500/40 CFR PART 264, SUBPART X)~~

~~The following information is provided to address the applicable hydrologic, geologic, and meteorological requirements of 20 NMAC 4.1.900/40 CFR 270.23(b) and (c) [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.60 [6-14-00], for the treatment technologies at SNL/NM. All of the treatment operations are located well within the boundaries of SNL/NM. With the exception of the TTF, all are located inside buildings that serve as secondary containment. Secondary containment at the TTF is described in Module II. The location of the treatment operations, the waste management practices identified in Section 1.0 of this permit renewal request/application and in each Unit-specific module, and the containment features described in the following sections will prevent the deposition or migration of RCRA-regulated constituents into the groundwater, surface water, soil surface, or the atmosphere and will ensure that the treatment operations do not violate the environmental performance standards of 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00]. Section G.1 provides general information about the treatment technologies that may be used at SNL/NM Units. Attachment F of each Unit-specific module provides closure information.~~

~~G.3.1 Protection of the Groundwater (20 NMAC 4.1.500/40 CFR 264.601[a])~~

~~Units will be operated in a manner that prevents releases that may have adverse effects on human health or the environment due to deposition or migration of waste constituents to the groundwater. The treatment operations are located inside buildings (except for the TTF), provided with secondary containment as needed, and inspected each working day in accordance with the inspection requirements addressed in Appendix C of this permit renewal request/application. The treatment operations will be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment.~~

~~The conditions outlined in 20 NMAC 4.1.500/40 CFR 264.601(a) [6-14-00], were considered and there is little or no potential for deposition or migration of waste constituents into the groundwater. The treatment operations will be operated and maintained in accordance with waste management procedures described in Section 1.0 of this permit renewal request/application, and closed in accordance with the procedures described in Appendix F of this permit renewal request/application and Attachment F of each Unit-specific module; therefore, adverse effects on human health or the environment due to the treatment operations are unlikely.~~

~~Hydrogeologic Assessment and Potential Pathways and Exposure Routes~~

~~SNL/NM Units are located in a semiarid, temperate, high desert climate. The average annual precipitation in the area is 8.4 inches (21.4 centimeters). The evaporation of free-standing water exceeds the annual precipitation. In addition, it is estimated that the depth to the regional aquifer and the annual moisture deficit significantly limit the potential for contaminants to migrate to the groundwater in the unlikely event that contaminants reach the ground surface.~~

~~Current maps of the piezometric surface indicate that the groundwater flow direction is from the north to the northwest (from the mountains to the Rio Grande).~~

~~The only aquifer capable of municipal and industrial water supply is the regional aquifer. Figure A-2 of this permit renewal request/application shows the locations of water supply wells in the SNL/NM area. No water supply wells are located within any SNL/NM Unit.~~

~~Sandia/DOE have an established groundwater monitoring program to assess and protect the quality of groundwater in the SNL/NM facility. The monitoring network includes test wells, supply wells, gauging stations, observation wells, and other hydrogeologic devices located within KAFB boundaries. Routine samples are analyzed for toxic constituents, basic water quality, and resource depletion. The results are published annually in the Environmental Monitoring Report for SNL/NM. A more complete description of SNL/NM hydrologic and geologic characteristics is provided in Sections A.3 and A.4 of Appendix A of this permit renewal request/application.~~

~~Land uses within and surrounding the boundaries of KAFB are shown on Figures A-9 and A-10 in Appendix A of this permit renewal request/application. Based on the surrounding land uses and the waste management practices described in Section 1.0 of this permit renewal request/application, the potential for damage to human health, domestic animals, wildlife, crops, vegetation, or physical structures due to exposure to hazardous waste constituents is unlikely.~~

~~G.3.2 Protection of Surface Water (20 NMAC 4.1.500/40 CFR 264.601[b])~~

~~Units will be operated in a manner that prevents releases that may have adverse effects on human health or the environment due to deposition or migration of waste constituents to surface water or wetlands. Hydrologic characteristics are described in Appendix A of this permit renewal request/application. Units will be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment.~~

~~The conditions outlined in 20 NMAC 4.1.500/40 CFR 264.601(b) [6-14-00], were considered and there is little or no potential for deposition or migration of waste constituents into surface water or wetlands. Treatment operations (except at the TTF) will be located inside buildings, provided with secondary containment as needed, operated and maintained in accordance with waste management procedures described in Section 1.0 of this permit renewal request/application, and closed in accordance with the procedures described in Appendix F of this permit renewal request/application and Attachment F of each Unit-specific module. The TTF also meets these conditions as described in Module II.~~

~~Hydrogeologic Assessment and Potential Pathways and Exposure Routes~~

~~The annual precipitation that occurs at SNL/NM is low. Surface water at SNL/NM is ephemeral and exists primarily in arroyos. Surface water drainage from SNL/NM Units will not reach ephemeral surface water bodies during normal operations. Drainage from the TTF is contained within a catchment basin.~~

~~Based on surrounding land uses, Unit locations, and waste management practices, the potential for damage to human health, domestic animals, wildlife, crops, vegetation, or physical structure due to exposure to hazardous waste constituents is unlikely.~~

~~G.3.3 Protection of Soil Surface (20 NMAC 4.1.500/40 CFR 264.601[b])~~

~~The location of Units and the waste management practices and containment features discussed in Section G.3.1 will effectively prevent the migration of RCRA-regulated waste constituents to the soil surface. Therefore, adverse affects on human health or the environment due to a migration of RCRA-regulated waste or constituents to the soil surface as a result of the treatment operations conducted at any Unit are unlikely.~~

~~Geological Assessment and Potential Pathways and Exposure Routes~~

~~The texture of the soils at SNL/NM Units ranges from fine sandy loam to loamy fine sand. In the unlikely event that a release from any Unit reaches the soil surface, soil erosion by storm water or winds could potentially transport these contaminants to the surrounding area. Additional information for the TTF is included in Module II.~~

~~G.3.4 Protection of the Atmosphere (20 NMAC 4.1.500/40 CFR 264.601[c])~~

~~The location of Units and the waste management practices and containment features discussed in Section G.3.1 will effectively prevent the migration of RCRA-regulated waste or constituents to the atmosphere. Therefore, adverse affects on human health or the environment due to a migration of RCRA-regulated waste or constituents to the atmosphere as a result of treatment operations conducted at any Unit are unlikely.~~

~~Meteorologic Assessment and Potential Pathways and Exposure Routes~~

~~The surface winds at SNL/NM are generally light, averaging about 4 miles per hour. Under normal conditions, resuspension of particulates is limited. The predominant prevailing wind direction is from the east/southeast to the west/northwest. Figure A-8 of Appendix A of this permit renewal request/application depicts wind roses for the Chemical Waste Landfill in Technical Area (TA)-III (near the RMWMF) and TA-V (near the TTF and AHCF). Additional information for the TTF is included in Module II.~~

9.0 REFERENCES

DHHS, see US Department of Health and Human Services

National Fire Protection Association (NFPA), 2002, "Standard for the Installation of Sprinkler Systems," NFPA 13, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," NFPA 25, National Fire Protection Association, Quincy, Massachusetts.

~~NIOSH Pocket Guide to Chemical Hazards, 1994. US Department of Health and Human Services, National Institute for Occupational Safety and Health.~~

NFPA, see National Fire Protection Association

Sandia National Laboratories/New Mexico (SNL/NM), 2003~~2~~, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 5~~3~~.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003a, "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003b, Appendices A–F in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

SNL/NM, see Sandia National Laboratories/New Mexico.

U.S. Department of Health and Human Services (DHHS), 1994. "NIOSH Pocket Guide to Chemical Hazards", National Institute for Occupational Safety and Health.

Module VI - MSB

Sandia National Laboratories/New Mexico
Manzano Storage Bunkers
Part B Permit Application

Module VI

Revision 2.0

~~February~~ April 2003

Prepared by
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Prepared for
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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ft	foot/feet
ft^2	square foot/feet
HSWA	Hazardous and Solid Waste Amendments
in.	inch(es)
MSB	Manzano Storage Bunkers
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	solid waste management unit
TA	Technical Area
Unit	RCRA-regulated waste management unit
WMA	waste management area

SANDIA NATIONAL LABORATORIES/NEW MEXICO
MANZANO STORAGE BUNKERS
PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Manzano Storage Bunkers (MSB) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage operations at the MSB. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared and revised ~~are providing~~ this module to provide Unit-specific~~address~~ details ~~and/or requirements~~ that supplement the information ~~those~~ provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application" ~~(SNL/NM, 2003a)~~, hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, ~~and~~ in the SNL/NM General Part B, and in the appendices to the General Part B ~~(SNL/NM, 2003a)~~ meet the applicable requirements for the MSB that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270 [6-14-00].

Sandia/DOE also prepared ~~submitted~~ a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" (SNL/NM, 2003~~2~~), hereinafter referred to as the SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The ~~SNL/NM~~ General Part A ~~(SNL/NM, 2002)~~ serves as a companion document to the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ and Unit-specific Part B modules, including this MSB Part B Permit Application.

In the General Part A, the General Part B, its appendices. and this module, a Unit to be permitted may sometimes be referred to as a "facility." The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The MSB are a set of ~~seven~~ five units, each with approximately 1600 to 21~~5~~00 square feet of space. They are located in the Manzano Area on Kirtland Air Force Base (KAFB) and are used for storage of RCRA-regulated wastes in containers. The MSB are owned by KAFB and leased to the DOE. All of the RCRA-regulated wastes listed in the General Part A ~~(SNL/NM, 2002)~~ may be managed at the MSB. Sandia/DOE currently operate the MSB under interim status in accordance with the terms of the Part A ~~(SNL/NM, 2002)~~ approved by the New Mexico Environment Department (NMED) (May 2002) and the most recent Part B permit request submitted to NMED (April 16, 2003~~February 6, 2002~~).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the MSB waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B~~ (SNL/NM, 2003a)~~.

Specific information ~~included~~ in this section regarding~~includes:~~

~~B~~ Unit operations~~,~~ includes~~ing:~~ containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and

~~B~~c~~C~~ontainer storage of RCRA-regulated wastes.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B~~ (SNL/NM, 2003a)~~, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [6-14-00].

1.1 Designated Waste Management Areas

The location of the MSB at SNL/NM is shown on Figures 1 and 2. The MSB include five~~seven~~ Units: Bunkers 37034, 37045, 37055, 37057, ~~37063, 37078,~~ and 37118 (Figure 2). There are 5 designated waste management areas (one in each bunker) as shown in Figures 3, 4, and 5. ~~The MSB are owned by KAFB and leased to the DOE.~~

In each MSB bunker, containers holding RCRA-regulated liquid wastes are stored on portable spill pallets and pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives and other liquids. The containers of liquids (typically 5- to 30-gallon capacity) are stored on the grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [6-14-00] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3).

The pallets come in various sizes and capacities; each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are not stacked on each other on the pallets. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

The containers are stored indoors and are protected from precipitation by the bunkers, and by the slope of the concrete paved surface outside the door that directs storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(4).

The MSB are constructed of concrete (walls, roof, and floor) and are covered by earthen materials. The walls and roof of each bunker are rounded. There are three types of bunkers:

Type B (37034~~ and 37063~~); Type C (~~37078 and~~ 37118); and Type D (37045, 37055, and 37057). The following sections provide descriptions of specific bunker storage structures, locations, and capacities.

1.1.1 Type B Bunker~~s~~ (37034~~ and 37063~~)

Type B bunkers consist of an access tunnel leading to a main chamber that is used for storage of RCRA-regulated wastes. Figure 3 provides a typical floor plan for a Type B bunker. The Type B access tunnel is approximately 20 feet (ft) long, 12 ft wide, and 12.5 ft high. ~~The concrete walls of the access tunnel are 1 ft thick.~~ The main chamber is approximately 81 ft long, 26.5 ft wide, and 12.8 ft high. ~~The concrete walls of the main chamber are 8 inches (in.) thick.~~ Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick roof of waterproofed concrete. The soil surface above and around each bunker is sloped so water drains away from the bunker. Access to the WMA of each bunker is through two sets of double doors that are 9 ft high and 9 ft wide. One set is at the entrance to the access tunnel, and the other set is at the entrance to the main chamber.

Based on the available floor space (2,100 square feet [ft^2]) in ~~each of the Type B~~ B~~b~~unker 37034~~s~~, it~~each bunker~~ can hold a maximum of 25,080 gallons of RCRA-regulated wastes.

1.1.2 Type C Bunker~~s~~ (~~37078 and~~ 37118)

Type C bunkers do not have an access tunnel and consist entirely of a main chamber used for storage of RCRA-regulated wastes. Figure 4 is a typical floor plan of a Type C bunker. The main charnber is approximately 80 ft long, 27 ft wide, and 12.8 ft high. ~~The concrete walls are 1.3 ft thick.~~ A 6-in. drain tile is located outside the bunker perimeter. Access to the main chamber is through a set of double doors 8 ft wide and 9.5 ft high. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick roof of waterproofed concrete. The soil surface over and around each bunker is sloped so water drains away from the bunker.

Based on the available floor space (approximately 2,1400 ft^2) in ~~each of the Type C b~~B~~unker~~s 37118, it~~each bunker~~ can hold a maximum of 25,080~~35,200~~ gallons of RCRA-regulated wastes.

1.1.3 Type D Bunkers (37045, 37055, and 37057)

Type D bunkers consist of an access tunnel leading to a main chamber. Only the main chamber is used for storage of RCRA-regulated wastes. Figure 5 is a typical floor plan of a Type D bunker. Type D access tunnels vary in length from 76 feet to 110 feet and are 9 ft wide and 11 to 12 ft high. ~~The concrete walls of the access tunnel are 1 ft thick.~~ The main chamber in each bunker is approximately 61 ft long, 26.5 ft wide, and 12.5 ft high. Access to the WMA of each bunker is through two sets of double doors that are 9 ft high and 9 ft wide. One set is at the entrance to the access tunnel, and the other set is at the entrance to the main chamber. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick roof of waterproofed concrete. The soil surface over and around each bunker is sloped so water drains away from each bunker.

Based on the available floor space (1,600 ft^2) in each of the Type D bunkers, each bunker can hold a maximum of 18,480 gallons of RCRA-regulated wastes.

1.2 Unit Operations

The MSB WMAs are used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers listed in the SNL/NM General Part A ~~(SNL/NM, 2002)~~.

The MSB are not continuously occupied. All personnel sign in on a log upon entering each bunker and sign out when they leave. Waste handling personnel work in pairs and maintain contact with each other. All personnel are trained to check that everyone has signed out and exited the bunker before turning off the lights and closing and locking the doors.

~~General~~ Iinformation regarding~~:~~ operation of all RCRA-regulated Units at SNL/NM is ~~containment systems; management of ignitable, reactive, and incompatible wastes; preparedness and prevention, and hazards prevention requirements are~~ included addressed in Section 1.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.500/40 CFR 264.175[b][5]; 20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.15[a] and [b])

Unit personnel begin taking action to evaluate and remove accumulated liquids in the spill pallets upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.~~Personnel attempt to identify the source if possible. Accumulated liquid containing RCRA-regulated wastes may be sampled and analyzed as needed before removal to determine the most appropriate method of removing the liquid from the containment. The liquid is then pumped into containers or collected onto absorbent material, picked up, and placed in containers. Containerized liquids are characterized in accordance with the Waste Analysis Plan provided as Appendix B of the SNL/NM General Part B (SNL/NM, 2003b).~~

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177; 20 NMAC 4.1.900/ ~~40 CFR~~ 40 CFR 270.14[b][9] and 270.15[c] and [d])

Any of the ignitable or reactive wastes listed in the General Part A ~~(SNL/NM, 2002)~~ may be managed at the MSB. Unit personnel employ the practices described in Section 1.1.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Additional Unit-specific features, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes. Water-reactive wastes are not routinely stored in the bunkers.

- Containers are not routinely opened ~~kept closed~~ during storage at the bunkers, and RCRA-regulated wastes are not repackaged.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas,~~;~~ each row or area containing only compatible wastes.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the MSB.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

The MSB are not equipped with automatic fire suppression systems. As noted in Table 2, fire-fighting services are provided by the KAFB fire department tanker trucks. Information on other required equipment located at the MSB is provided in Section 6.0 and Table 2 of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the MSB is provided in Appendix C of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the MSB is provided in Section 1.1.3.3 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ and in Section 6.0 of this module. Personnel at the Unit typically maintain contact with the emergency coordinator and other Radioactive and Mixed Waste Management Facility (RMWMF) personnel through 2-way radios or cellular phones.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the MSB to prevent hazards. Additional information applicable to the MSB and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

MSB personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B ~~(SNL/NM, 2002b)~~ to prevent hazards in unloading. Loading and unloading activities take place on the paved areas immediately outside the bunkers. The surface is sloped gently away from the door, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Containers are typically strapped together or tied down on a pallet before being moved. Containers are moved with a forklift from the storage areas through the access tunnels to the loading areas at each bunker. Containers may be moved with a drum dolly or hand truck within each bunker.

Waste handling personnel work in pairs at the Unit, and maintain contact with one another. Because the Unit is not routinely occupied, personnel are trained to be particularly aware of weather conditions and other operations that could affect waste movement, and to exercise caution in operating equipment such as forklifts.

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

Sheet-flow run-on of surface water from surrounding areas and runoff from the MSB are prevented from entering/leaving the WMAs by the design and construction of the bunkers. The MSB are constructed of concrete and covered by earthen materials. The slope of the earthen materials covering the bunkers prevents run-on of storm water or snow melt. The interior roof and side walls of each bunker are protected by a waterproof membrane. In Type B and Type C bunkers, a 6-ft drain tile is located on the exterior perimeter, so any water that percolates through the earthen fill is drained away from the bunkers. The drive at the front of each bunker is level or sloped slightly away from the bunker doors.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the MSB will affect water supplies, as described in this section ~~(containment)~~ and in Section 1.1.4.3 of the SNL/NM General Part B. ~~(SNL/NM, 2003a)~~

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/ 40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B ~~(SNL/NM, 2003a)~~. RCRA-regulated waste management activities at the MSB will be suspended in response to equipment failures of power outages affecting those WMAs.

Electrical power is not required for the safe operation of the MSB WMAs. Equipment and/or power failures will not result in a loss of RCRA-regulated waste containment.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

MSB personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B ~~(SNL/NM, 2002b)~~ to prevent undue exposure.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

MSB personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B ~~(SNL/NM, 2002b)~~ to prevent releases to the atmosphere during storage.

Subpart AA

MSB storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities at the MSB, Sandia/DOE do not manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00].

Subpart CC

MSB personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B ~~(SNL/NM, 2002b)~~ to prevent releases to the atmosphere in accordance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the bunker WMAs.

Section B.5.3 of Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00].

~~The WMAs at the MSB are typically used solely for the storage of "radioactive mixed waste" or "remediation waste" and are therefore not subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements in accordance with 20 NMAC 4.1.500/40 CFR 264.1080 [6-14-00]. Non-radioactive, non-remediation RCRA-regulated wastes that are managed at the MSB will be segregated from mixed radioactive waste and remediation waste, and will be managed separately.~~

~~Non-radioactive, non-remediation RCRA-regulated wastes containing less than 500 parts per million by weight volatile organics are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]. The process for establishing the exemption is described in Section 1.1.4.6 of the SNL/NM General Part B (SNL/NM, 2003a).~~

~~Containers of non-radioactive, non-remediation RCRA-regulated wastes that are not identified as being exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] are stored in primary containers that 1) have a design capacity of less than or equal to 0.1 cubic meter (m^3) or 2) are U.S. Department of Transportation-approved and have a design capacity of greater than 0.1 m^3 but less than 0.46 m^3. Container covers are maintained in closed and sealed conditions but may be opened for the purposes described in 20 NMAC 4.1.500/40 CFR 264.1086(c)(1)–(5) [6-14-00].~~

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR~~,~~ 264 Subpart I)

Container storage practices applicable to the MSB are presented in the following sections.

1.3.1 Container Types and Labeling

MSB personnel use the containers types and labeling practices described in Section 1.2.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

MSB personnel employ the container handling practices described in Section 1.2.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.1 Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)

The condition of containers at the MSB is maintained as indicated in Section 1.2.2.1 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~.

1.3.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

MSB personnel employ the aisle space and storage configuration as described in Section 1.2.2.2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~. Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than two or three pallets high. Smaller containers may be stacked on a single pallet. Box-shaped containers may be stacked two high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are not stacked.

1.3.2.3 Capability of Waste with containers (20 NMAC 4.1.500/40 CFR 264.172)

MSB personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the SNL/NM General Part B ~~(SNL/NM, 20023a)~~.

1.3.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

MSB personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the SNL/NM General Part B before storing containers in areas that are not equipped with secondary containment.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of the 20 NMAC 4.1.5~~1~~00 and ~~-~~.900/~~[6-14-00].~~ 40 CFR 264~~0-266, 268,~~ and 270 [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the MSB.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The doors of the individual bunkers are locked except when personnel are present. As noted in Appendix A of the General Part B ~~(SNL/NM, 2003b)~~, Sandia security personnel periodically monitor the SNL/NM RCRA-regulated Units during non-operational hours.

Unit personnel have Sandia-issued badges. Individuals who do not have Sandia-issued badges are escorted. These procedures limit access to the MSB WMAs in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The MSB are located within the Manzano Base area. The Manzano Base is surrounded by an 8-ft~~,~~ chain-link fence~~s~~ (Figures 1, 2, and 8). Entrance to the Manzano Base area, whether by personnel or vehicles, is through one controlled gate. Manzano Base access control

procedures are designed to assure that only properly authorized persons, vehicles, and property are allowed access to the bunkers.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The entrance to each bunker is posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, ~~and~~ are legible from a distance of 25 ft, and can be seen from the paved access road approach to each bunker~~the MSB~~. Additional signs are not necessary because employees and visitors do not approach the bunkers~~MSB~~ from any other direction.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes to the MSB include Wyoming Boulevard, and Pennsylvania Avenue as shown on Figure A-4 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. The MSB are located approximately 1 mile east of the exit road leading to the entrance of TA-III and TA-V and at the end of Pennsylvania Avenue. Within Manzano Base, waste is transported to each bunker~~the MSB~~ on 2-lane asphalt-paved roads (Figure 6).

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard, and Eubank Boulevard are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Fewer than 10 vehicles typically travel to the MSB per week. These include flatbed trucks and trailers carrying supplies and containers of RCRA-regulated waste to and from the MSB.

2.2.3 Traffic Control Signals

A stop sign is located approximately 50 ft west of the Manzano Base entrance gate. Traffic control signals within Manzano Base include stop signs, yield signs, and posted speed limits. Traffic routes and controls at Manzano Base are shown on Figure 6.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i and ii] and 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMAs at the MSB are not located within 3,000 ft of any faults with Holocene displacements (see Section A.4.2 in Appendix A [SNL/NM, 2002c] of the SNL/NM General Part B).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the MSB are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).
- Surface waters, including intermittent streams, near the MSB are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [6-14-00]).
- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [6-14-00]). The area surrounding the MSB is occupied by test facilities.
- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).
- Legal boundaries of SNL/NM (including the MSB) are shown on Figure A-2 in Appendix A of the General Part B ~~(SNL/NM, 2003b)~~ (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [6-14-00]).
- Access control features at the MSB (e.g., fences, gates) are shown on Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the MSB are shown on Figure A-2 in Appendix A of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~ and Figure 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).

- Locations of Manzano Base and the MSB WMAs, access roads, and loading and unloading areas are shown on Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [6-14-00]). There are no sanitary sewers in the vicinity of the MSB.

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 9 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00]).

- Locations of Manzano Base and MSB WMAs are shown on Figure7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the MSB. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to the NMED at these scales and contour intervals due to the size of the MSB, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c] and 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of this comprehensive Part B permit request. The MSB is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor are the MSB likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

In accordance with 40 CFR 270.14[b][2]~~,~~ and 20 NMAC 4.1.500/40 CFR 264.13, "General Waste Analysis"~~, and 20 NMAC 4.1.800/40 CFR 268.7, "Waste Analysis and Record-Keeping"~~ [6-14-00], waste analysis requirements applicable to all Units, including the MSB, are addressed in Appendix B of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] required that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the "Site-Wide Inspection Plan", provided as Appendix C of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. Unit personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 1, with the inspection criteria and frequency.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B ~~(SNL/NM, 2003b)~~. The inspection plan (Appendix C and this section) is maintained at the RMWMF. Inspection records for the current calendar year are maintained at each bunker. Inspection records for previous calendar years are maintained at the RMWMF or the SNL/NM Records Center.

Table 1
Manzano Storage Bunker Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Portable eye wash	Operational, accessible, in good condition	Monthly
Spill control equipment	Present, quantities per inventory, accessible, in good condition	Monthly
Smoke alarm	Present	Monthly
Fire extinguisher	Present, charged, accessible, and in good condition	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Bunker floor	Clean, no spills or excessive wear	Weekly when wastes are managed. Monthly otherwise.
Bunker walls	Not leaking or spalling, in good condition	Weekly when wastes are managed. Monthly otherwise.
Bunker ceiling	Not leaking or spalling, and in good condition	Weekly when wastes are managed. Monthly otherwise.
Bunker lights	Operational and in good condition	Weekly when wastes are managed. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, no spills	Daily when wastes are managed. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when wastes are managed. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
STORED CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Daily for individual containers that were handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Daily for individual containers that were handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Daily for individual containers that were handled. Weekly otherwise.
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Daily for individual containers that were handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Daily for individual containers that were handled. Weekly otherwise.
Location	Correct aisle space, correct stacking (2 maximum)	Daily for individual containers that were handled. Weekly otherwise.

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900, 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16 [6-14-00], "Personnel Training." The Sandia/DOE training program is designed and implemented to prepare personnel to operate and safely maintain those areas used for managing RCRA-regulated waste at the MSB.

All job descriptions identified in Appendix D, Table D-2 of the SNL/NM General Part B ~~(SNL/NM, 2003a)~~ are applicable at the MSB. MSB personnel receive training in accordance with the "Site-Wide Personnel Training Plan" ~~for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act- Regulated Waste Management Units" as~~ provided in Appendix D of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~.

Training records for MSB personnel are maintained at the Radioactive and Mixed Waste Management Facility at SNL/NM.

6.0 CONTINGENCY PLAN

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia/DOE Site-Wide Contingency Plan is included as Appendix E of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. Supplemental MSB-specific information is included in this section, Figures 10-12, and in Tables 2 and 3 of this module. Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained at each bunker, at the RMWMF and at the SNL/NM Emergency Operations Center.

The U.S. Department of Energy and Sandia Corporation use the ~~seven~~five bunkers of the MSB to store containers of RCRA-regulated waste. The MSB are located approximately 1 mile east of the road leading to the entrance of TA-III and -V at the end of Pennsylvania Avenue. The WMAs at the MSB include: a Type B bunker~~s~~ (37034~~ and 37063~~); a Type C bunker~~s~~ (~~37078 and~~ 37118); and three Type D bunkers (37045, 37055, and 37057). Bunkers are constructed of concrete (walls, roof, and floor) and are covered by earthen materials.

RCRA-regulated wastes bearing the U.S. EPA listed in the General Part A Permit ~~(SNL/NM, 2002),~~ may be stored at the MSB WMAs. Waste is segregated based on compatibility groups within each bunker.

Figure 10 presents evacuation routes for the MSB. Figures 11 and 12 present emergency response and access information for the MSB. Table 2 lists the emergency equipment typically available at the MSB. Table 3 lists the emergency coordinators for the MSB.

~~Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained at each bunker, at the RMWMF and at the SNL/NM Emergency Operations Center.~~

The emergency coordinators are informed of planned work activities at the beginning of each work day; this includes activities at Units that are not routinely staffed (such as the MSB).

Table 2
Manzano Storage Bunkers, Emergency Equipment and Locations

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Portable Eyewash	By inner door inside each bunker
	Absorbents	By inner door inside each bunker
Internal Communication and Alarm System	Voice command Portable 2-way radio	Operating personnel typically carry radios.
	Smoke Alarms	• Smoke detectors and alarms inside each bunker • Strobe light on front outside each bunker
External Communication System	Mobile Telephone or Portable Radio	Taken to bunkers by personnel
Fire Extinguishers	Portable (A-B-C)	By entrance door outside each bunker
Fire Suppression	Water to Extinguish Fires	~~Kirtland Air Force Base (~~KAFB~~)~~ tanker truck at the KAFB fire station in the Manzano administrative area

KAFB Kirtland Air Force Base

Table 3
Manzano Storage Bunkers,
Facility Emergency Coordinator List

April 16~~February 18~~, 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Jeff Jarry Sandia National Laboratories P. O. Box 5800 Albuquerque, NM 87185	(505) 284-3080 (office) (505) 561-1138 (pager)	(505) 452-3337
First Alternate	Mike Spoerner Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2813 (office) (505) 540-5296 (pager)	(505) 828-3441
Second Alternate	Phil Zelle Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2486 (office) (505) 540-7437 (pager)	(505) 292-5097
Third Alternate	Mary Ann Krauss Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-9997 (office) (505) 540-5228 (pager)	(505) 299-0793

One or more of the listed personnel are routinely available at the Radioactive and Mixed Waste Management Facility during normal work hours (7:00 am to 5:30 pm, Monday through Thursday) and can be contacted by radio or telephone during those hours.

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/~~,~~ 40 CFR 270.14[b][13], and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I [6-14-00]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~. The site-wide Closure Plan~~general closure information~~ includes a description of the SNL/NM facility; waste description; closure performance standards, ~~an SNL/NM facility description,~~ closure methods; sampling and analysis plan; closure schedule; procedures for amendment of the Closure Plan, closure certification and report, survey plat, and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The U.S. Department of Energy and Sandia Corporation use the five bunkers of the Manzano Storage Bunkers (MSB) to store containers of RCRA-regulated waste. The MSB are located approximately 1 mile east of the road leading to the entrance of TA-III and -V at the end of Pennsylvania Avenue. The WMAs at the MSB include: a Type B bunker (37034); a Type C bunker (37118); and three Type D bunkers (37045, 37055, and 37057). Bunkers are constructed of concrete (walls, roof, and floor) and are covered by earthen materials.

~~7.1~~7.2 Estimate of Maximum Waste in Storage

The maximum total inventory of RCRA-regulated waste in storage at any time in the MSB is approximately 105,600~~176,000~~ gallons of liquids and/or solids. WMAs are located at the bunkers shown in Figure 2. The maximum total waste inventory is broken down as follows:

- Type B Bunker (37034): 25,080 gallons
- Type C Bunker (37118): 25,080 gallons
- Type D Bunkers (37045, 37055, and 37057): 55,440 gallons

~~7.2~~7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5~~4~~ in Appendix F of the SNL/NM General Part B ~~(SNL/NM, 2003b)~~, closure activities specified in this plan assume the following conditions were met during the operational life of the MSB:

- RCRA-regulated waste handling activities involving the opening of waste containers at the MSB were confined to the interiors of the bunkers. If contamination occurred, it would have been confined to those areas; and

- The interior walls and floors of RCRA-regulated waste management areas were maintained to retain their integrity by following established maintenance and inspection procedures and breaches of protective coatings did not occur.

~~7.3~~7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the bunkers, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the MSB.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan presents sample collection equipment and techniques applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the bunkers. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the MSB.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the MSB.

8.0 TREATMENT PLAN

Sandia/DOE do not perform treatment of RCRA-regulated wastes requiring a permit at the MSB.

9.0 REFERENCES

Sandia National Laboratories/New Mexico (SNL/NM), 2003~~2~~, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 5~~3~~.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003a, "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), 2003b, Appendices A-F (Site-Wide Waste Analysis Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units) in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," Revision 1.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

SNL/NM, see Sandia National Laboratories/New Mexico.

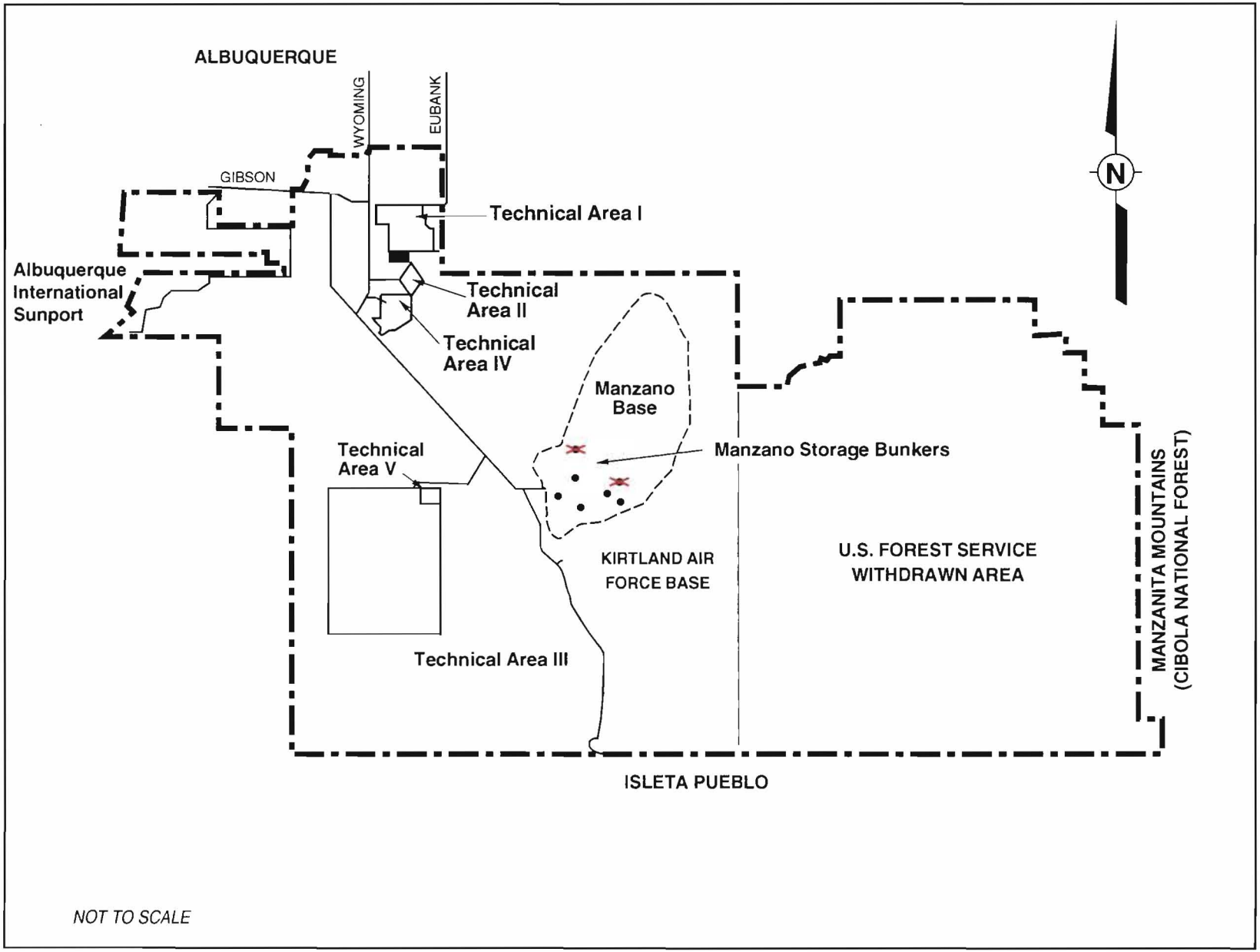

Figure 1
Location Map of the Manzano Storage Bunkers at Sandia National Laboratories/New Mexico

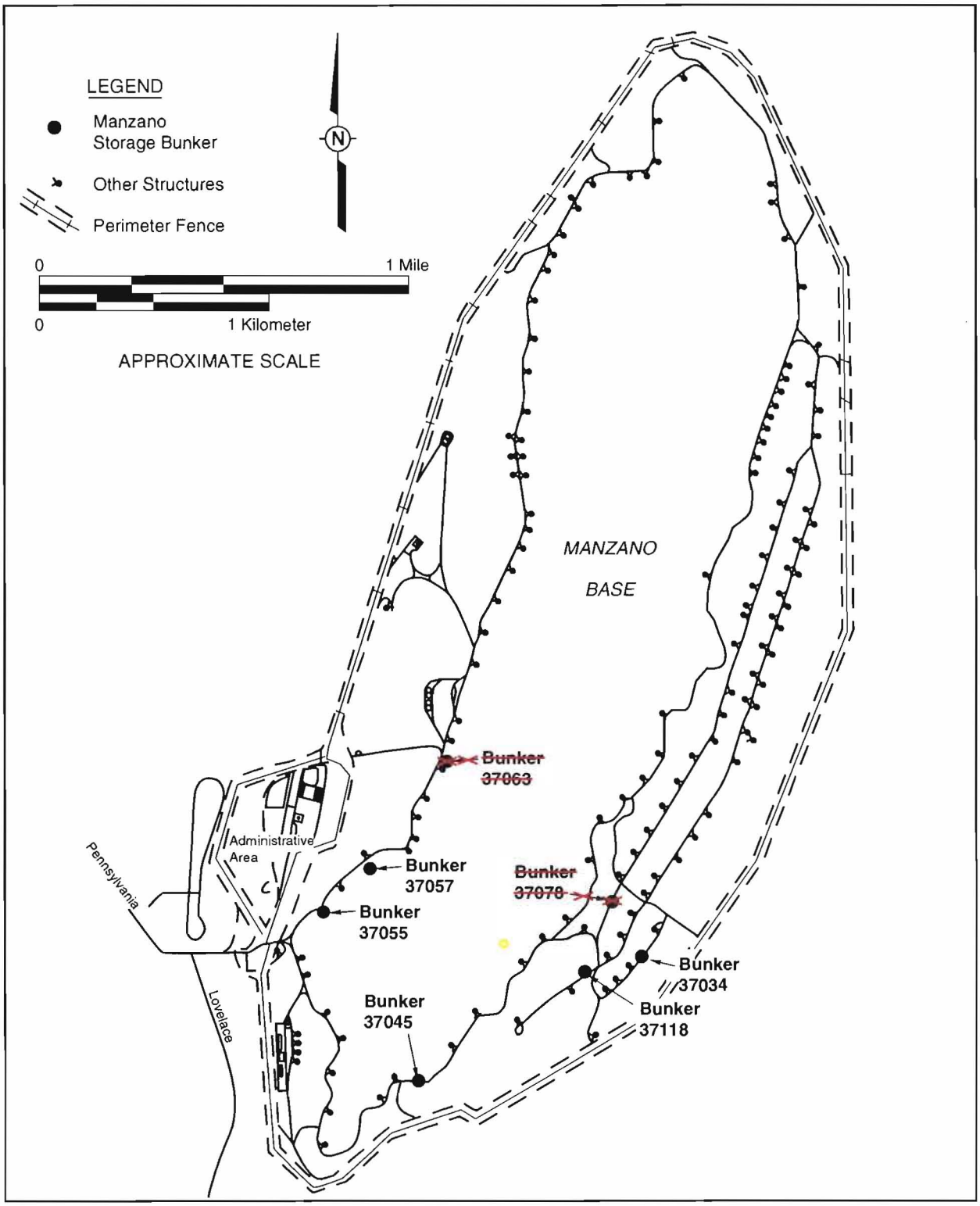

Figure 2

Location of the Manzano Storage Bunkers at Manzano Base

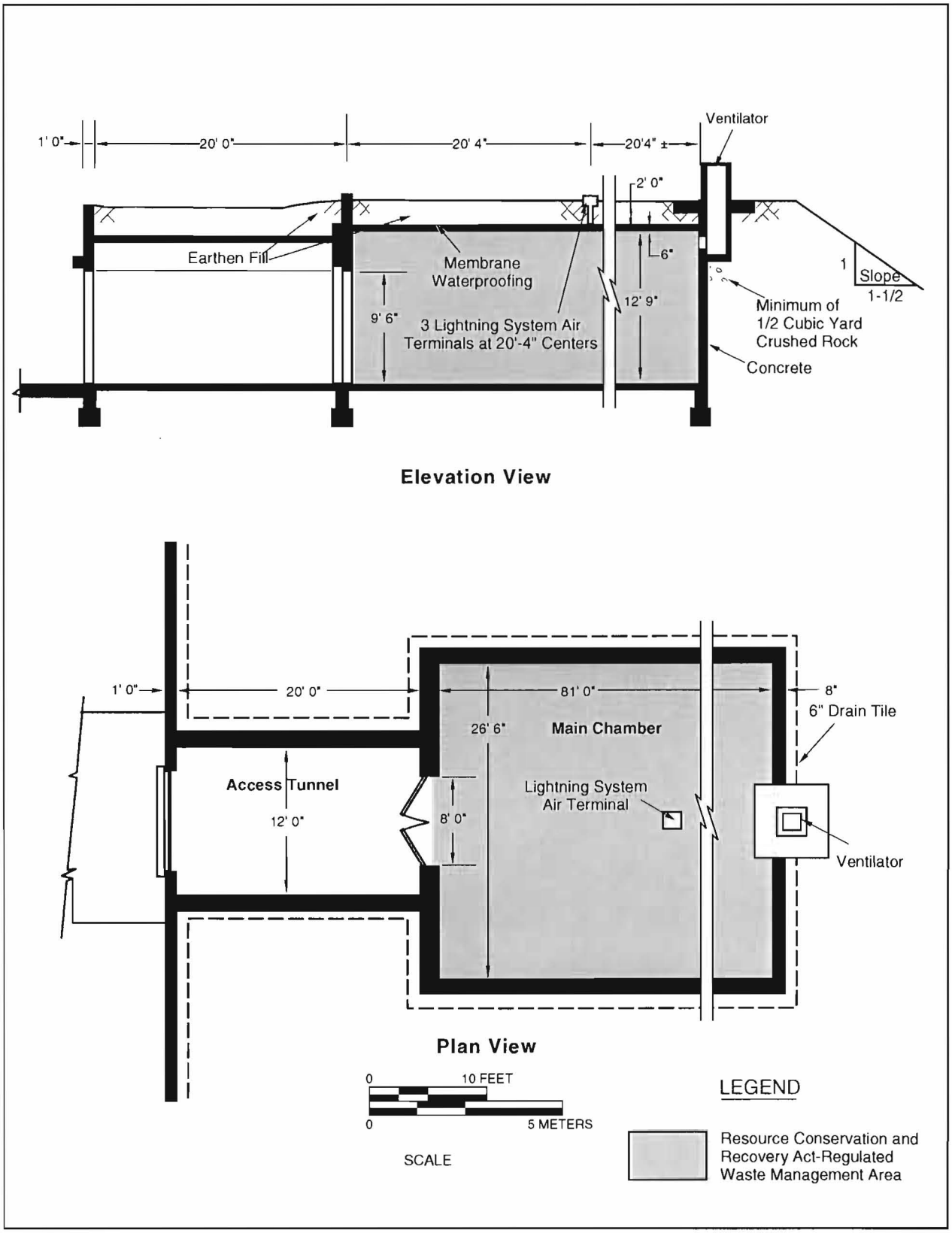

Figure 3
Manzano Storage Bunkers, Type B,
Bunkers 37034 ~~and 37063~~

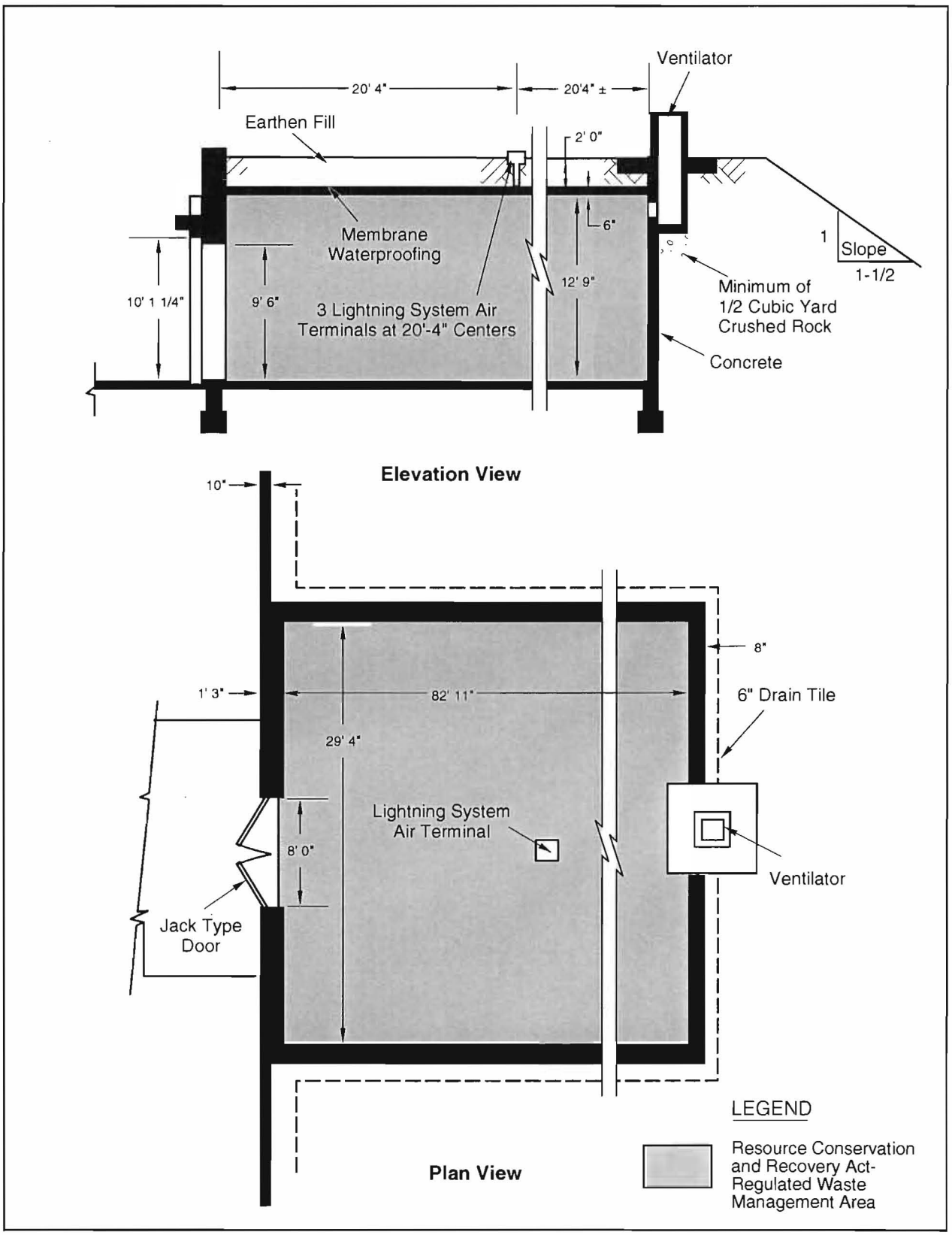

Figure 4
Manzano Storage Bunker~~s~~, Type C,
Bunker~~s 37078 and~~ 37118

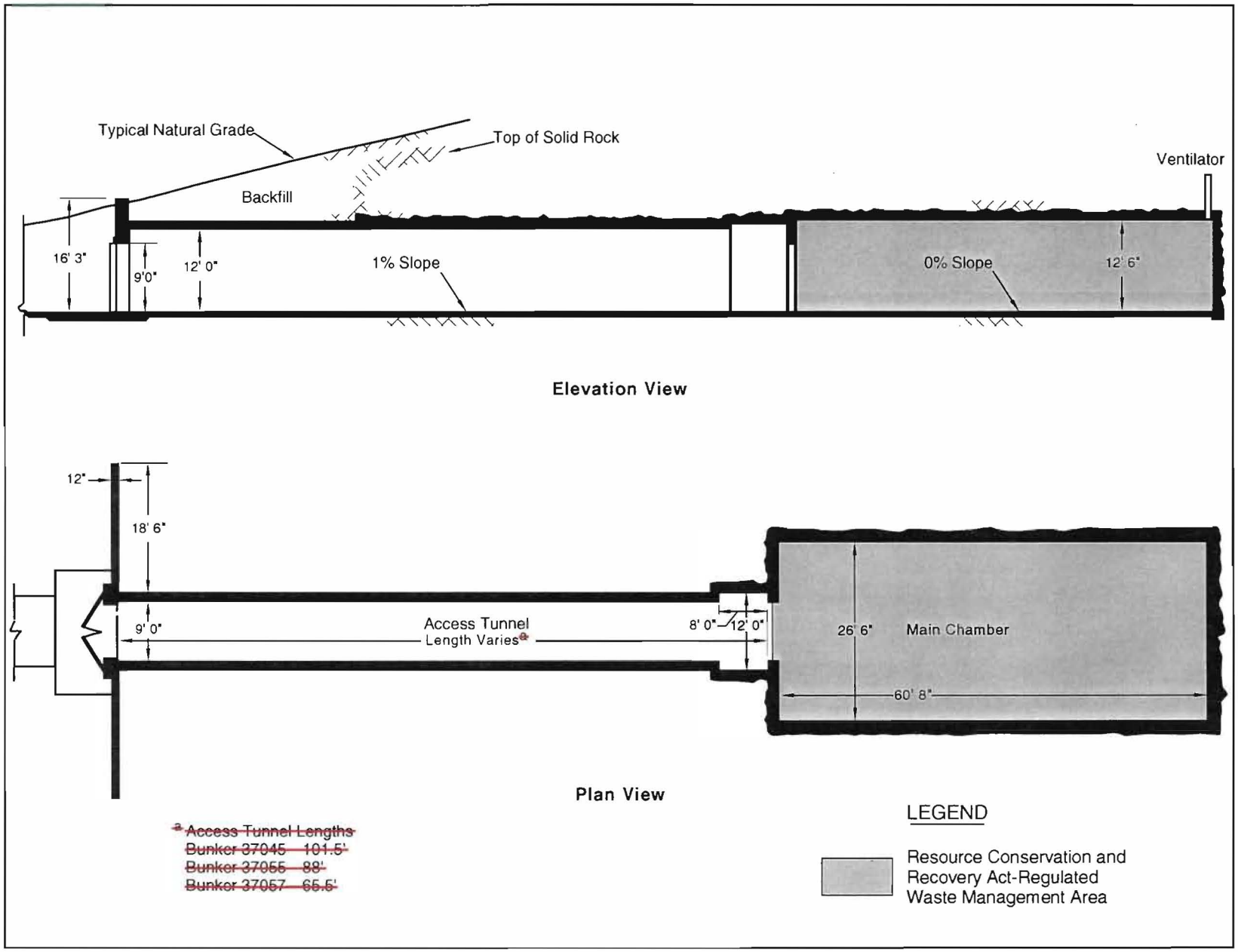

Figure 5
Manzano Storage Bunkers, Type D
Bunkers 37045, 37055, and 37057

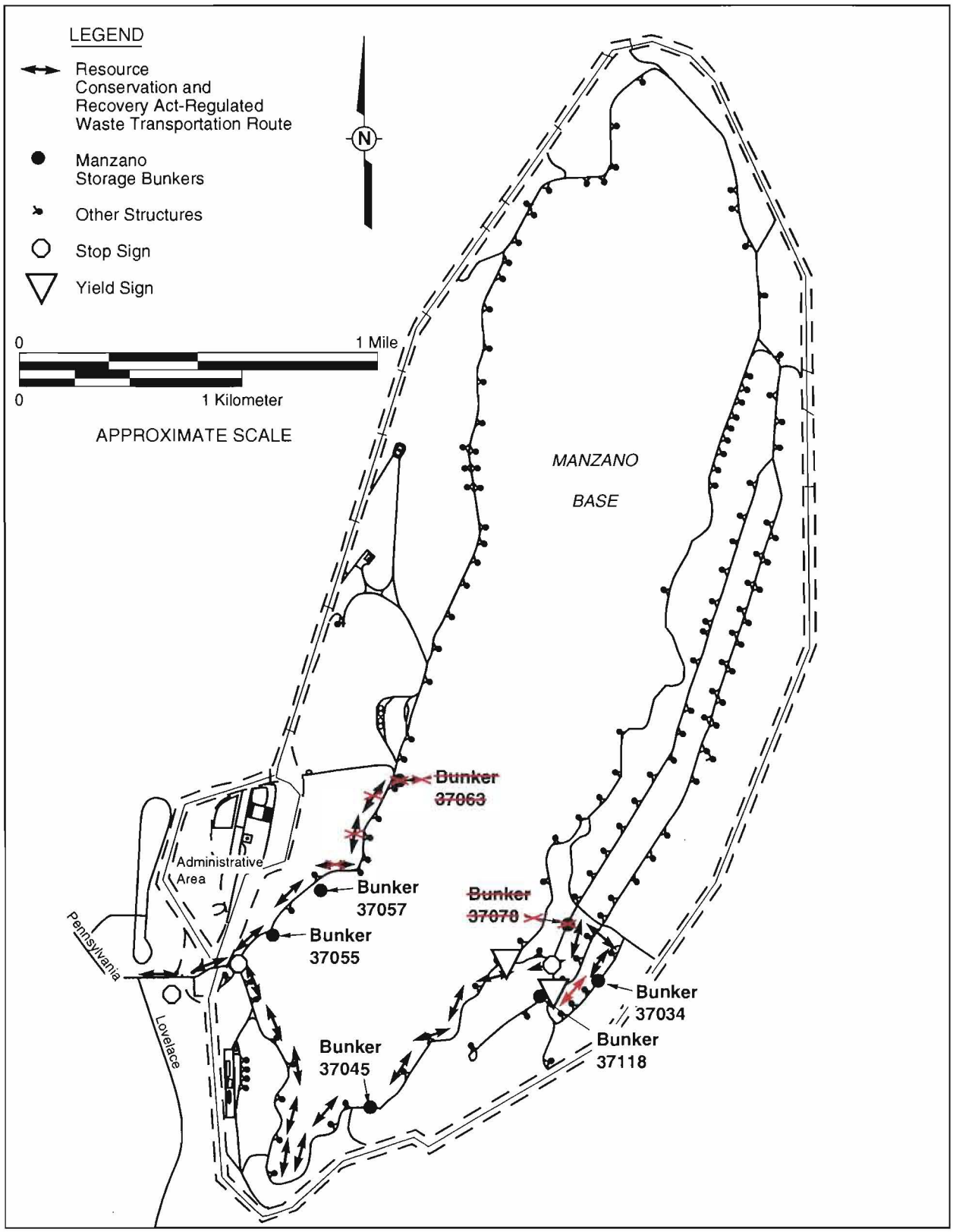

Figure 6

Manzano Storage Bunkers, Traffic Routes and Controls

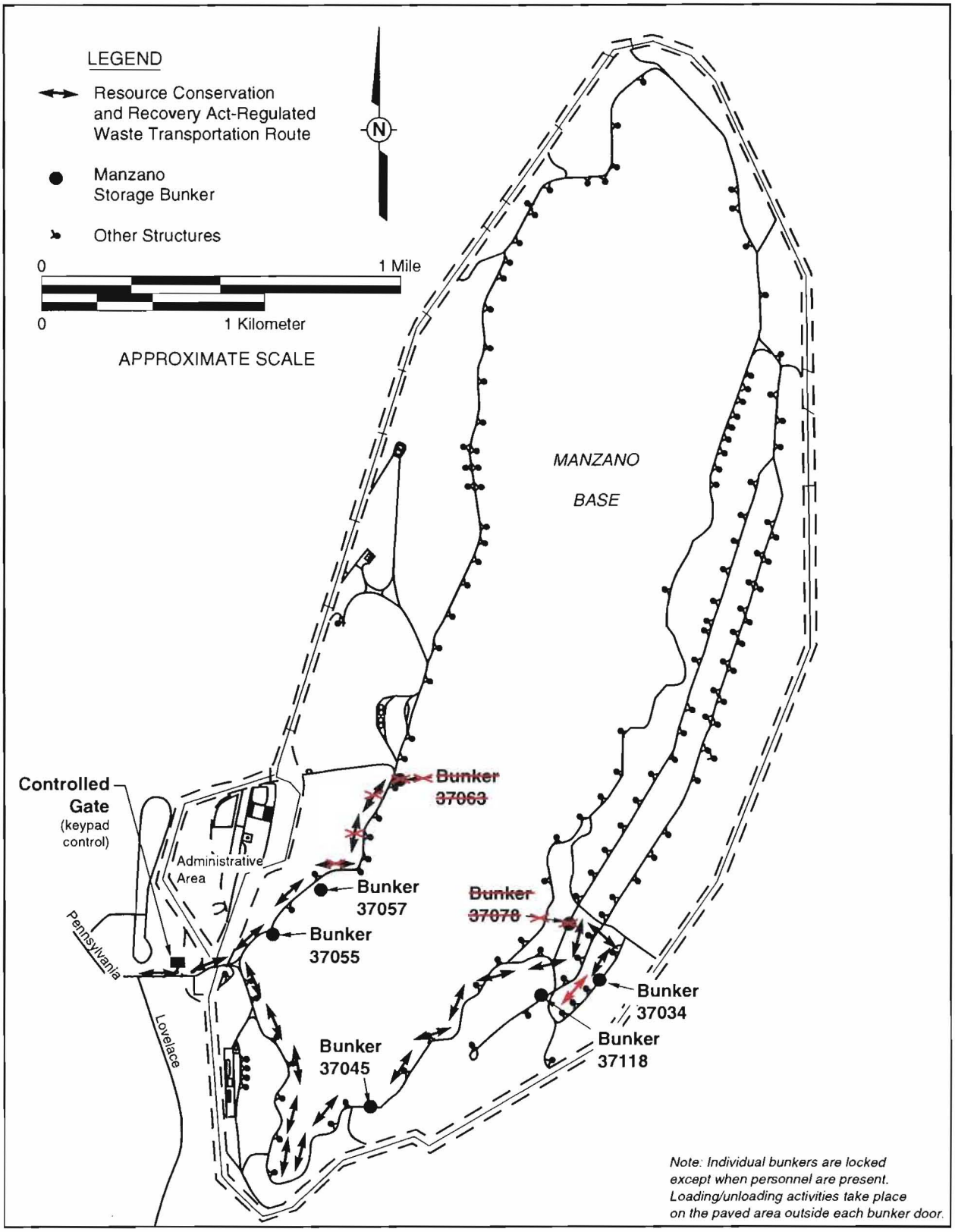

Figure 8

Manzano Storage Bunkers, Access Control Features

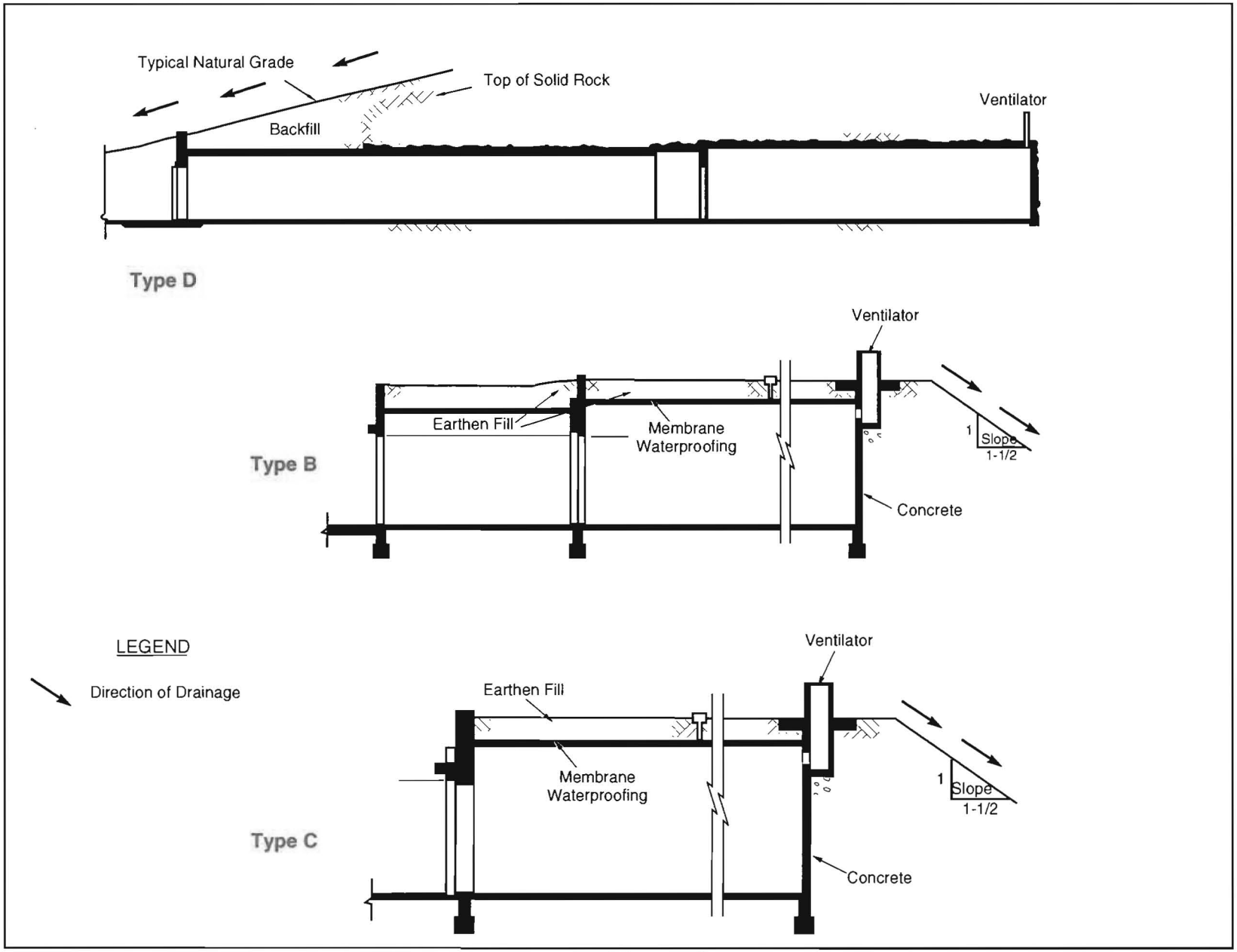

Figure 9
Manzano Storage Bunkers, Drainage Control Features

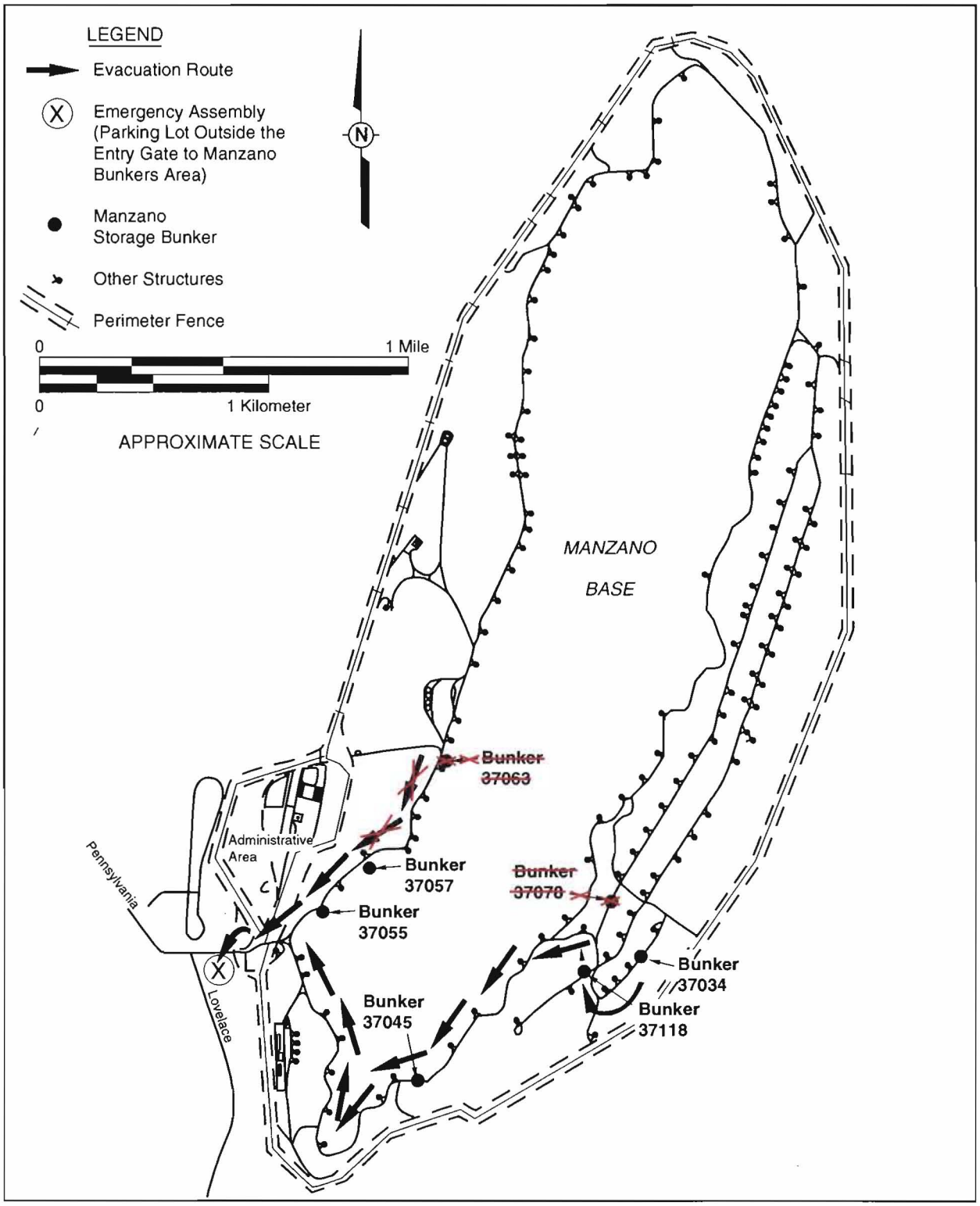

Figure 10
Manzano Storage Bunkers, Evacuation Routes

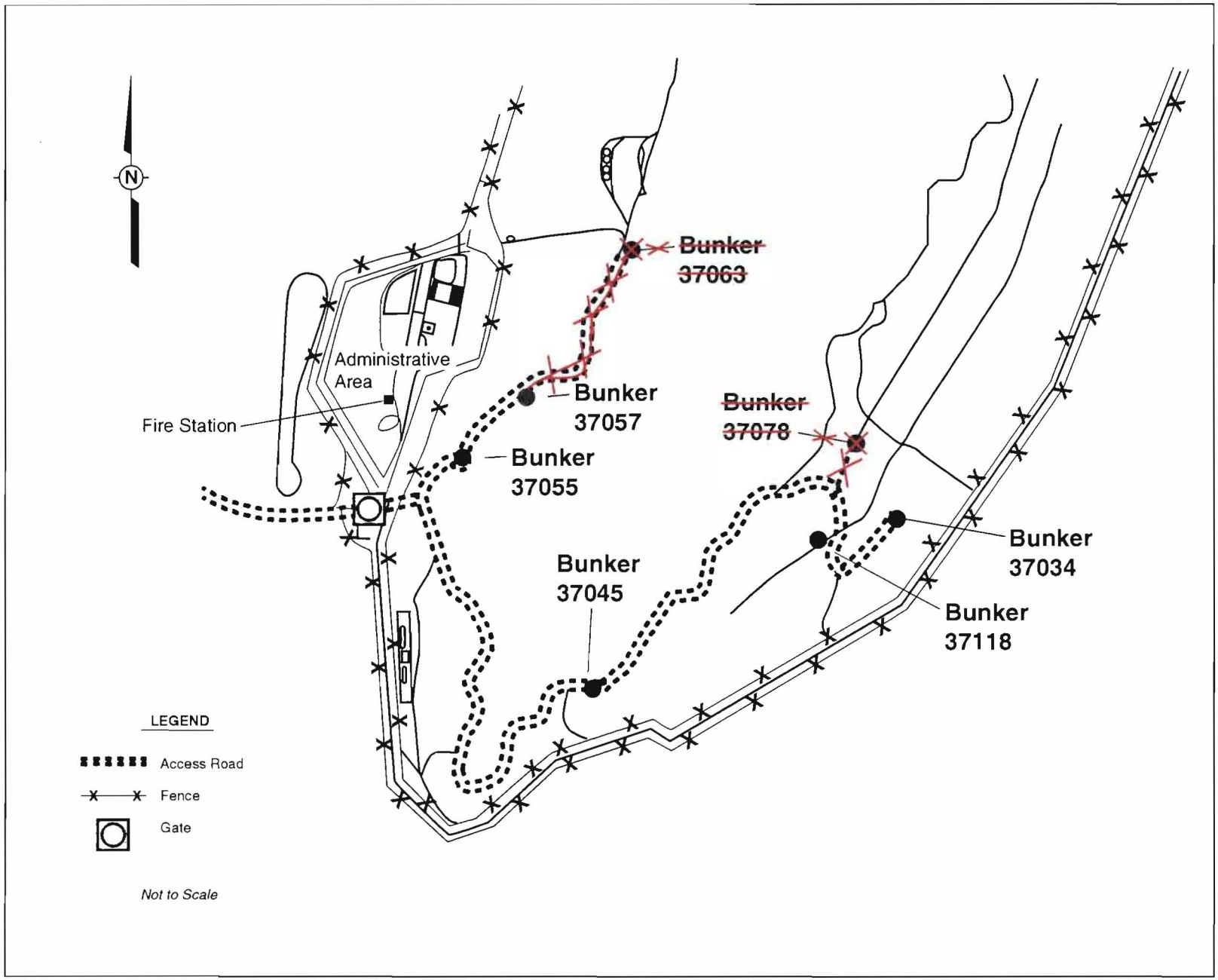

Figure 11

Emergency Response and Access Information in the Vicinity of the Manzano Storage Bunkers

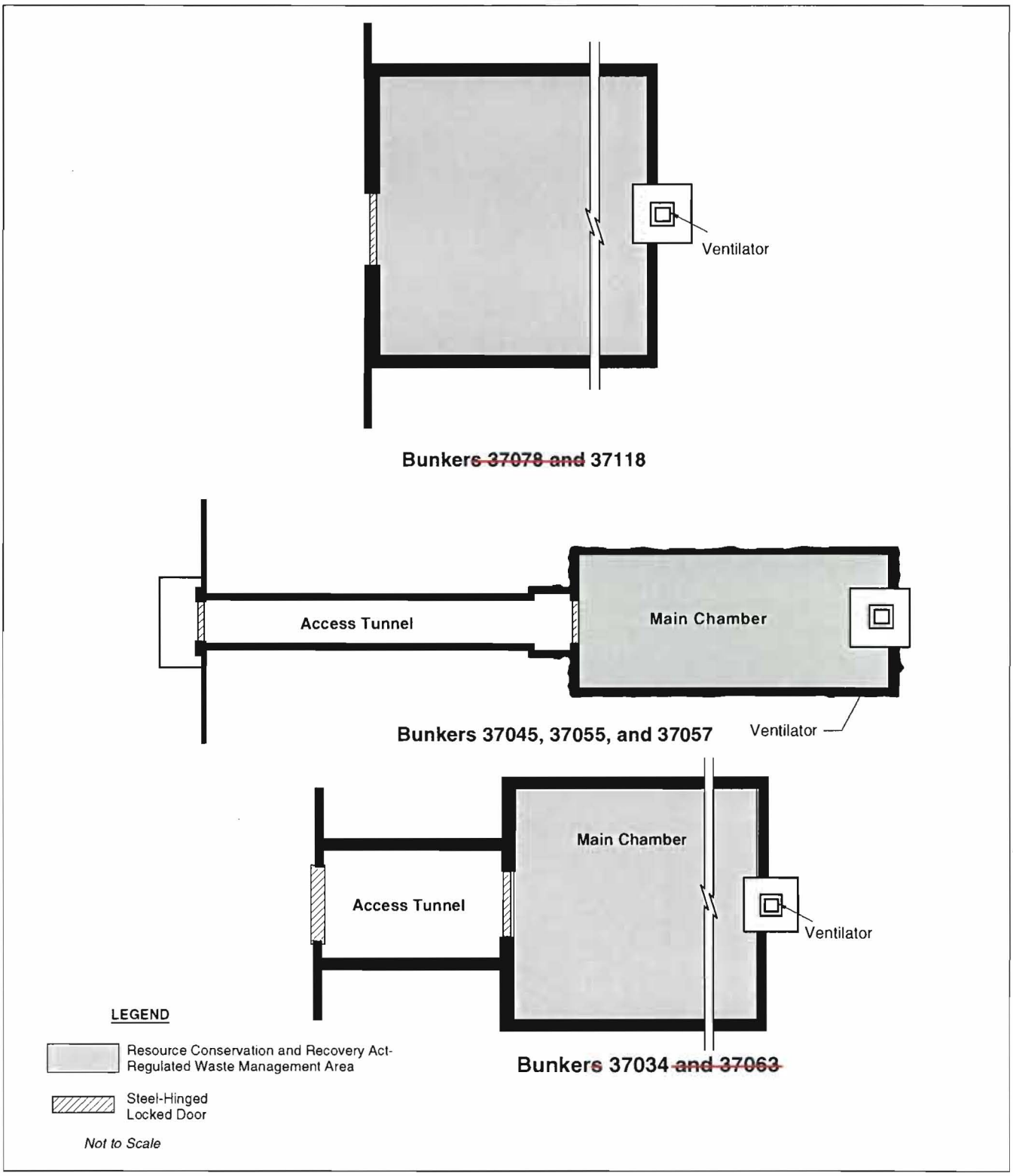

Figure 12

Emergency Response and Access Information at the Manzano Storage Bunkers

Volume II

PART 4

INFORMATION REQUIREMENTS
SOLID WASTE MANAGEMENT UNITS

1.0 INTRODUCTION

This part addresses 20 NMAC 4.1.900, 40 CFR 270.14(d), *Information Requirements for Solid Waste Management Units*. This provision requires the following information for each solid waste management unit (SWMU) at the facility:

- The location of each unit on a topographic map,
- Designation of the type of unit,
- General dimensions and structural description,
- When the unit was operated,
- Specification of wastes that have been managed at the unit, to the extent available,
- Available information pertaining to any release of hazardous waste or hazardous constituents, and
- Results of sampling and analysis of groundwater, land surface, and subsurface strata, surface water, or air.

The required information is provided for each SWMU and for each area of concern (AOC) which the New Mexico Environment Department (NMED) has determined qualifies to be on the permit. The information is provided in the form of Environmental Restoration Site Summary Sheets, a database containing current information on each SWMU/AOC. Figure 1 shows the location of each SWMU/AOC. The Site Summary Sheets and Figure 1 are presented in Section 2.0.

Within 30 days of discovery of a newly-identified SWMU, DOE and Sandia will submit a notification to the NMED, as required by Section IV.G of the current RCRA permit. If an area is suspected of being a SWMU, historical information is gathered and sampling may be conducted to determine if the area qualifies as a SWMU, as defined in Section IV.A of the current RCRA permit. ("SWMU means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.") The information is presented and evaluated in the notification to the NMED. Additional information (for example, the results of sampling) will be compiled and presented in a SWMU Assessment Report, including an assessment of whether releases of hazardous waste including hazardous constituents have occurred, are occurring, or are likely to occur from the unit. The NMED may determine that the SWMU should be included in the HSWA Module, based on a finding that releases of hazardous waste including hazardous

constituents have occurred, are occurring, or are likely to occur from the unit. If a SWMU is added to the HSWA Module, the NMED may require further investigations or corrective measures at that site. The current permit conditions include provisions for RCRA facility investigations and corrective measures, including voluntary corrective measures.

Section 3.0 of this Part contains supplemental information for Canyons Groundwater, Technical Area III/V Groundwater, and Tijeras Arroyo Groundwater.

2.0 SITE SUMMARY SHEETS

SNL/NM SWMU information is provided in the form of Environmental Restoration Site Summary Sheets, a database containing current information on each SWMU/AOC. Figure 1 shows the location of each SWMU/AOC. The remainder of this section contains the Site Summary Sheets.

3.0 SUPPLEMENTAL INFORMATION FOR CANYONS GROUNDWATER, TECHNICAL AREA III/V GROUNDWATER, AND TIJERAS ARROYO GROUNDWATER

This section provides supplemental information for Canyons Groundwater, Technical Area III/V Groundwater, and Tijeras Arroyo Groundwater (TAG). The supplemental information addresses, for each area: releases, monitoring well descriptions, and groundwater sampling results. The information related to TAG is for information purposes only; TAG is not a SWMU and the source of releases associated with TAG is unknown.

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Canyons Groundwater

Site History

In 1996, the Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Project reported elevated concentrations of nitrate in the Burn Site production well. SNL/NM installed a monitoring well (CYN-MW1D) in 1997 in order to determine the extent of potential contamination. The sampling of this well revealed elevated levels of nitrate exceeding the U.S. Environmental Protection Agency (EPA) maximum concentration level (MCL) of 10 milligrams per liter (mg/L). Water samples from CYN-MW1D also had detectable levels of petroleum hydrocarbons. Additional groundwater monitoring wells (CYN-MW3 and CYN-MW4) were installed in 1999 to define the nature and extent of contamination at the site. Two piezometers (12AUP01 and CYN-MW2S) were installed in 1996 and 1997, respectively, to monitor groundwater flow. Both piezometers have been dry since installation, but are routinely checked. The network of three groundwater monitoring wells and two piezometers comprise the Canyons Groundwater Investigation. The Burn Site production well was drilled in 1986 to provide nonpotable water for fire suppression during burn tests.

The area of concern for the Canyons Groundwater Investigation is Lurance Canyon located within the boundaries of the U.S. Forest Service Withdrawn Area, which is permitted to the Department of Energy (DOE). Lurance Canyon is one of three large canyons in the Manzanita Mountains (Madera Canyon from the north, Sol se Mete Canyon from the south, and Lurance Canyon from the east). The canyons channel the headwaters of the Arroyo del Coyote. The Canyons Groundwater Investigation study area is within SNL/NM Operable Unit (OU) 1333.

The Lurance Canyon Burn Site is identified as Solid Waste Management Unit (SWMU) 94 and is currently used for testing fire survivability of transportation containers, weapons components, simulated weapons, and satellite components. SWMU 94 lies within SWMU 65, the Lurance Canyon Explosive Test Site, which was used for high explosive (HE) tests, liquid and solid propellant burn tests, and open pit burn tests. Test operations began at SWMU 65 in the late 1960s, but the site is now inactive. Historical aerial photographs indicate that the transition of testing activities from high explosives testing and jet propulsion 4 (JP-4) fuel fires in excavated pits (SWMU 65) to tests using portable steel burn pans (SWMU 94) occurred between 1971 and 1982. Waste water from numerous test units was released into an unlined pit.

The contaminants of concern (COC) for the Canyons Groundwater project include petroleum hydrocarbons (volatile organic compounds [VOCs] and diesel range organics [DRO]) and nitrate. The release of hydrocarbon contaminants to the environment is attributed to the testing activities at SWMU 94 and SWMU 65. The source of nitrate contamination in groundwater has not been identified.

The hydrogeology of the area is detailed in a 2001 SNL/NM report "Groundwater Investigation Canyons Test Area, Operable Unit 1333 Burn Site, Lurance Canyon". The saturated zone beneath the Burn Site is contained within an assemblage of fractured Precambrian igneous and metamorphic rocks that have undergone extensive deformation. The subsurface data indicate that the groundwater system is confined by an aquitard of partially fractured Precambrian rocks.

Because of the confined hydrologic conditions, contaminants may reach groundwater via open fractures in the aquitard. Groundwater in the area generally flows to the west.

Historically, the maximum petroleum hydrocarbon concentration (measured as DRO) in the Canyons Groundwater Investigation area has been 406 micrograms per liter (µg/L) in CYN-MW1D. The maximum nitrate concentration has been 27 mg/L also in CYN-MW1D, exceeding the MCL of 10 mg/L. CYN-MW3 has also had nitrate levels (22 mg/L) that exceeded the MCL. Other compounds measured in groundwater included ethyl benzene, toluene, and xylene. These compounds have been detected in trace amounts, all below the MCLs (where applicable).

In 2000 and 2001, two Voluntary Corrective Actions for SWMU 94 (subunits F and H) removed approximately 1,200 and 880 cubic yards of fuel-contaminated soil, respectively. Following the excavation, confirmatory soil samples showed that fuel contamination was of limited extent and did not reach the underlying bedrock. At the time of the 2000 excavation, a visual inspection revealed that a possible fault in the bedrock at the base of the excavation.

The following conclusions can be made:

- The source of petroleum hydrocarbon contaminants in groundwater is likely the waste water discharged into the unlined pit
- The distribution of petroleum hydrocarbon and nitrate contaminants suggest downward movement through the fault(s) to the saturated zone
- The activities creating the sources of petroleum hydrocarbon contamination have ceased. Areas of contaminated soil have been removed, thus preventing further downward migration of contaminants.

The nearest downgradient production well (KAFB-4) is approximately 10 miles down Arroyo del Coyote.

Constituents of Concern

Volatile organic compounds, diesel range organics, and nitrate.

Current Hazards

No hazards are present in surface or subsurface soils.

Current Status of Work

The network of three groundwater-monitoring wells has been sampled quarterly for COCs as well as other water quality parameters from the dates of well installation to September 2002. SNL/NM is currently conducting semi-annual sampling for the Canyons Groundwater Investigation. Groundwater results are reported in the Annual Groundwater Monitoring Report produced by the SNL/NM Groundwater Protection Program.

Future Work Planned

A Corrective Measure Study is being prepared for the Canyons Groundwater Investigation. No additional fieldwork or investigations are planned.

Waste Volume Estimated/Generated

No hazardous or radioactive waste associated with Canyon Groundwater Investigation has been generated.

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Technical Area III/V Groundwater

Site History

The Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Project has reported concentrations of trichloroethylene (TCE) exceeding the U.S. Environmental Protection Agency (EPA) maximum concentration level (MCL) in groundwater from one Technical Area (TA) V monitoring well (LWDS-MW1) since 1993 (SNL/NM September 1995). The other primary groundwater contaminant at TA-V is nitrate, which has exceeded New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) maximum background level and occasionally has exceeded EPA MCL in several wells. TCE and nitrate have been identified as the contaminants of concern (COCs) for the TA-V study area. TCE is a chlorinated solvent typically used for degreasing operations. Nitrate is principally a degradation product of septic waste. The state and Federal drinking water standard (the MCL) for TCE is 5 micrograms per liter (µg/L), which is equivalent to 5 parts per billion. The state and Federal MCL for nitrate is 10 milligrams per liter (mg/L), which is equivalent to 10 parts per million (ppm). Groundwater contamination at TA-V is the result of waste water and septic waste disposal.

TA-V has 12 designated solid waste management units (SWMU): three are within the Operable Unit (OU) 1307 boundaries and are associated with the Liquid Waste Disposal System (LWDS); the remaining nine are within the OU 1306 boundaries. OU 1306 includes sites within both TA-V and TA-III. The NMED HRMB has reviewed the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report for OU 1307 (SNL/NM September 1995) and SNL/NM responses to comments from the NMED were submitted (SNL/NM January 1998). The OU 1306 RFI Report (SNL/NM June 1996) was reviewed by the NMED and SNL/NM has responded to two Notice of Deficiencies (NOD) on this report (SNL/NM October 1997, SNL/NM July 1998).

TA-III and TA-V are located in the south central portion of Kirtland Air Force Base (KAFB). TA-V is located in the northeastern corner of TA-III and occupies approximately 35 acres. TA-V is a secured research and testing area; facilities located in TA-V are designed to test radiation effects on components. TA-V houses large electron beam accelerators, three research reactors in two reactor facilities, an intense gamma irradiation facility (GIF), and a hot cell facility (HCF).

The numerous investigations that have occurred at the TA-III and TA-V SWMUs have resulted in the following activities:

- Drilling and sampling 26 boreholes
- Installing 13 groundwater monitoring wells
- Collecting 139 surface passive soil vapor samples
- Installing and sampling numerous shallow geoprobe points
- Performing quarterly groundwater sampling events
- Performing slug tests and analyses for six TA-V monitoring wells.

The potential release sites of TCE and/or nitrate in the TA-V study area include the LWDS drain field, the LWDS impoundments, and the TA-V seepage pits. The LWDS drain field received approximately 6.4 million gallons of reactor coolant water from 1963 to 1967 when the drainfield collapsed. All disposal activities at these sites have ceased, and none are currently in operation. TCE was found in sludge samples from the LWDS tanks associated with the drain field, in low concentrations in soil samples around the LWDS drain field, and also in low concentrations at the TA-V seepage pits. No record of solvent use and/or disposal was kept for any TA-V facilities. However, interviews with TA-V personnel reveal that solvents were used at various locations.

The hydrogeologic setting of TA-V is complex. Groundwater occurs within two interfingering Santa Fe Group units, the alluvial fan facies and the Ancestral Rio Grande (ARG) fluvial facies. These two lithofacies have distinct hydrologic characteristics that influence the direction and rate of groundwater flow. Low- to moderate-permeability alluvial-fan facies interfinger with high-permeability ARG facies. Structural features such as faults also influence groundwater migration.

Groundwater occurs at TA-V at depths between 478 and 512 feet (ft) below ground surface in the regional aquifer. The groundwater potentiometric surfaces reveal a groundwater mound existing beneath TA-V. Groundwater flow directions are to the west, south, and north away from the mound. The horizontal gradient is approximately 0.003 ft/ft. Hydraulic conductivities range from 10^{-2} ft/ minute in the ARG facies to 10^{-5}ft/minute in alluvial fan facies. Estimated horizontal flow velocities for both units range from 4 to 10 ft/year.

Historically, the maximum TCE concentration in the TA-V area has been 24 µg/L at LWDS-MW1, and the maximum nitrate (measured as nitrate plus nitrite as nitrogen) concentration has been 36 mg/L at LWDS-MW2.

Other volatile organic compounds measured in groundwater at TA-V include degradation products of TCE: cis-1,2-dichloroethene and 1,1-dichloroethene. Concentrations of arsenic, barium, beryllium, chromium, lead, nickel, selenium, and thallium have exceeded the EPA MCLs in groundwater at TA-V. However, these metal contaminants are not considered to the primary COCs in groundwater at TA-V. Thorium-234 and uranium-238 have exceeded the HRMB approved background values in several monitoring wells. However, these isotopes are naturally occurring in the sediments of the Albuquerque basin, and are not attributed to TA-V operations.

The following conclusions can be made:

- The groundwater mound beneath the TA-V is most likely a result of the waste water disposal from the LWDS drain field. However, it appears more likely that geologic anisotropy and heterogeneity in the area along with the regional water level declines have created relatively high groundwater levels in the area. It is possible that both wastewater discharge and geologic variations are contributing to high groundwater levels beneath TA-V.

- Aqueous transport of contaminants by infiltration of the wastewater is the most probable transport mechanism for both volatile organic and inorganic constituents through the vadose zone and into the aquifer.
- The TCE plume in TA-V groundwater appears to originate from the LWDS tank and drainfield area.
- The primary source of TCE in groundwater at TA-V was from the approximately 6.4 million gallons of waste water from LWDS drain field in the 1960s.

Constituents of Concern

TCE and nitrate.

Current Hazards

No hazards are present in surface or subsurface soils.

Current Status of Work

The network of 13 groundwater-monitoring wells is sampled quarterly for COCs as well as other water quality parameters. The most recent sampling event (November 2002) revealed 16.4 µg/L TCE and 10.8 mg/L nitrate in LWDS-MW1. These were the maximum values for the monitoring network. Groundwater monitoring will continue on a quarterly basis. Groundwater results are reported in the Annual Groundwater Monitoring Report produced by SNL/NM's Groundwater Protection Program.

Future Work Planned

No additional field work or investigations are planned.

Waste Volume Estimated/Generated

No hazardous or radioactive waste has been generated.

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Tijeras Arroyo Groundwater

Site History

In 1992, the Sandia National Laboratories/New Mexico (SNL/NM) ER Project began conducting groundwater studies at Technical Area-II (TA-II). The TA-II studies along with other Solid Waste Management Unit related investigations eventually were incorporated into the Tijeras Arroyo Groundwater (TAG) Investigation. In addition to work conducted by the ER Project, the TAG Investigation has recently incorporated groundwater investigations conducted by the Kirtland Air Force Base (KAFB) Installation Restoration Program and the City of Albuquerque (COA) Environmental Health Department.

Trichloroethylene (TCE) and nitrate have been identified as the contaminants of concern (COCs) for the TAG study area with groundwater being the only exposure pathway applicable to the TAG Investigation. TCE is a chlorinated solvent typically used for degreasing operations. Nitrate is principally a degradation product of septic waste. The state and Federal drinking water standard (the maximum contaminant level [MCL]) for TCE is 5 micrograms per liter (µg/L), which is equivalent to 5 parts per billion. The state and Federal MCL for nitrate is 10 milligrams per liter (mg/L), which is equivalent to 10 parts per million (ppm).

The TAG study area is currently defined as an approximately eight-square mile, rectangular area that is centered on the intersection of Wyoming and Hardin Boulevards in the north-central portion of KAFB. The study area is bounded on the east by Manzano Base, on the west by the KAFB boundary along Yale Boulevard, on the north by Lomas Boulevard, and on the south by a line that extends from the Tijeras Arroyo Golf Course to Montessa Park.

The potential release sites of TCE and/or nitrate in the TAG study area include sewage lagoons, waste-water outfalls, septic systems, landfills, sewer lines, and the Tijeras Arroyo Golf Course. Based upon the historical use and disposal of chlorinated solvents, the extent of TCE in groundwater is probably associated with multiple aqueous releases of solvents and subsequent vapor-phase transport through the vadose zone. Nitrate in groundwater is probably derived from the release of sanitary waste and the application of fertilizers.

The hydrogeologic setting of the TAG study area is dominated by two water-bearing zones, the perched system and the regional aquifer, both of which are present within the upper Santa Fe Group. The perched system is not used for water supply. The COA, KAFB, and the Veterans Administration (VA) utilize the regional aquifer for water-supply purposes. In the central portion of the study area, the upper surface of the perched system is present at depths ranging from approximately 220 to 330 feet (ft) below ground surface (bgs); the perched system covers approximately 3.5 square miles and may extend across the northern boundary of KAFB. The direction of groundwater flow in the perched system is to the southeast. Discontinuous, yet overlapping multiple lenses of unsaturated

alluvial-fan sediments serve as a perching horizon beneath the perched system and above the regional aquifer. The upper surface of the regional aquifer is present at approximately 440 to 570 ft bgs in the central portion of the study area. In the TAG study area, the direction of groundwater flow in the regional aquifer is principally to the northwest towards the KAFB, COA, and VA water-supply wells. Groundwater in the perched system merges with the regional aquifer southeast of Tijeras Arroyo. The regional aquifer extends across the entire study area and the Albuquerque Basin.

Historically across the TAG study area, the maximum concentrations of TCE and nitrate in the perched system have been 9.6 µg/L and 44 mg/L, respectively. For the regional aquifer, the historical maximum concentrations of TCE and nitrate have been 3.2 µg/L and 49 mg/L, respectively. The following conclusions can be made:

- The distribution of TCE in the perched system is sporadic across the study area and is indicative of discrete TCE occurrences, not widespread contamination.
- The occurrence of TCE in the regional aquifer is negligible.
- The distribution of nitrate above the background level (4 mg/L) is laterally widespread in the perched system, yet discontinuous across the study area.
- Concentrations of nitrate in the regional aquifer above the background level (4 mg/L) are scattered across the TAG study area.

Constituents of Concern

TCE and nitrate.

Current Hazards

No hazards are present in surface or subsurface soils.

Current Status of Work

The first comprehensive SNL/NM groundwater document was the 1996 Sandia North Groundwater Investigation Plan. A pair of Sandia North status reports were prepared in 1998 and 2000. In late 2000, the term 'Sandia North' was replaced by 'Tijeras Arroyo'. The November 2002 TAG Continuing Investigation Report presents an integrated overview of all the SNL/NM, KAFB, and COA groundwater studies conducted in the TAG study area, and includes well completion diagrams.

The types of studies conducted in the TAG study area include groundwater sampling, soil-vapor sampling, borehole sampling, aquifer testing, colloidal borescope, borehole geophysical surveys, seismic surveys, and site-specific soil sampling. Process knowledge has been acquired by the review of engineering drawings, historical aerial photography, utility plans, and various documents.

As of January 2003, SNL/NM had installed 30 monitoring wells (25 groundwater and 5 soil-vapor) in the TAG study area. KAFB had installed 28 groundwater monitoring wells. The COA had installed 5 groundwater monitoring wells near the Eubank Landfill.

SNL/NM conducted quarterly groundwater sampling in the TAG study area until April 2002, but has since curtailed sampling activities until NMED provides additional guidance. Groundwater sampling results from March/April 2002 are the most recent and complete analytical data set for the TAG study area. Groundwater samples were collected from 50 of the 64 monitoring wells in the current monitoring well network (SNL/NM, KAFB, and COA monitoring wells). The maximum concentration of TCE in the perched system was 7.5 µg/L. Only two of the monitoring wells had TCE concentrations that exceeded the MCL of 5 µg/L. None of the regional-aquifer monitoring wells yielded samples with detectable concentrations of TCE.

For the March/April 2002 sampling event, the maximum concentration of nitrate in the perched system was 30 mg/L. A total of 26 perched-system monitoring wells had nitrate concentrations that exceeded the background level of 4 mg/L. Ten of the 26 perched-system monitoring wells had nitrate concentrations that exceeded the MCL (10 mg/L). For the regional aquifer, the maximum concentration of nitrate was 18 mg/L. A total of eight regional-aquifer monitoring wells had nitrate concentrations that exceeded background (4 mg/L). Three wells had nitrate concentrations that met or exceeded the MCL (10 mg/L).

Future Work Planned

SNL/NM has suspended TAG-related groundwater sampling and drilling until NMED comments are received for the TAG Work Plan (version August 29, 2002). KAFB and the COA continue to collect groundwater samples.

The TAG Work Plan identified data gaps and presented an approach for completing the characterization of TCE and nitrate contamination in groundwater in the TAG study area. Six monitoring wells are proposed for completion in the perched system, assuming that producible quantities of groundwater are encountered at each location. Two of the monitoring wells are proposed for installation on KAFB property. Four more monitoring wells are proposed for the vicinity of the Eubank Landfill. In addition, five soil-vapor boreholes also are proposed; soil-vapor samples will be collected at multiple depths to a maximum depth of approximately 250 ft and analyzed for TCE. A total of 51 groundwater monitoring wells (45 pre-existing and 6 proposed) will be sampled for six quarterly events. The first event will occur after the proposed monitoring wells are installed and properly developed. The groundwater samples will be analyzed using EPA methods 8260 and 353.2 for TCE and nitrate, respectively. Additional parameters will be measured for a select number of monitoring wells to assess aerobic/anaerobic conditions, denitrification potential, and conditions relevant for monitored natural attenuation. After the six groundwater-sampling events are completed, the analytical data will be evaluated to determine if the preparation of the final report is warranted, or if a corrective action is needed.

Waste Volume Estimated/Generated

No hazardous or radioactive waste has been generated.

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Modules

I HWMF Hazardous Waste Management Facility

II TTF Thermal Treatment Facility

III RMWMF Radioactive and Mixed Waste Management Facility

IV Reserved

V AHCF Auxiliary Hot Cell Facility

VI MSB Manzano Storage Bunkers

OVERVIEW

1.0 BACKGROUND

Sandia National Laboratories (SNL) is a multi-purpose engineering and science laboratory owned by the U.S. Department of Energy (DOE) and co-operated by Sandia Corporation (Sandia), a subsidiary of Lockheed Martin, and the DOE. Sandia designs non-nuclear components for the nation's nuclear weapons, performs a wide variety of energy research and development projects, and works on assignments that respond to national security threats. Sandia National Laboratories/New Mexico (SNL/NM) is located on Kirtland Air Force Base (KAFB) southeast of Albuquerque, New Mexico. SNL/NM consists of five technical areas (TAs) and several remote testing areas situated in the eastern half of the 80-square-mile KAFB.

Sandia generates wastes that are regulated under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act and implementing regulations, specifically the New Mexico Administrative Code (NMAC) Title 20, Chapter 4. In this Part B permit request, these wastes are referred to as RCRA-regulated wastes (i.e., wastes that meet the regulatory definition of hazardous or mixed wastes). RCRA-regulated wastes are generated during SNL/NM operations and ongoing corrective actions for solid waste management units (SWMUs). The corrective actions are conducted under the SNL/NM Environmental Restoration (ER) Project.

Since November 19, 1980, Sandia/DOE have managed RCRA-regulated wastes at SNL/NM under the applicable requirements of Title 40 of the Code of Federal Regulations, Parts 260-270, and with the requirements of NMAC Title 20, Chapter 4, as they became effective. Sandia/DOE operations include:

- **Chemical Waste Landfill (CWL).** Sandia/DOE operated the CWL in the southeastern corner of SNL/NM TA-III for disposal of RCRA-regulated wastes under interim status until 1985. Sandia/DOE are closing the landfill under interim status according to a closure plan approved by the New Mexico Environment Department (NMED). Two voluntary corrective measures (VCM) have been performed at the CWL: a vapor extraction VCM, and a landfill excavation VCM. The CWL is a regulated unit under RCRA. Groundwater assessment and monitoring information for the CWL is addressed in this comprehensive Part B permit request. Sandia/DOE will prepare corrective measures documentation as required by the closure plan.

- **Hazardous Waste Management Facility (HWMF).** The HWMF consists of several buildings within a fenced area located south of SNL/NM TA-I. The HWMF is used for storage and packaging of RCRA-regulated wastes. The wastes are transported to off-site RCRA-permitted facilities for treatment, storage, and/or disposal. These wastes are generated during SNL/NM operations and corrective action activities. The Part B hazardous waste operating permit for the HWMF was issued in August 1992 and expired on August 6, 2002. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a request for the renewal of the HWMF operating permit. Sandia/DOE revised most of the request in response to NMED's comments dated October 10, 2002. The complete updated request for renewal of the HWMF operating permit is included in this April 2003 submittal.

- **Thermal Treatment Facility (TTF).** The TTF consists of a burn cage with ancillary equipment located in a fenced area south of Building 6715 in the northern part of SNL/NM TA-III. The TTF is used for thermal treatment of explosive wastes generated by SNL/NM operations. RCRA-regulated treatment residuals are transported to off-site permitted facilities for treatment, storage, and/or disposal. The Part B hazardous waste operating permit for the TTF was issued on November 4, 1994. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a request for the renewal of the TTF operating permit. Sandia/DOE revised most of the request in response to changes in planned operations and NMED's comments dated October 10, 2002. The complete updated request for renewal of the TTF operating permit is included in this April 2003 submittal.

- **Radioactive and Mixed Waste Management Facility (RMWMF).** The RMWMF consists of several buildings within a fenced area located at the southeastern corner of SNL TA-III, west of the CWL. The RMWMF is used for storage, treatment, and packaging of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. RCRA-regulated wastes and treated residues are transported to off-site permitted facilities for treatment, storage, and/or disposal. The RMWMF is operated under interim status. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a Part B permit application for operation of the RMWMF, which superseded the application submitted to the NMED in December 1996. Sandia/DOE revised most of the application in response to NMED's comments dated October 10, 2002. The complete updated application for operation of the RMWMF is included in this April 2003 submittal.

- **High Bay Waste Storage Facility (HBWSF).** The HBWSF is an area within Building 6596 in SNL/NM TA-V. The HBWSF is used for storage and packaging of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. RCRA-regulated wastes are transported to off-site permitted facilities for treatment, storage, and/or disposal. The HBWSF is operated under interim status. The comprehensive Part B permit request submitted to NMED in February 2002 included a Part B permit application for operation of the HBWSF, which superseded the application submitted to the NMED in December 1996. In February 2003, Sandia/DOE decided to withdraw the Part B permit application for the HBWSF. Sandia/DOE continue to operate the Unit under interim status and will submit a revised closure plan to NMED for approval during 2003.

- **Manzano Storage Bunkers (MSB).** The MSB are a set of Units used for storage of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The seven bunkers within the MSB are located within the former Manzano Base in the eastern part of KAFB. RCRA-regulated wastes are typically transported to other SNL/NM Units for storage and/or treatment before being transported to permitted off-site facilities for further treatment, storage, and/or disposal. The MSB are operated under interim status. The comprehensive Part B permit request submitted to NMED in February 2002 included a Part B permit application for operation of the MSB, which superseded the application submitted to the NMED in December 1996. In February 2003, Sandia/DOE decided to withdraw the Part B permit application for two of the bunkers. Sandia/DOE continue to operate the two Units under interim status and will submit a revised

closure plan to NMED for approval during 2003. Sandia/DOE revised much of the application in response to NMED's comments dated October 10, 2002. The complete updated application for operation of the remaining five bunkers in the MSB is included in this April 2003 submittal.

- **Auxiliary Hot Cell Facility (AHCF).** The AHCF is located in Building 6597 in SNL/NM TA-V. The AHCF will be used for treatment, packaging, and storage of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included an application for operation of the AHCF. Sandia/DOE revised most of the application in response to NMED's comments dated October 10, 2002. The complete updated application for operation of the AHCF is included in this April 2003 submittal.

- **Corrective action for SWMUs at SNL/NM.** Sandia/DOE have identified numerous SWMUs throughout SNL/NM, and are conducting corrective action under Module IV of the Part B Permit issued by the U.S. Environmental Protection Agency (EPA) under the 1984 Hazardous and Solid Waste Amendments to RCRA. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included the required information for SWMUs and Areas of Concern (AOCs) that qualify to be on the permit as determined by NMED. Sandia/DOE updated the information in response to NMED's comments dated October 10, 2002. The complete set of updated information is included in this April 2003 submittal.

- **Corrective Action Management Unit (CAMU).** The CAMU was used for staging, treatment, and containment of remediation wastes generated during ER Project activities. The CAMU included staging areas for bulk and containerized waste, a treatment pad, and a containment cell. The CAMU is located at SNL/NM SWMU 107 in the southeastern corner of SNL/NM TA-III, northwest of the CWL and the RMWMF. The 5-year authorization to operate the CAMU under Permit Module IV was issued by EPA on September 25, 1997, and expired on September 20, 2002. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a request for renewal of the operating authorizations associated with the CAMU. Sandia/DOE completed operations at the CAMU in early 2003, and are currently closing the Unit in accordance with an approved closure plan. Sandia/DOE will prepare a post-closure care application during 2003 and submit it to NMED under separate cover.

- CAMU Temporary Unit (TU) for soil stabilization operations. The temporary unit was one of two treatment units used to treat remediation wastes at the CAMU. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a revised and updated request for authorization to operate the TU.

  Sandia/DOE completed operations at the TU in early 2003, and are currently closing the Unit in accordance with an approved closure plan. When closure activities are complete, Sandia/DOE will withdraw the request for authorization of the TU.

- CAMU Low Temperature Thermal Desorption Unit (LTTD) Unit. The LTTD unit was one of two treatment units used to treat remediation wastes at the CAMU. The comprehensive Part B permit request submitted to NMED on February 6,

2002 included a request for continuance of a temporary authorization issued by NMED on August 3, 1998 for operation of the LTTD unit. In NMED's initial response dated March 22, 2002, the NMED determined that the temporary authorization was no longer valid and that a separate permit application for LTTD operation was required. Based on that direction, DOE and Sandia transmitted a newly prepared Class 2 permit modification request for operation of the LTTD unit on June 11, 2002. On September 24, 2002, the NMED transmitted a final approval, with conditions. LTTD operations are now complete and the unit is undergoing closure as approved by the NMED. When closure activities are complete, Sandia/DOE will withdraw the request for authorization of the LTTD unit.

2.0 COMPREHENSIVE PART B PERMIT REQUEST

The operations described in Section 1.0 have been addressed separately in past Sandia/DOE permitting activities. Each unit is included in this comprehensive Part B permit request, as requested by the NMED. The request is organized into five parts.

2.1 Part 1

Part 1 consists of this updated introduction; a summary of Sandia/DOE's public notice activities associated with the original permit request submitted in February 2002, and an updated general RCRA Part A permit request. The RCRA Part A includes a list of RCRA-regulated wastes managed at SNL/NM, types of management activities, capacities, waste volumes, and photographs of each unit.

2.2 Part 2

Part 2 consists of the updated Part B permit renewal request/application for the nine RCRA-regulated waste management units associated with ongoing operations at SNL/NM. Sandia/DOE revised most of the February 2002 request in response to NMED's comments dated October 10, 2002. Part 2 includes complete applications and renewal requests for the HWMF, TTF, RMWMF, AHCF, and five MSB.

In order to minimize redundant information, the permit request is presented in the following format:

- A "general" Part B that serves as an umbrella document. The general Part B contains general and site-wide SNL/NM information applicable to all nine of the waste management units, addressing the general information requirements of NMAC Title 20, Chapter 4.
- Five "modules" – one for the set of five bunkers in the MSB, and one for each of the other units listed above. Each module contains unit-specific information addressing the requirements of NMAC Title 20, Chapter 4. For clarity and consistency, the information in each unit-specific module is arranged in the same order as the information in the General Part B.

The exact order of the information is shown in the table of contents at the beginning of the General Part B and in the tables of contents for each module and section. The General Part B includes a table of regulatory references and the location of the corresponding information in the permit renewal request/application.

2.3 Part 3

Part 3 consists of a revised discussion of the groundwater information for regulated units (the CWL is the only such unit at SNL/NM). The discussion has been revised in response to NMED comments dated October 10, 2002.

2.4 Part 4

Part 4 consists of updated information about SWMUs at SNL/NM. It includes three sections:

- An introduction, including a description of the Sandia/DOE process for identifying SWMUs;
- A summary of the required information for each SWMU and AOC that qualifies to be on the permit as determined by NMED; and
- A summary of supplemental information about Canyons Groundwater, Technical Area III/V Groundwater, and Tijeras Arroyo Groundwater (TAG).

2.5 Part 5

Part 5 has not been updated at this time (April 2003). It consists of the requests for the renewal or continuance of authorization to operate the Corrective Action Management Unit (CAMU), and two associated treatment units, that were submitted to NMED in February 2002.

- Authorization to operate the CAMU and its elements: staging areas for bulk and containerized waste, the treatment pad, and the containment cell.
- Authorization to operate the Temporary Unit (TU) for soil stabilization.
- Authorization to operate the Low-Temperature Thermal Desorption (LTTD) Unit.

The CAMU and associated treatment units, the TU and the LTTD unit, have completed operations and are undergoing closure in accordance with closure plans approved by NMED. A post-closure care application for the CAMU is being prepared. Sandia/DOE will complete the CAMU post-closure care application in 2003 and will request that this submittal be substituted in the comprehensive Part B permit request as the CAMU permit application. For the CAMU treatment units, a request to withdraw the LTTD unit and TU from the comprehensive Part B permit request will be transmitted following completion of the closure process.

Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application

Revision 5.0

April 2003

Prepared by
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185

Prepared for
The U.S. Department of Energy

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MAIL THE COMPLETED FORM TO: The Appropriate EPA Regional or State Office.	United States Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION FORM**	
1. Reason for Submittal (See instructions on page 25) CHECK CORRECT BOX(ES)	**Reason for Submittal:** ☐ To provide initial notification (to obtain an EPA ID Number for hazardous waste, universal waste, or used oil activities). ☐ To provide subsequent notification (to update site identification information). ☐ As a component of a First RCRA Hazardous Waste Part A Permit Application. ☒ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # *5*) ☐ As a component of the Hazardous Waste Report.	
2. Site EPA ID Number (See instructions on page 26)	**EPA ID Number**: *NM5 890 110 518*	
Site Name (See instructions on page 26)	**Name:** *Sandia National Laboratories*	
4. Site Location Information (See instructions on page 26)	**Street Address:** *1515 Eubank Blvd. SE*	
	City, Town, or Village: *Albuquerque*	**State:** *NM*
	County Name: *Bernalillo*	**Zip Code:** *87123*
5. Site Location (See instructions on page 26)	**Site Land Type :** ☐ Private ☐ County ☐ District ☒ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other	
6. North American Industry Classification System (NAICS) Code(s) for the Site (See instructions on page 26)	**A.** *92811*	**B.** *54171*
	C.	**D.**
7. Site Mailing Address (See instructions on page 27)	**Street or P.O. Box:** *P.O. Box 5400, Sandia Site Office*	
	City, Town, or Village: *Albuquerque*	
	State: *NM*	
	Country: *USA*	**Zip Code:** *87185-5400*
8. Site Contact Person (See instructions on page 27)	**First Name:** *John* **MI:**	**Last Name:** *Gould*
	Phone Number: *(505)-845-6089*	**Phone Number Extension:**
9. Legal Owner and Operator of the Site (See instructions on pages 27 and 28)	**A. Name of Site's Legal Owner:** *US Department of Energy*	**Date Became Owner (mm/dd/yyyy):** *11/01/1949*
	Owner Type: ☐ Private ☐ County ☐ District ☒ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other	
	B. Name of site's Operator: *Sandia Corporation*	**Date Became Operator (mm/dd/yyyy):** *11/01/1949*
	Operator Type: ☐ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☒ Other	

EPA ID No.	N	M	5	8	9	0	1	1	0	5	1	8

10. Type of Regulated Waste Activity (Mark 'X' in the appropriate boxes. See instructions on pages 28 to 32)

A. Hazardous Waste Activities

1. Generator of Hazardous Waste
(Choose only one of the following three categories)

[X] a. LQG: Greater than 1,000 kg/mo (2,200 lbs./mo) of non-acute hazardous waste; or

[ ] b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs/mo.) of non-acute hazardous waste; or

[ ] c. CESQG: Less than 100 kg/mo (220 lbs./mo.) of non acute hazardous waste

In addition, indicate other generator activities (check all that apply)

[ ] d. United States Importer of Hazardous Waste

[X] e. Mixed Waste (hazardous and radioactive) Generator

For Items 2 through 6, check all that apply:

[ ] **2. Transporter of Hazardous Waste**

[X] **3. Treater, Storer, or Disposer of Hazardous Waste (at your site)** Note: A hazardous waste permit is required for this activity.

[ ] **4. Recycler of Hazardous Waste (at your site)** Note: A hazardous waste permit may be required for this activity.

5. Exempt Boiler and/or Industrial Furnace

[ ] a. Small Quantity On-site Burner Exemption

[ ] b. Smelting, Melting and Refining Furnace Exemption

[ ] **6. Underground Injection Control**

B. Universal Waste Activities *None*

1. Large Quantity Handler Of Universal Waste (accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste generated and/or accumulated at your site. (check all boxes that apply):

		Generated	Accumulated
a.	Batteries	[ ]	[ ]
b.	Pesticides	[ ]	[ ]
c.	Thermostats	[ ]	[ ]
d.	Lamps	[ ]	[ ]
e.	Other (specify) _____	[ ]	[ ]
f.	Other (specify) _____	[ ]	[ ]
g.	Other (specify) _____	[ ]	[ ]

[ ] **2. Destination Facility for Universal Waste:**
Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities *None*

1. Used Oil Transporter – Indicate Type(s) of Activity(ies)

[ ] a. Transporter

[ ] b. Transfer Facility

2. Used Oil Processor and/or Re-refiner – Indicate Type(s) of Activity(ies)

[ ] a. Processor

[ ] b. Re-refiner

[ ] **3. Off-Specification Used Oil Burner**

4. Used Oil Fuel Marketer – Indicate Type(s) of Activity

[ ] a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner

[ ] b. Marketer Who First Claims the Used Oil Meets the Specifications

11. Description of Hazardous Wastes (See instructions on page 33) *(n/a per instructions)*

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

EPA ID No.	N	M	5	8	9	0	1	1	0	5	1	8

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-regulated hazardous wastes handled at you site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed for waste codes.

12. Comments (See instructions on Page 33)

None

13. 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 managed 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. **(See instructions on page 33)**

Signature of owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Owner: Karen Boardman, Manager, US Department of Energy, Sandia Site Office	
	Co-Operator: Karen Boardman, Manager, US Department of Energy, Sandia Site Office	
	Co-Operator: Donald H. Blanton, Vice President Human Resources & Protection Services, Sandia Corporation	

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact (See instructions on page 35)	**First Name:** *John*	**MI:**	**Last Name:** *Gould*
	Phone Number: *505-845-6089*		**Phone Number Extension:**
2. Facility Permit Contact Mailing Address (See instructions on page 35)	**Street Address:** *P.O. Box 5400, US Department of Energy, Sandia Site Office*		
	City, Town, or Village: *Albuquerque*		**State:** *NM*
	County Name: *USA*		**Zip Code:** *87185-5400*
3. Legal Owner Mailing Address and Telephone Number (See instructions on page 36)	**Street or P.O. Box:** *P.O. Box 5400*		
	City, Town, or Village: *Albuquerque*		
	State: *NM*		
	Country: *USA*	**Zip Code:** *87185-5400*	**Phone Number:** *505-845-4094*
4. Operator Mailing Address and Telephone Number (See instructions on page 36)	**Street or P.O. Box:** *P.O. Box 5800, Department 3100*		
	City, Town, or Village: *Albuquerque*		
	State: *NM*		
	Country: *USA*	**Zip Code:** *87185-5400*	**Phone Number:** *505-844-8516*
5. Facility Existence Date (See instructions on page 36)	**Facility Existence Date (mm/dd/yyyy):** *11/19/1980*		

6. Other Environmental Permits (See instructions on page 36) *See Appendix A*

A. Permit Type	B. Permit Number	C. Description

7. Nature of Business (Provide a brief description; see instructions on page 37)

Sandia National Laboratories/New Mexico is a multi-program research and Development (R&D) laboratory of the U.S. Department of Energy. Missions include R&D related to nuclear weapons, energy, and other programs of national interest.

8. Process Codes and Design Capacities (See instructions on page 37)

A. **PROCESS CODE -** ***Enter the code from the list of process codes below that best describes each process to be used at the facility. Thirteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 9.***

B. PROCESS DESIGN CAPACITY- For each code entered in column A, enter the capacity of the process.

1. AMOUNT - Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.

2. UNIT OF MEASURE - ***For each amount entered in column B(1), enter the code in column B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.***

C. PROCESS TOTAL NUMBER OF UNITS - ***Enter the total number of units for each corresponding process code.***

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Disposal:	
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet; Hectare-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure L isted Below
	Storage:	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Acres; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
	Treatment:	
T01	Tank Treatment	Gallons Per Day; Liters Per Day; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; or Metric Tons Per Hour
T02	Surface Impoundment Treatment	Gallons Per Day; Liters Per Day; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Pounds Per Hour; Short Tons per Day; Kilograms Per Hour; Metric Tons Per Day; or Metric Tons Per Hour
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Gallons Per Day; Liters Per Hour; or Million Btu Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; Btu Per Hour; or Million Btu Per Hour
T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour ; Short Tons Per Hour; Kilograms Per Hour; M etric T ons Per Day; M etric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Liters Per Hour; Kilograms Per Hour; or Million Btu Per Hour
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
T87	Smelting, Melting, or Refining Furnace	Gallons Per Day; Liters Per Day; Pounds Per Hour ; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Gallons Per H our; Liters Per Hour; or Million Btu Per Hour
T88	Titanium Dioxide Chloride Oxidation Reactor	
T89	Methane Reforming Furnace Pulping Liquor Recovery	
T90	Furnace Combustion Device Used In	
T91	The Recovery Of Sulfur Values From Spent Sulfuric Acid Halogen Acid Furnaces Other Industrial Furnaces	
T92	Listed In 40 CFR §260.10	
T93		
T94	Containment Building –Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
	Miscellaneous (Subpart X)	
X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per H our; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour ; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; or Million Btu Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit of Measure Listed Below

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
Galloms	G	Short Tons Per Hour	D	Cubic Yards	Y
Gallons Per Hour	E	Metric Tons Per Hour	W	Cubic Meters	C
Gallons Per Day	U	Short Tons Per Day	N	Acres	B
Liters	L	Metric Tons Per Day	S	Acre-feet	A
Liters Per Hour	H	Pounds Per Hour	J	Hectares	Q
Liters Per Day	V	Kilograms Per Hour	R	Hectare-meter	F
		Million BTU Per Hour	X	BTU Per Hour	I

8. Process Codes and Design Capacities (Continued) *See Appendix B*

EXAMPLE FOR COMPLETING Item 8 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons

Line Number	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
1	S 0 1	586,836.0	G	012	
2	T 0 4	945.0	G	002	
3	T 0 4	52.0	J	004	
4					
5	X 0 1	20.8	G	001	

NOTE: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 37 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
2	T 0 4	120	U	002	Chemical Deactivation
2	T 0 4	220	U	002	Macroencapsulation
2	T 0 4	605	U	002	Stabilization
3	T 0 4	10	J	001	Thermal Deactivation
3	T 0 4	40	J	002	Physical Treatment
3	T 0 4	2	J	001	Amalgamation

10. Description of Hazardous Wastes (See instructions on page 37)

A. EPA HAZARDOUS WASTE NUMBER - Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	*CODE*	*METRIC UNIT OF MEASURE*	*CODE*
POUNDS	*P*	*KILOGRAMS*	*K*
TONS	*T*	*METRIC TONS*	*M*

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

a. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate the waste will be stored, treated, and/or disposed at the facility.

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

i. Enter the first two as described above.
ii. Enter "000" in the extreme right box of Item 10.D(1).
iii. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 10.E.

b. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in Item 10.D(2) or in Item 10.E(2).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

c. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.

d. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.

e. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING Item 10 (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		*A. EPA Hazardous Waste No. (Enter code)*				*B. Estimated Annual Quantity Of Waste*	*C. Unit of Measure (Enter Code)*	*D. PROCESSES*									
								(1) PROCESS CODES (Enter Code)									*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
X	1	K	0	5	4	900	P	T	0	3	D	8	0				
X	2	D	0	0	2	400	P	T	0	3	D	8	0				
X	3	D	0	0	1	100	P	T	0	3	D	8	0				
X	4	D	0	0	2												Include With Above

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
1	P001	125	K	S01				
2	P002	110	K	S01				
3	P003	110	K	S01				
4	P004	110	K	S01				
5	P005	125	K	S01				
6	P006	110	K	S01				
7	P007	110	K	S01				
8	P008	110	K	S01				
9	P009	110	K	S01				
10	P010	110	K	S01				
11	P011	125	K	S01				
12	P012	110	K	S01				
13	P013	110	K	S01				
14	P014	110	K	S01				
15	P015	110	K	S01				
16	P016	110	K	S01				
17	P017	110	K	S01				
18	P018	110	K	S01				
19	P020	110	K	S01				
20	P021	110	K	S01				
21	P022	200	K	S01				
22	P023	110	K	S01				
23	P024	110	K	S01				
24	P026	110	K	S01				
25	P027	110	K	S01				
26	P028	110	K	S01				
27	P029	1,600	K	S01				
28	P030	350	K	S01				
29	P031	110	K	S01				
30	P033	110	K	S01				
31	P034	110	K	S01				
32	P036	110	K	S01				
33	P037	110	K	S01				
34	P038	110	K	S01				
35	P039	110	K	S01				
36	P040	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
37	P041	110	K	S01				
38	P042	110	K	S01				
39	P043	110	K	S01				
40	P044	110	K	S01				
41	P045	110	K	S01				
42	P046	110	K	S01				
43	P047	110	K	S01				
44	P048	110	K	S01				
45	P049	110	K	S01				
46	P050	110	K	S01				
47	P051	110	K	S01				
48	P054	110	K	S01				
49	P056	110	K	S01				
50	P057	110	K	S01				
51	P058	110	K	S01				
52	P059	110	K	S01				
53	P060	110	K	S01				
54	P062	110	K	S01				
55	P063	110	K	S01				
56	P064	250	K	S01				
57	P065	110	K	S01				
58	P066	110	K	S01				
59	P067	110	K	S01				
60	P068	110	K	S01				
61	P069	110	K	S01				
62	P070	110	K	S01				
63	P071	110	K	S01				
64	P072	110	K	S01				
65	P073	110	K	S01				
66	P074	110	K	S01				
67	P075	110	K	S01				
68	P076	110	K	S01				
69	P077	110	K	S01				
70	P078	130	K	S01				
71	P081	110	K	S01				
72	P082	110	K	S01				
73	P084	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
74	P085	110	K	S01				
75	P087	150	K	S01				
76	P088	110	K	S01				
77	P089	110	K	S01				
78	P092	110	K	S01				
79	P093	110	K	S01				
80	P094	110	K	S01				
81	P095	110	K	S01				
82	P096	110	K	S01				
83	P097	110	K	S01				
84	P098	150	K	S01				
85	P099	110	K	S01				
86	P101	110	K	S01				
87	P102	110	K	S01				
88	P103	110	K	S01				
89	P104	200	K	S01				
90	P105	110	K	S01				
91	P106	1100	K	S01				
92	P108	110	K	S01				
93	P109	110	K	S01				
94	P110	110	K	S01				
95	P111	110	K	S01				
96	P112	110	K	S01				
97	P113	150	K	S01				
98	P114	110	K	S01				
99	P115	110	K	S01				
100	P116	110	K	S01				
101	P118	110	K	S01				
102	P119	110	K	S01				
103	P120	125	K	S01				
104	P121	110	K	S01				
105	P122	110	K	S01				
106	P123	110	K	S01				
107	P127	110	K	S01				
108	P128	110	K	S01				
109	P185	110	K	S01				
110	P188	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
111	P189	110	K	S01				
112	P190	110	K	S01				
113	P191	110	K	S01				
114	P192	110	K	S01				
115	P194	110	K	S01				
116	P196	110	K	S01				
117	P197	110	K	S01				
118	P198	110	K	S01				
119	P199	110	K	S01				
120	P201	110	K	S01				
121	P202	110	K	S01				
122	P203	110	K	S01				
123	P204	110	K	S01				
124	P205	110	K	S01				
125	U001	110	K	S01				
126	U002	1,100	K	S01				
127	U003	350	K	S01				
128	U004	110	K	S01				
129	U005	110	K	S01				
130	U006	110	K	S01				
131	U007	110	K	S01				
132	U008	200	K	S01				
133	U009	110	K	S01				
134	U010	110	K	S01				
135	U011	110	K	S01				
136	U012	125	K	S01				
137	U014	110	K	S01				
138	U015	110	K	S01				
139	U016	110	K	S01				
140	U017	110	K	S01				
141	U018	110	K	S01				
142	U019	250	K	S01				
143	U020	110	K	S01				
144	U021	110	K	S01				
145	U022	110	K	S01				
146	U023	110	K	S01				
147	U024	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
148	U025	110	K	S01				
149	U026	110	K	S01				
150	U027	110	K	S01				
151	U028	5,100	K	S01				
152	U029	110	K	S01				
153	U030	110	K	S01				
154	U031	600	K	S01				
155	U032	600	K	S01				
156	U033	110	K	S01				
157	U034	110	K	S01				
158	U035	150	K	S01				
159	U036	600	K	S01				
160	U037	150	K	S01				
161	U038	110	K	S01				
162	U039	110	K	S01				
163	U041	110	K	S01				
164	U042	110	K	S01				
165	U043	110	K	S01				
166	U044	250	K	S01				
167	U045	125	K	S01				
168	U046	110	K	S01				
169	U047	110	K	S01				
170	U048	110	K	S01				
171	U049	110	K	S01				
172	U050	110	K	S01				
173	U051	175	K	S01				
174	U052	125	K	S01				
175	U053	110	K	S01				
176	U055	125	K	S01				
177	U056	350	K	S01				
178	U057	125	K	S01				
179	U058	110	K	S01				
180	U059	110	K	S01				
181	U060	110	K	S01				
182	U061	110	K	S01				
183	U062	110	K	S01				
184	U063	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
185	U064	110	K	S01				
186	U066	110	K	S01				
187	U067	125	K	S01				
188	U068	110	K	S01				
189	U069	200	K	S01				
190	U070	150	K	S01				
191	U071	110	K	S01				
192	U072	110	K	S01				
193	U073	110	K	S01				
194	U074	110	K	S01				
195	U075	300	K	S01				
196	U076	110	K	S01				
197	U077	300	K	S01				
198	U078	150	K	S01				
199	U079	150	K	S01				
200	U080	1,100	K	S01				
201	U081	110	K	S01				
202	U082	110	K	S01				
203	U083	110	K	S01				
204	U084	110	K	S01				
205	U085	110	K	S01				
206	U086	110	K	S01				
207	U087	110	K	S01				
208	U088	110	K	S01				
209	U089	110	K	S01				
210	U090	110	K	S01				
211	U091	110	K	S01				
212	U092	110	K	S01				
213	U093	110	K	S01				
214	U094	110	K	S01				
215	U095	110	K	S01				
216	U096	110	K	S01				
217	U097	110	K	S01				
218	U098	110	K	S01				
219	U099	110	K	S01				
220	U101	110	K	S01				
221	U102	120	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
222	U103	110	K	S01				
223	U105	110	K	S01				
224	U106	110	K	S01				
225	U107	150	K	S01				
226	U108	150	K	S01				
227	U109	110	K	S01				
228	U110	110	K	S01				
229	U111	110	K	S01				
230	U112	1,100	K	S01				
231	U113	110	K	S01				
232	U114	110	K	S01				
233	U115	110	K	S01				
234	U116	110	K	S01				
235	U117	130	K	S01				
236	U118	110	K	S01				
237	U119	110	K	S01				
238	U120	110	K	S01				
239	U121	300	K	S01				
240	U122	600	K	S01				
241	U123	135	K	S01				
242	U124	110	K	S01				
243	U125	110	K	S01				
244	U126	110	K	S01				
245	U127	110	K	S01				
246	U128	110	K	S01				
247	U129	110	K	S01				
248	U130	110	K	S01				
249	U131	150	K	S01				
250	U132	125	K	S01				
251	U133	350	K	S01				
252	U134	2,100	K	S01				
253	U135	175	K	S01				
254	U136	110	K	S01				
255	U137	110	K	S01				
256	U138	110	K	S01				
257	U140	150	K	S01				
258	U141	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
259	U142	110	K	S01				
260	U143	110	K	S01				
261	U144	400	K	S01				
262	U145	110	K	S01				
263	U146	110	K	S01				
264	U147	200	K	S01				
265	U148	110	K	S01				
266	U149	110	K	S01				
267	U150	110	K	S01				
268	U151	1,400	K	S01				
269	U152	110	K	S01				
270	U153	110	K	S01				
271	U154	600	K	S01				
272	U155	110	K	S01				
273	U156	110	K	S01				
274	U157	110	K	S01				
275	U158	125	K	S01				
276	U159	225	K	S01				
277	U160	150	K	S01				
278	U161	150	K	S01				
279	U162	200	K	S01				
280	U163	110	K	S01				
281	U164	110	K	S01				
282	U165	1,100	K	S01				
283	U166	110	K	S01				
284	U167	110	K	S01				
285	U168	110	K	S01				
286	U169	300	K	S01				
287	U170	110	K	S01				
288	U171	125	K	S01				
289	U172	110	K	S01				
290	U173	110	K	S01				
291	U174	110	K	S01				
292	U176	110	K	S01				
293	U177	150	K	S01				
294	U178	150	K	S01				
295	U179	200	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
296	U180	200	K	S01				
297	U181	150	K	S01				
298	U182	125	K	S01				
299	U183	125	K	S01				
300	U184	125	K	S01				
301	U185	125	K	S01				
302	U186	150	K	S01				
303	U187	110	K	S01				
304	U188	125	K	S01				
305	U189	110	K	S01				
306	U190	110	K	S01				
307	U191	110	K	S01				
308	U192	110	K	S01				
309	U193	110	K	S01				
310	U194	110	K	S01				
311	U196	125	K	S01				
312	U197	110	K	S01				
313	U200	110	K	S01				
314	U201	125	K	S01				
315	U202	110	K	S01				
316	U203	110	K	S01				
317	U204	125	K	S01				
318	U205	110	K	S01				
319	U206	110	K	S01				
320	U207	110	K	S01				
321	U208	110	K	S01				
322	U209	120	K	S01				
323	U210	125	K	S01				
324	U211	200	K	S01				
325	U213	450	K	S01				
326	U214	110	K	S01				
327	U215	110	K	S01				
328	U216	110	K	S01				
329	U217	110	K	S01				
330	U218	110	K	S01				
331	U219	125	K	S01				
332	U220	600	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
333	U221	110	K	S01				
334	U222	110	K	S01				
335	U223	1,100	K	S01				
336	U225	150	K	S01				
337	U226	4,100	K	S01				
338	U227	1,600	K	S01				
339	U228	1,100	K	S01				
340	U234	110	K	S01				
341	U235	110	K	S01				
342	U236	110	K	S01				
343	U237	110	K	S01				
344	U238	110	K	S01				
345	U239	350	K	S01				
346	U240	110	K	S01				
347	U243	110	K	S01				
348	U244	110	K	S01				
349	U246	110	K	S01				
350	U247	110	K	S01				
351	U248	110	K	S01				
352	U249	110	K	S01				
353	U271	110	K	S01				
354	U278	110	K	S01				
355	U279	110	K	S01				
356	U280	110	K	S01				
357	U328	110	K	S01				
358	U353	110	K	S01				
359	U359	200	K	S01				
360	U364	110	K	S01				
361	U367	110	K	S01				
362	U372	110	K	S01				
363	U373	110	K	S01				
364	U387	110	K	S01				
365	U389	110	K	S01				
366	U394	110	K	S01				
367	U395	110	K	S01				
368	U404	110	K	S01				
369	U409	110	K	S01				

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
370	U410	110	K	S01				
371	U411	110	K	S01				
372	F001	265,000	K	S01	T04	X02	X03	
373	F002	272,000	K	S01	T04	X02	X03	
374	F003	275,000	K	S01	T04	X02	X03	
375	F004	1,500	K	S01	T04	X02	X03	
376	F005	262,000	K	S01	T04	X02	X03	
377	F006	200	K	S01				
378	F007	6,500	K	S01				
379	F008	200	K	S01				
380	F009	200	K	S01				
381	F010	200	K	S01				
382	F011	200	K	S01				
383	F012	100	K	S01				
384	F019	100	K	S01				
385	F020	100	K	S01				
386	F021	100	K	S01				
387	F022	100	K	S01				
388	F023	100	K	S01				
389	F024	100	K	S01				
390	F025	100	K	S01				
391	F026	100	K	S01				
392	F027	150	K	S01				
393	F028	100	K	S01				
394	FO32	100	K	S01				
395	F034	100	K	S01				
396	F035	100	K	S01				
397	F037	100	K	S01				
398	F038	100	K	S01				
399	F039	250,000	K	S01	T04			
400	D001	125,500	K	S01	T04	X02	X03	
401	D002	58,000	K	S01	T04	X02		
402	D003	41,000	K	S01	T04	X03		
403	D004	39,000	K	S01	T04	X02		
404	D005	48,000	K	S01	T04	X02		
405	D006	105,000	K	S01	T04	X02		
406	D007	66,000	K	S01	T04	X02		

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
407	D008	125,000	K	S01	T04	X02		
408	D009	40,000	K	S01	T04	X02		
409	D010	2,000	K	S01	T04	X02		
410	D011	45,000	K	S01	T04	X02	X03	
411	D012	25,050	K	S01				
412	D013	150	K	S01				
413	D014	150	K	S01				
414	D015	150	K	S01				
415	D016	150	K	S01				
416	D017	150	K	S01				
417	D018	32,000	K	S01	T04	X02		
418	D019	25,200	K	S01	T04	X02		
419	D020	25,050	K	S01	T04	X02		
420	D021	25,100	K	S01	T04	X02		
421	D022	26,000	K	S01	T04	X02		
422	D023	25,050	K	S01	T04	X02		
423	D024	25,050	K	S01	T04	X02		
424	D025	25,050	K	S01	T04	X02		
425	D026	25,100	K	S01	T04	X02		
426	D027	25,100	K	S01	T04	X02		
427	D028	26,000	K	S01	T04	X02		
428	D029	25,100	K	S01	T04	X02		
429	D030	25,500	K	S01	T04	X02		
430	D031	25,050	K	S01	T04	X02		
431	D032	25,100	K	S01	T04	X02		
432	D033	25,100	K	S01	T04	X02		
433	D034	25,500	K	S01	T04	X02		
434	D035	40,000	K	S01	T04	X02		
435	D036	25,100	K	S01	T04	X02		
436	D037	25,100	K	S01	T04	X02		
437	D038	25,100	K	S01	T04	X02		
438	D039	27,000	K	S01	T04	X02		
439	D040	30,000	K	S01	T04	X02		
440	D041	25,050	K	S01	T04	X02		
441	D042	25,050	K	S01	T04	X02		
442	D038	25,100	K	S01	T04	X02		
443	D039	27,000	K	S01	T04	X02		

10. Description of Hazardous Wastes

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES (1) PROCESS CODES (Enter Code)				D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
444	D040	30,000	K	S01	T04	X02		
445	D041	25,050	K	S01	T04	X02		
446	D042	25,050	K	S01	T04	X02		
447	D043	25,050	K	S01	T04	X02		

11. Map (See instructions on page 38 : *See Figure B-1*

Attach to this application a topographic map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

12. Facility Drawing (See instructions on Page 39: *See Appendix B*

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

13. Photographs (See instructions on page 39): *See Appendix B*

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

14. Comments (See instructions on page 39)

APPENDIX A

ACTIVE ENVIRONMENTAL PERMITS

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Sandia National Laboratories/New Mexico
Active Environmental Permits as of 03/31/03

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
SEWER WASTEWATER				
General	2069 A-5	0323/00	06/30/03	COA
General	2069 F-5	01/3/00	07/31/03	COA
Microelectronics Development Laboratory	2069 G-5	06/01/02	05/31/05	COA
General	2069 I-4	01/24/00	01/31/04	COA
General	2069 K-4	03/01/02	10/31/04	COA
SURFACE DISCHARGE				
Pulsed Power Development Facilities (Discharge Plan)	DP-530	09/21/01	09/21/06	NMED
STORM WATER				
National Pollution Discharge Elimination System "Multi-sector General" Permit	NMR05A961	02/01	09/30/05	EPA
Storm Drain, Sanitary Sewer, and Domestic Water System Modernization	NMR10B507	06/29/99	06/31/03 (estimated date)	EPA
NPDES construction permit for the Joint Computational Engineering Laboratory	[b]	04/20/02	10/03	EPA
Joint Computational Engineering Laboratory	[b]	01/28/02	07/31/09 (estimated date)	EPA
ECOLOGICAL				
New Mexico Department of Game and Fish, for Scientific/Educational Purposes, Authorization for Taking of Protected Wildlife	2931	01/01/02	12/31/02 [a]	New Mexico Department of Game and Fish
Fish and Wildlife Special Purpose Salvage Permit (for migratory birds)	MB040780-0	05/30/01	12/31/03	U.S. Fish and Wildlife Service
UNDERGROUND STORAGE TANKS				
9,750 gal emergency generator fuel		07/1/01	06/30/03	NMED, PST Bur.
20,000 gal oil storage tank		07/1/01	06/30/03	NMED, PST Bur.
20,000 gal oil storage tank		07/1/01	06/30/03	NMED, PST Bur.

NOTE:
[a] Applied for permit renewal, not yet received.
[b] Permit number not issued yet.
COA = City of Albuquerque
NMED = New Mexico Environment Department
EPA = U.S. Environmental Protection Agency
PST Bur. = Petroleum Storage Tank Bureau

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 03/31/03 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
ABOVEGROUND STORAGE TANKS				
1,024,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
508,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
213,898 gal storage tank	[b]	07/01/02	06/30/03	NMED
209,421 gal storage tank	[b]	07/01/02	06/30/03	NMED
45,490 gal storage tank	[b]	07/01/02	06/30/03	NMED
44,129 gal storage tank	[b]	07/01/02	06/30/03	NMED
10,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
10,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
10,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
75,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
75,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
75,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
250,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
250,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
250,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
250,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
250,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
250,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
250,000 gal storage tank	[b]	07/01/02	06/30/03	NMED
25,000 gal storage tank	[b]	07/01/02	06/30/03	NMED

NOTE:
[b] Permit number not issued yet.
NMED = New Mexico Environment Department

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 03/31/03 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
RCRA				
RCRA Part B Operating Permit for the Hazardous Waste Management Facility Module I - General Permit Conditions Module II - General Facility Conditions Module III - Containers	NM5890110518-1	08/06/92	08/06/02 [c]	NMED
RCRA Part B Operating Permit Module IV - Hazardous and Solid Waste Amendments Portion for Solid Waste Management Units	NM5890110518-1	08/26/93	09/20/02 [c]	EPA/NMED
RCRA Part B Operating Permit for the Thermal Treatment Facility Module I - General Permit Conditions Module II - General Facility Conditions Module III - Containers	NM5890110518-2	12/04/94	12/04/04 [c]	NMED
General Part A Permit Request Storage and/or treatment of RCRA-regulated waste at twelve waste management Units.	NM5890110518	First submitted 8/90 Rev. 4, 05/28/02	Pending Review (No expiration date)	NMED
Class III Permit Modification for the Management of Hazardous Remediation Waste in the Corrective Action Management Unit (CAMU), Technical Area III	NM5890110518	09/25/97	09/20/02 [c]	NMED
Class II Permit Modification for Temporary Treatment Operations at the CAMU	NM5890110518	04/04/02	One year after TU is ready for operation	NMED
Class II Permit Modification for Low Temperature Thermal Desorption Treatment Operations at the CAMU	NM5890110518	09/24/02	None	NMED
Comprehensive Part B Permit Request Storage and/or treatment of RCRA-regulated waste at nine waste management Units.	NM5890110518	02/06/02 [c]		NMED
TSCA				
Risk-Based Approval Request under 40 CFR 761.61(c); Risk-Based Method for Management of PCB Materials; Chemical Waste Landfill and CAMU		06/26/02	No expiration date	EPA

NOTE:

[a] Applied for permit renewal; not yet received

[c] Submitted application for renewal on 02/06/2002, undergoing agency review.EPA = U.S. Environmental Protection Agency

NMED = New Mexico Environment Department

RCRA = Resource Conservation and Recovery Act

TSCA = Toxic Substances Control Act

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 01/22/02 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
AIR (Open Burn Permits)				
Fire Extinguisher (Fire Training)		[d]		COA
Burn Site		[d]		COA
Burn Site/Sled Track		[d]		COA
Burn Site (Large Pool Fire Tests)		[d]		COA
Explosive Testing		[d]		COA
9920 and Sled Track		[d]		COA
Thermal Treatment Facility (permit must be submitted to NMED within 30 days of receipt)	76-OB-5-2003	03/21/03	12/31/03	COA
AIR (Permits & Registrations)				
Hammermill Facility	144	08/28/85	Biennial update	COA
Fire Laboratory used for the Authentication of Modeling and Experiments	196	05/19/88	Registration[†]	COA
Neutron Generator Facility	374- MI	07/17/98	Biennial update	COA
Neutron Generator Recertification	396	05/07/96	Biennial update	COA
Standby diesel generators (four)	402	05/07/96	Biennial update	COA
Radioactive & Mixed Waste Management Facility	415- M1	11/24/99	Biennial update	COA
Isotope Production Facility	428	07/08/96	Biennial update	COA
Title V Operating Permit	515 (pending)	Submitted [a] 03/1/96	Pending (5 yr renewal)	COA
Classified Waste Landfill	560	12/17/96	Biennial update	COA
Classified Waste Landfill	NESHAP	06/96	Approval [††]	EPA
Advanced Manufacturing Processes Laboratory	646	01/23/97	Biennial update	COA
Portable Burn Pools	647	05/05/97	Biennial update	COA
Chemical Waste Landfill (CWL) Excavation	540	5/19/99	Registration [†]	COA
Chemical Waste Landfill -Voluntary Corrective Measure	648	05/23/97	Registration [†]	COA
Soil Washing / Soil Stabilization Unit, CAMU	888-M1	08/21/02	Biennial update	COA
High Energy Radiation Megavolt Electron Source-III	NESHAP	6/29/88	Approval [††]	EPA
Advanced Manufacturing Prototype Facility	1406	11/6/00	Registration [†]	COA
Microelectronics Development Laboratory	1678	12/23/02	Biennial update	COA
Emergency Generator	924	5/5/98	Biennial update	COA
Processing and Environmental Technology Laboratory	925-M1	03/05/01	Biennial update	COA

NOTE:

[a] Applied for permit renewal; not yet received

[d] COA issues open burn permits annually. Sandia/DOE have applied for/will apply for this permit for calendar year 2003.

[†] Registration = Certificate, no permit required.

[††] Approval = EPA does not issue a permit.

EPA = U.S. Environmental Protection Agency

APPENDIX B

LOCATION-SPECIFIC PROCESS CODE LISTINGS, DESIGN CAPACITIES, FIGURES, AND PHOTOGRAPHS

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Explanation of Process Code Listings and Design Capacities at the Hazardous Waste Management Facility

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	99,950 gallons	Building 958
Container storage area	7,590 gallons	Building 959
Container storage area	5,005 gallons	Modular Storage Building 958B
Container storage area	5,005 gallons	Modular Storage Building 958C
Total S01	**117,550 gallons**	

Explanation of Process Code Listings and Design Capacities at the Thermal Treatment Facility

Description	Capacity	Associated Structure/Building
Line 5 X01 Treatment: Thermal		
Thermal treatment of explosive waste	20.8 gallons/batch 190 pounds/batch	South of Building 6715
Total X01	**20.8 gallons/batch** **190 pounds /batch**	

Explanation of Process Code Listings and Design Capacities at the Radioactive and Mixed Waste Management Facility

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	13,420 gallons	Building 6920
Container storage area	7,810 gallons	Building 6921
Container storage area	83,160 gallons	Building 6925
Container storage area	83,160 gallons	Building 6926
Container storage area	1,100 gallons	Modular Storage Building
Container storage area	1,100 gallons	Modular Storage Building
Container storage area	19,800 gallons	Asphalt area N, E, and W of Building 6920
Total S01	**209,550 gallons**	

Line 3 T04 Other Treatment (in containers)		
Chemical deactivation	65 gallons/day	Building 6920, Building 6921
Macroencapsulation	165 gallons/day	Building 6920, Building 6921, Building 6925
Stabilization	550 gallons/day	Building 6920, Building 6921
Thermal deactivation	10 pounds/hour	Building 6920
Amalgamation	2 pounds/hour	Building 6920, Building 6921
Total T04	**780 gallons/day and 12 pounds/hour**	

Line 4 T04 Other Treatment (physical treatment)		
Physical treatment	20 pounds/hour	Building 6920, Building 6921
Total T04	**20 pounds/hour**	

Explanation of Process Code Listings and Design Capacities at the High Bay Waste Storage Facility

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	100,320 gallons	Building 6596
Total S01	**100,320 gallons**	

Explanation of Process Code Listings and Design Capacities at the Auxiliary Hot Cell Facility

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	2,200 gallons	Building 6597
Storage silos	1,456 gallons	Building 6597
Total S01	**3,656 gallons**	
Line 2 T04 Other Treatment (in containers)		
Chemical deactivation	55 gallons/day	Building 6597
Macroencapsulation	55 gallons/day	Building 6597
Stabilization	55 gallons/day	Building 6597
Total T04	**165 gallons/day**	
Line 4 T04 Other Treatment (physical treatment)		
Physical treatment	20 pounds/hour	Building 6597
Total T04	**20 pounds/hour**	

Explanation of Process Code Listings and Design Capacities at the Manzano Storage Bunkers

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage		
Container storage area	50,160 gallons	Type B Bunkers Bunkers 37034 and 37063
Container storage area	50, 160 gallons	Type C Bunkers Bunkers 37078 and 37118
Container storage area	55,440 gallons	Type D Bunkers Bunkers 37045, 37055, and 37057
Total S01	**155,760 gallons**	

LOCATION-SPECIFIC PROCESS CODE LISTINGS AND DESIGN CAPACITIES

FIGURES

TO VIEW THE MAP/MAPS ASSOCIATED WITH THIS DOCUMENT PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

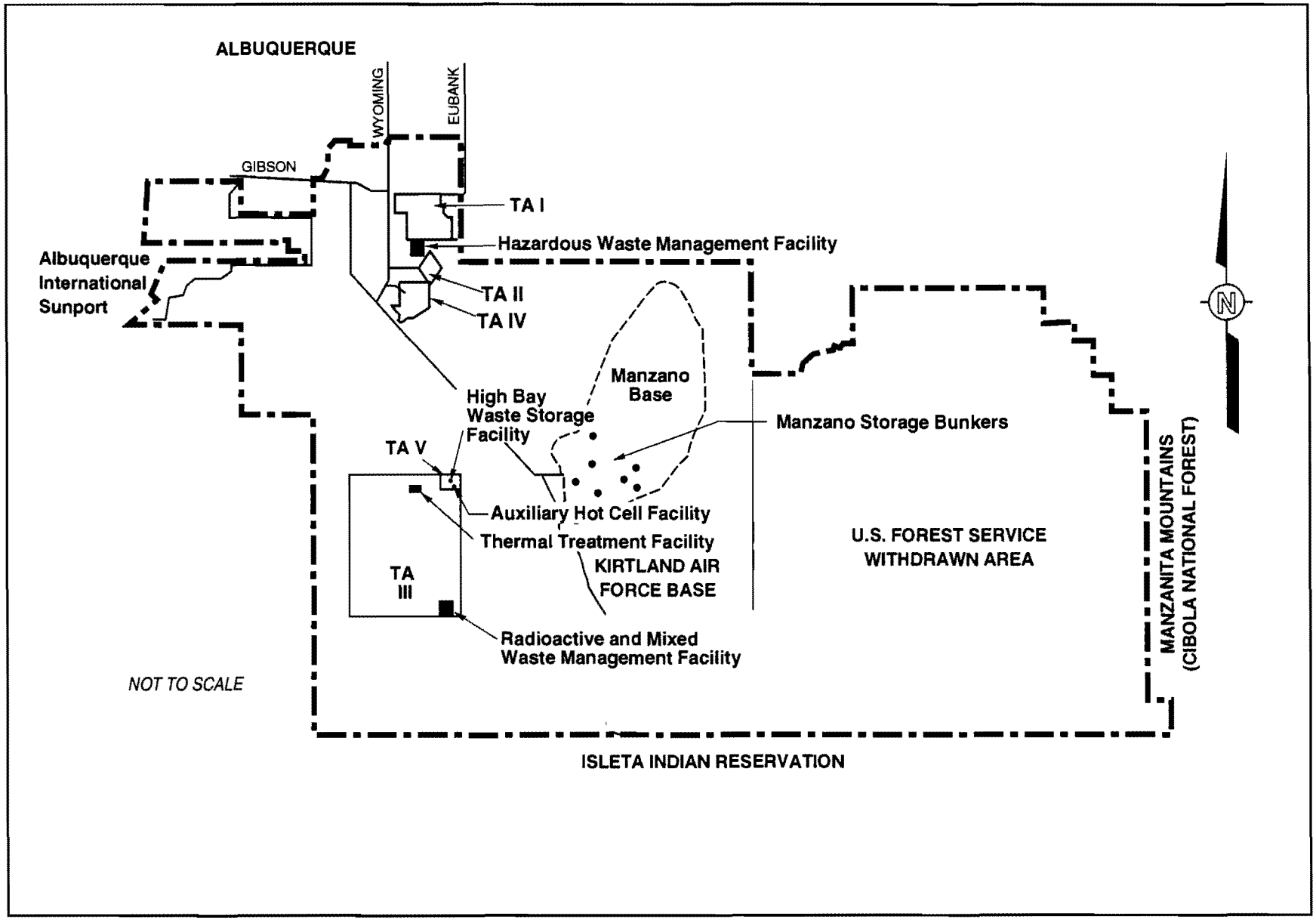


Figure B-2

Sandia National Laboratories/New Mexico, Technical Areas (TAs) and Resource Conservation and Recovery Act-Regulated Waste Management Units

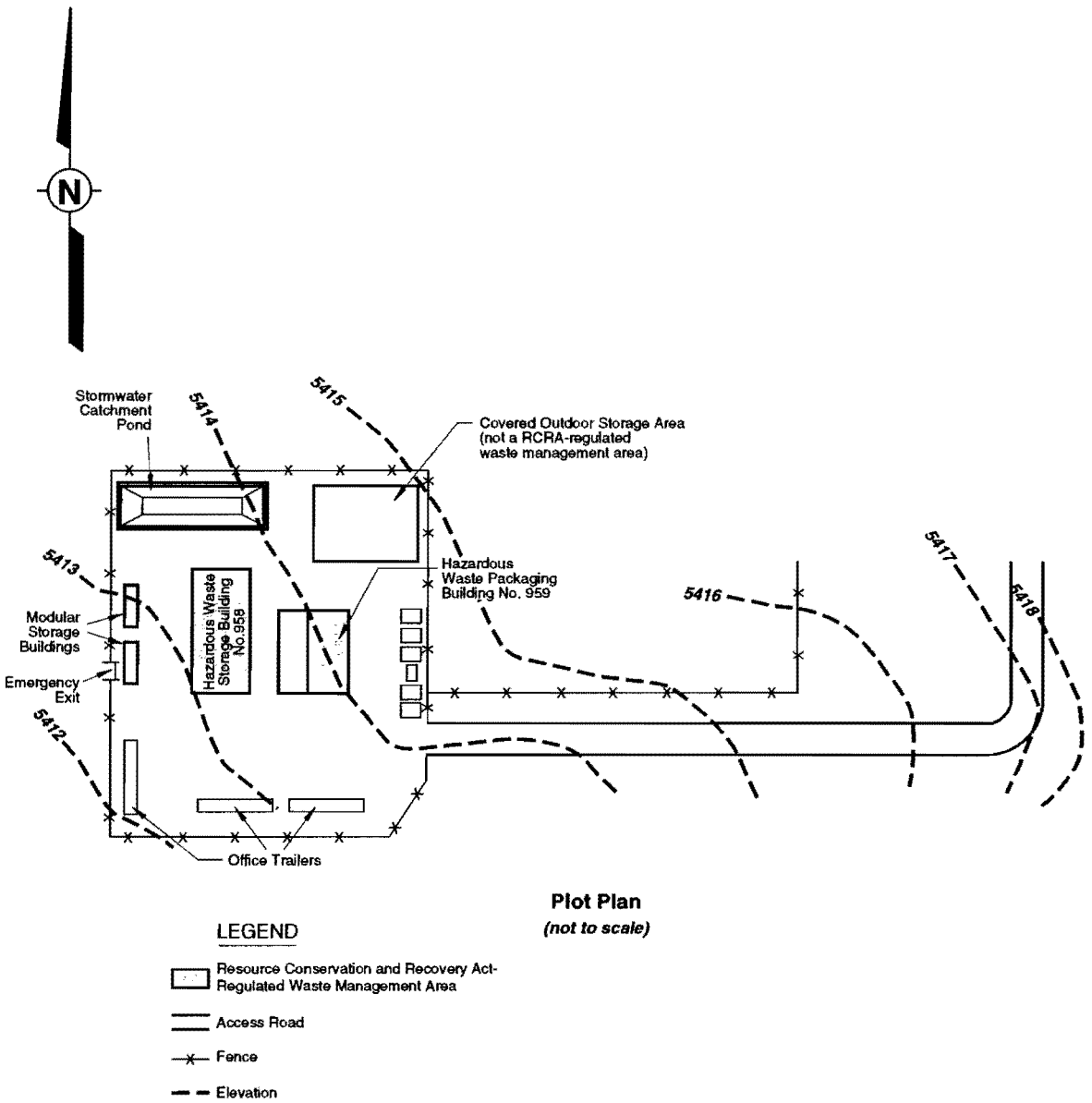
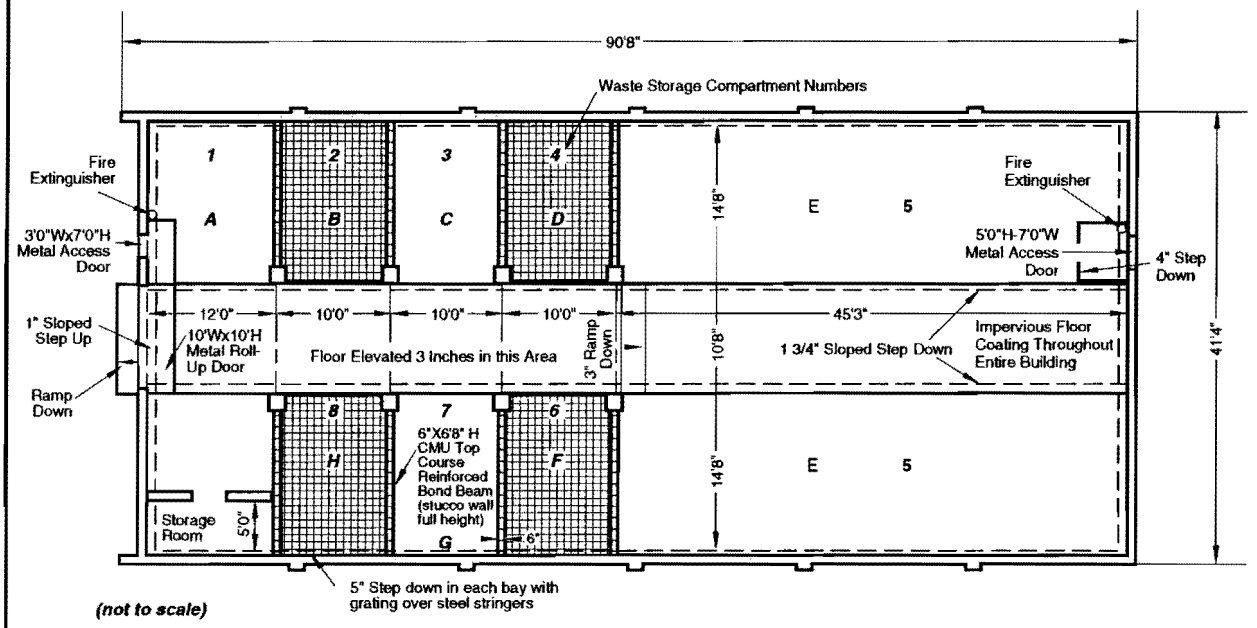


Figure B-3
Hazardous Waste Management Facility, Resource Conservation and Recovery Act-Regulated Waste Management Areas

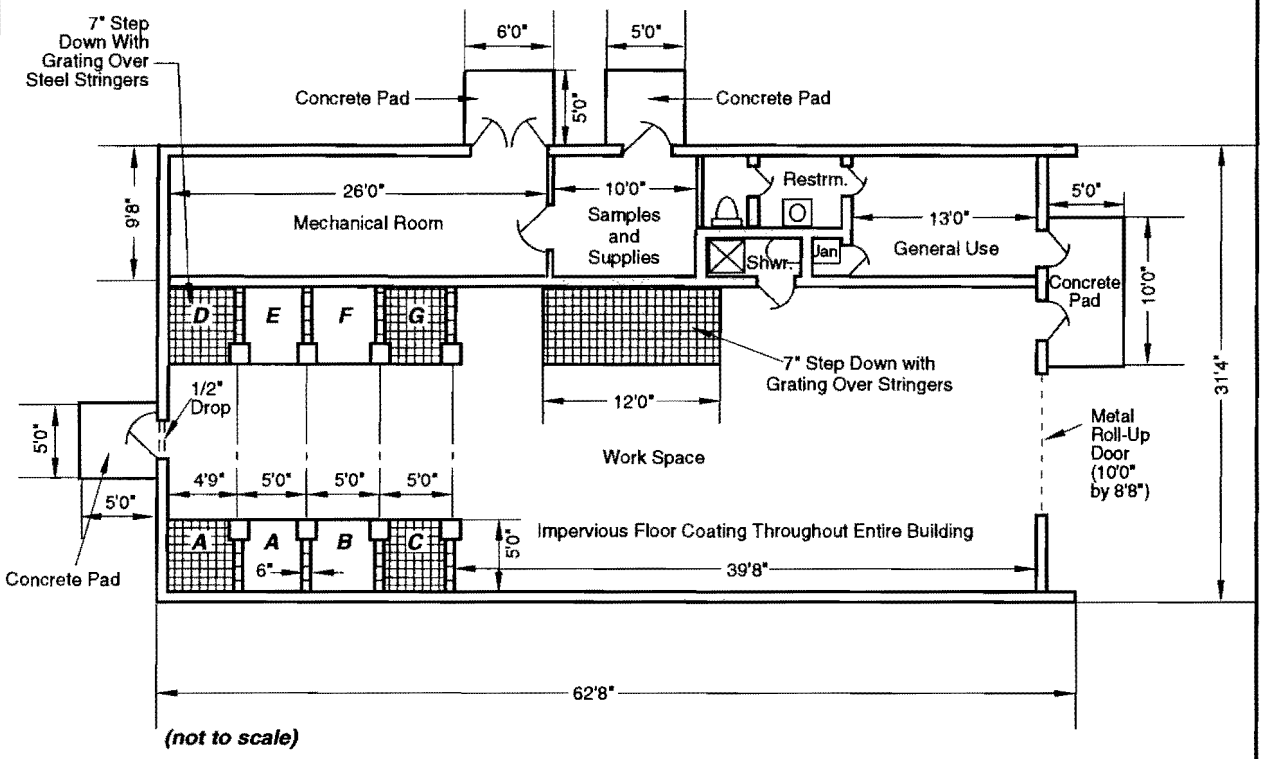


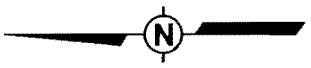
Typical Waste Segregation Groups

- A Holding Bay
- B Poisons
- C Flammables
- D Oxidizers
- E Hydrocarbons, Organics, Solvents, Non-Regulated Wastes
- F Corrosives (caustics)
- G Corrosives (acids or caustics)
- H Corrosives (acids)

Note: Cells 1-4 and 6-8 are constructed with a 5" step down and grating over steel stringers. Cell 5 is not equipped with grating.

Figure B-4
Hazardous Waste Storage Building (Building 958), Floor Plan



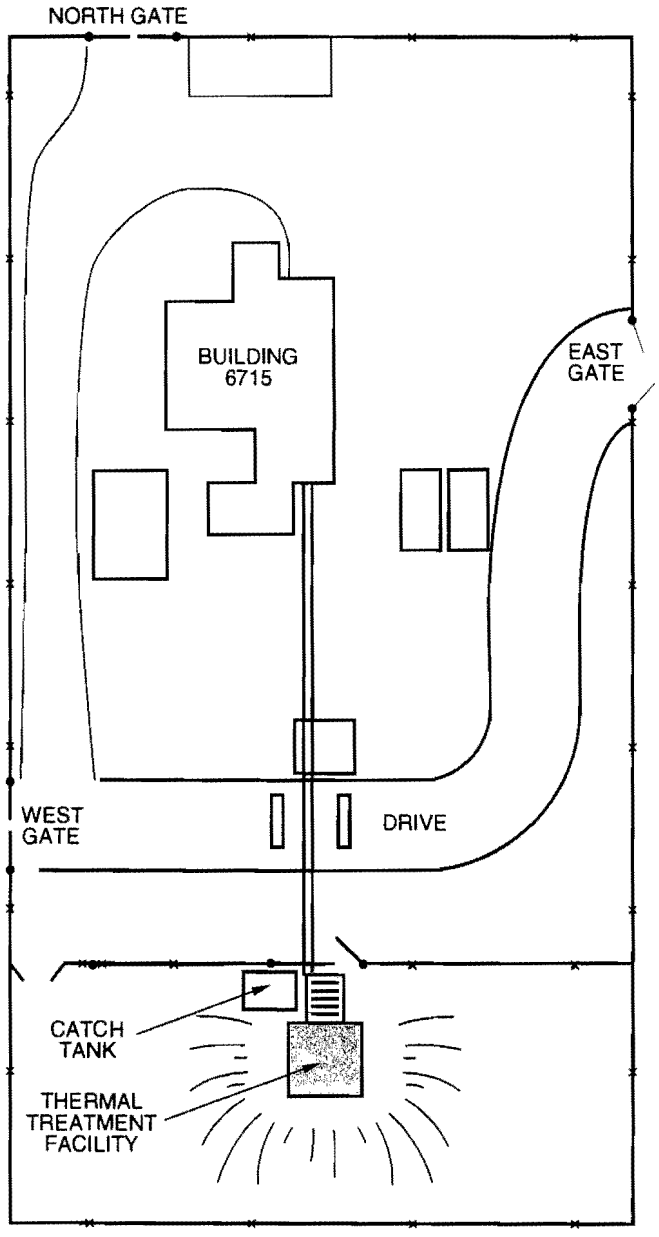


Typical Waste Segregation Groups

A Hydrocarbons, Organics, and Solvents
B Class 9 Solids and Liquids
C Poisons
D Oxidizing Mineral Acids, Non-Acidic Oxidizers
E Non-Regulated Waste
F Caustics
G Organic Acids, Non-Oxidizing Mineral Acids, Mercury

Note: All storage cells equipped as shown for Cell D: 7" step down and steel grating over stringers.

Figure B-5
Hazardous Waste Packaging Building (Building 959), Floor Plan



SITE SKETCH NOT TO SCALE

LEGEND

- Resource Conservation And Recovery Act-Regulated Waste Management Area
- Access Road
- Fence
- Gate
- Steps
- Earthen Berm

Figure B-6
Thermal Treatment Facility,
Resource Conservation and Recovery Act-Regulated Waste Management Area

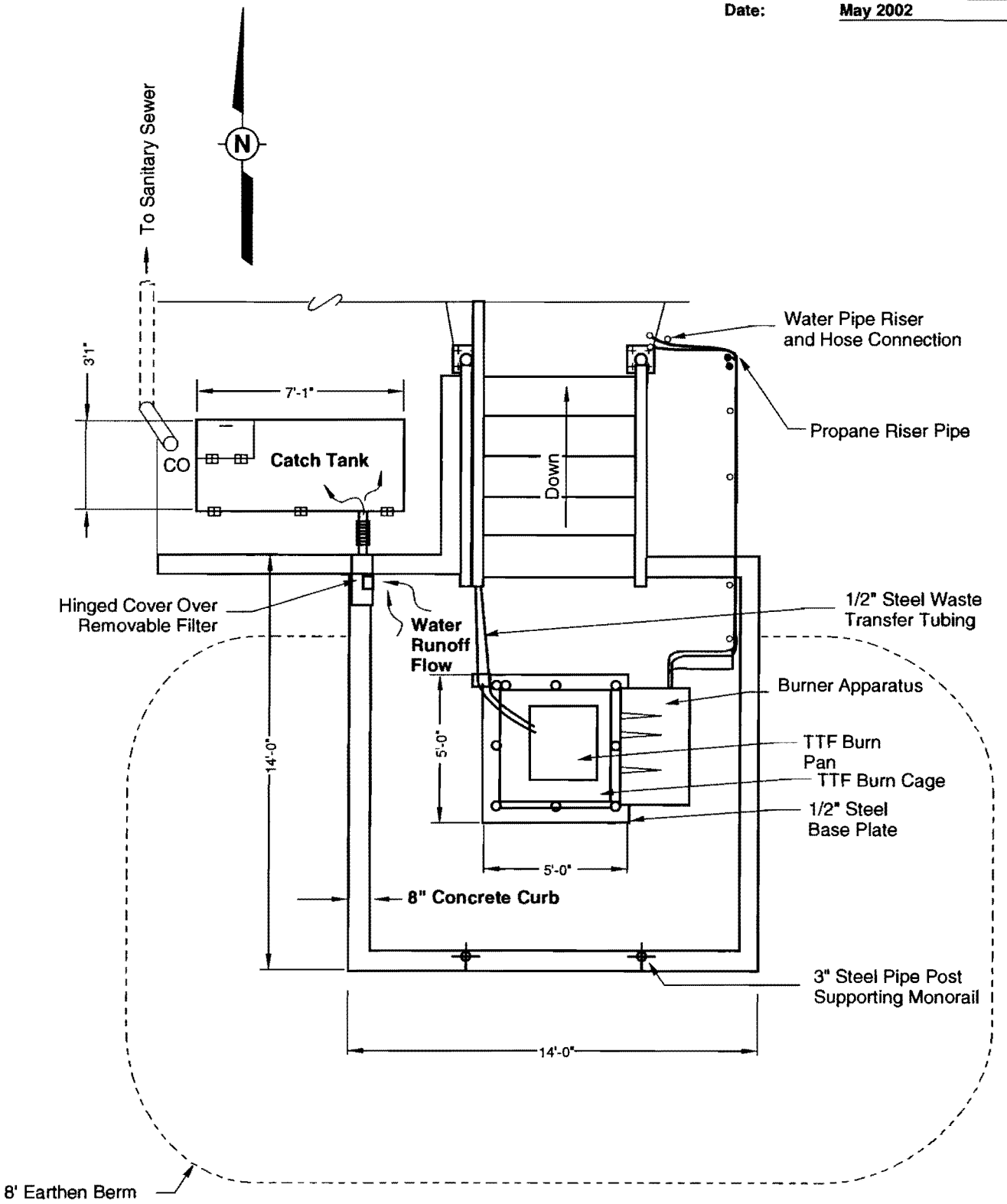


Figure B-7
Thermal Treatment Facility (TTF)—Plan View

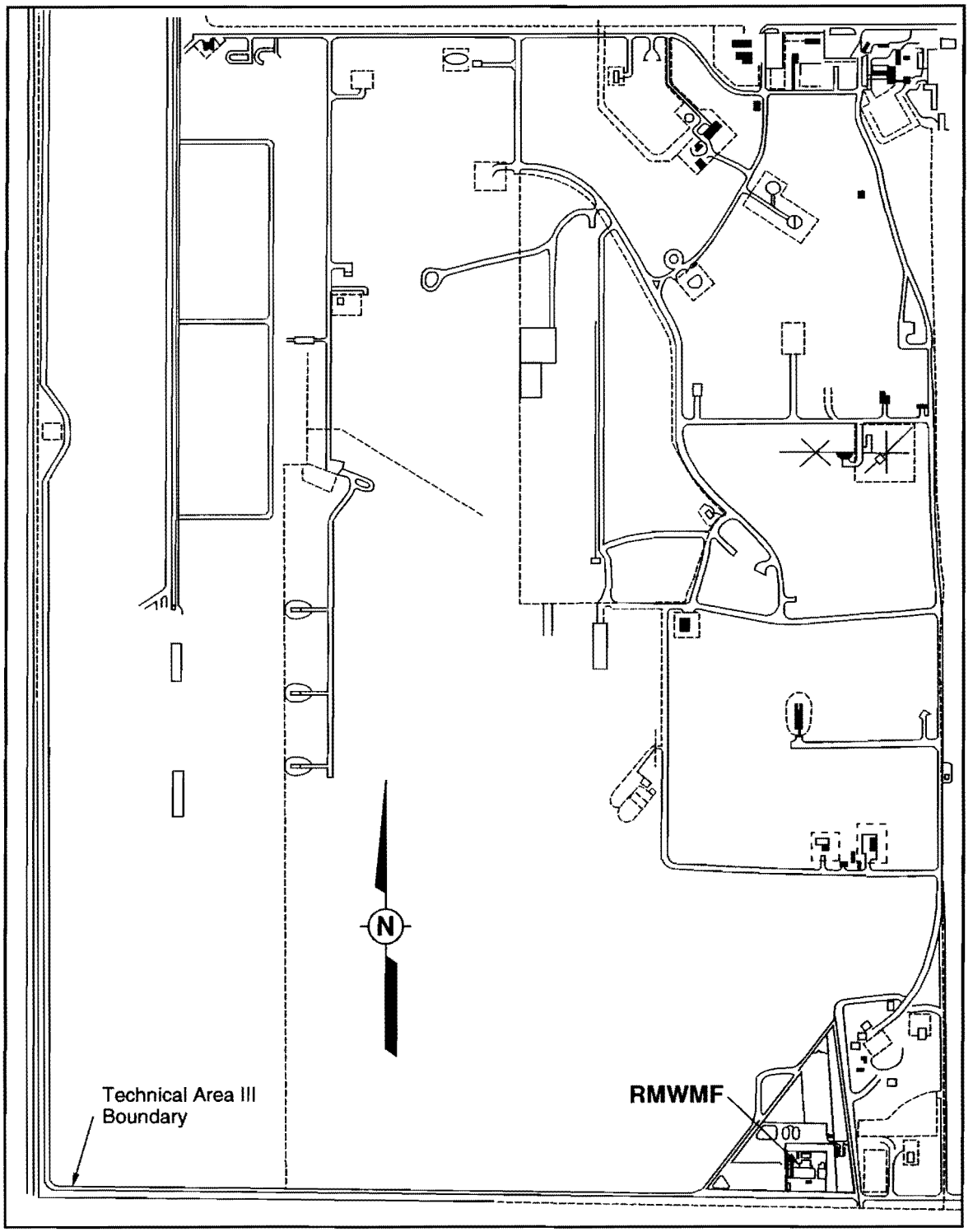


Figure B-8
Location of the Radioactive and Mixed Waste Management Facility (RMWMF) in Technical Area III

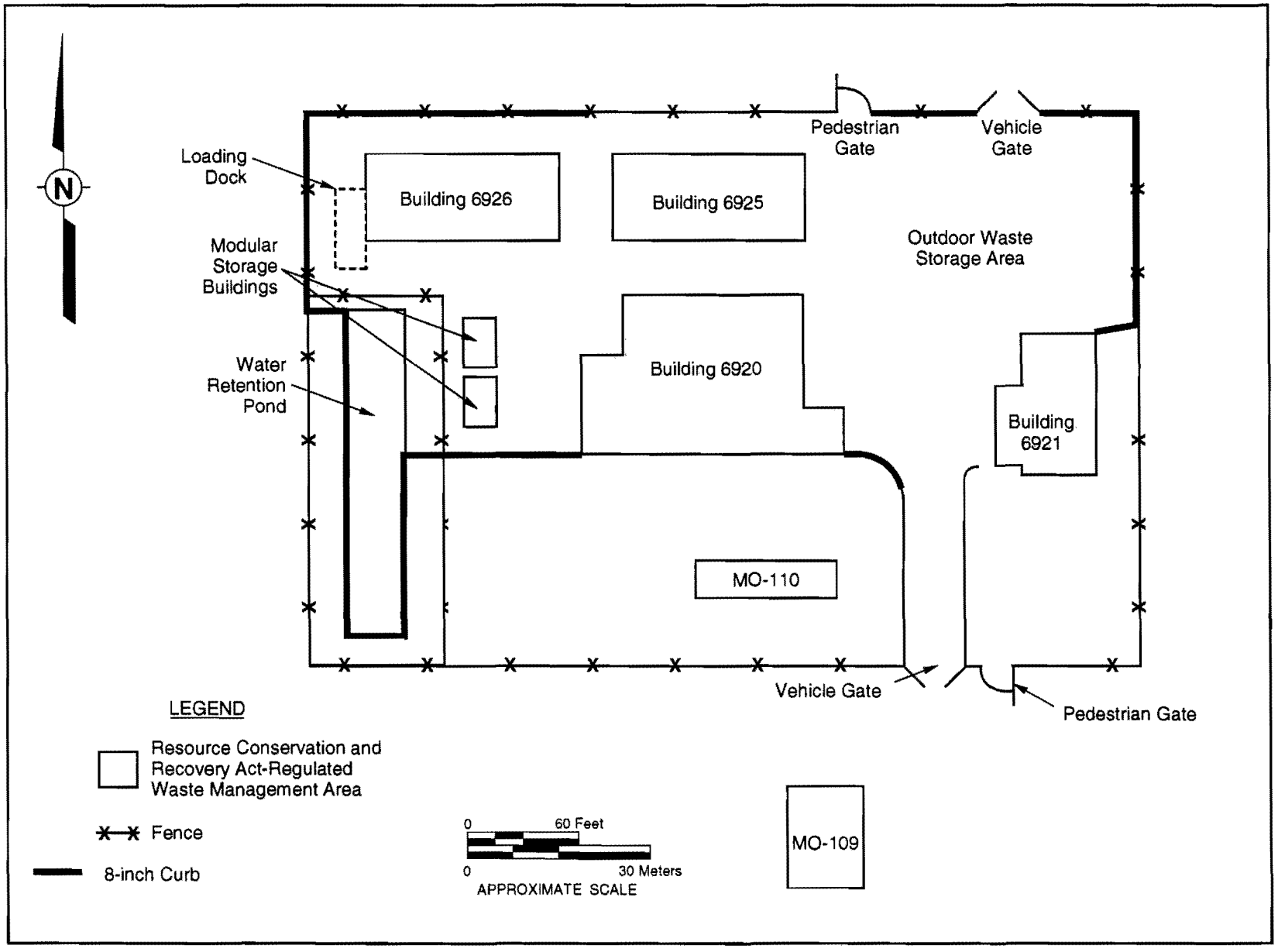


Figure B-9
Radioactive and Mixed Waste Management Facility,
Resource Conservation and Recovery Act-Regulated Waste Management Areas

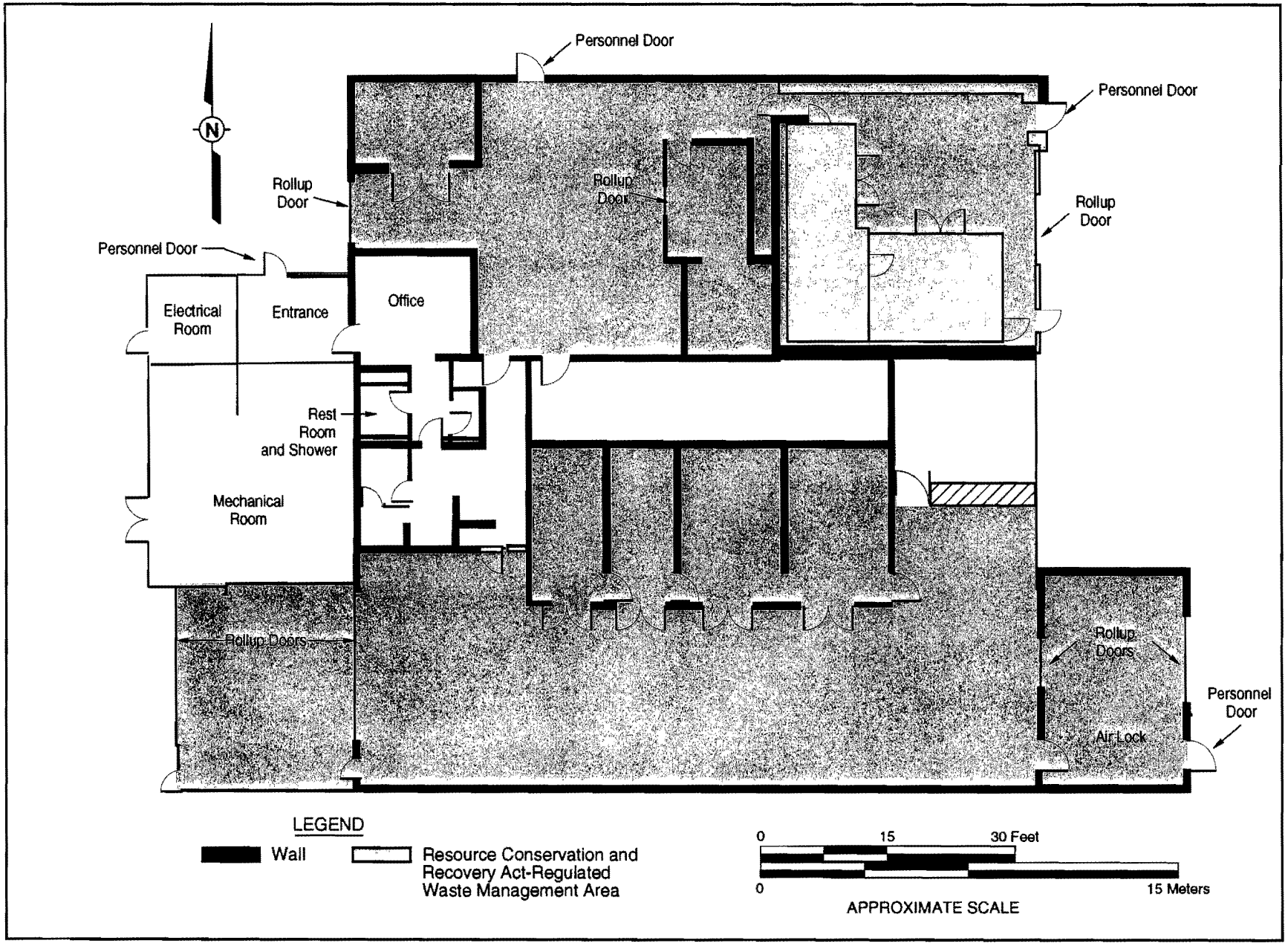


Figure B-10
Radioactive and Mixed Waste Management Facility, Building 6920, Resource Conservation and Recovery Act-Regulated Waste Management Areas

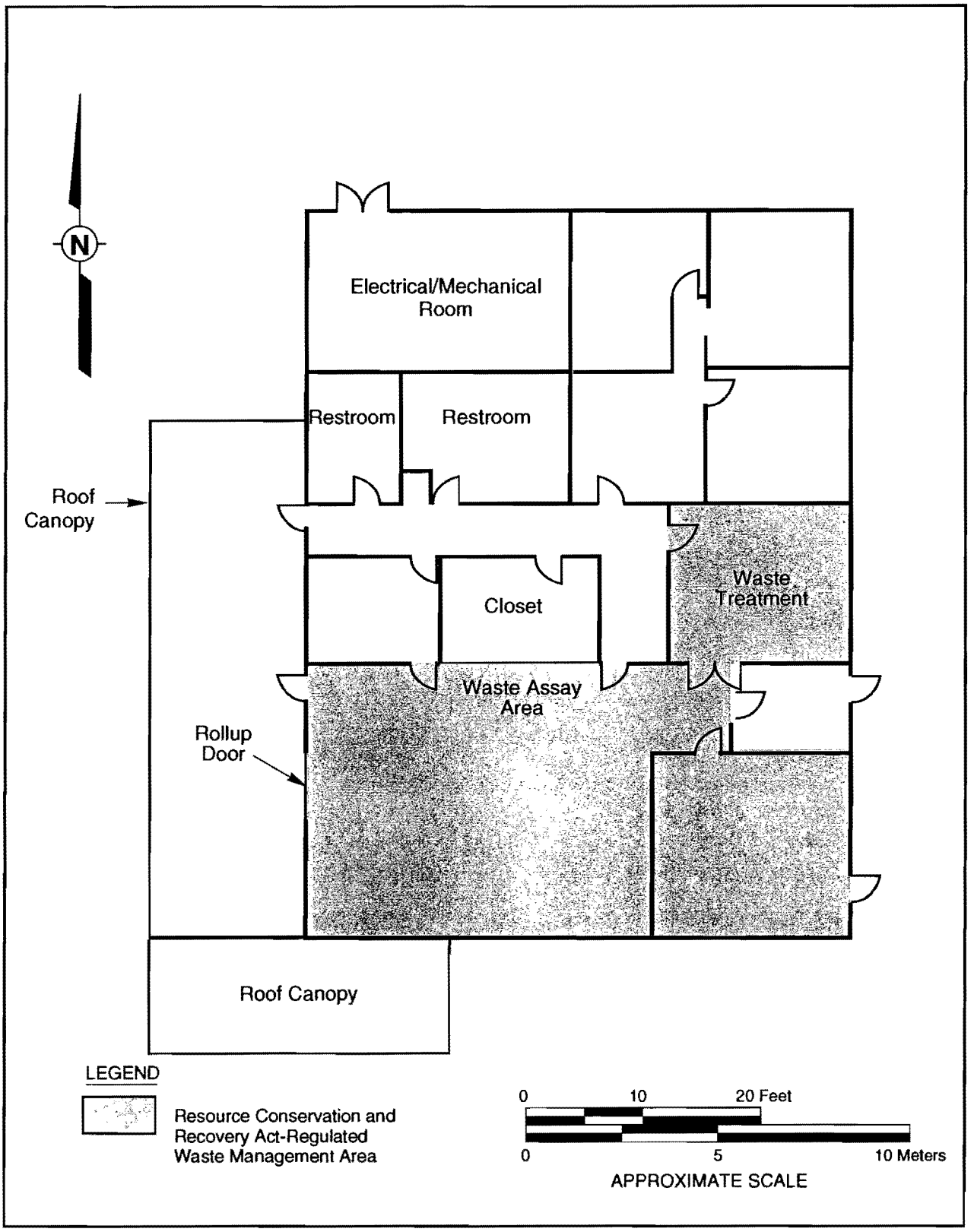


Figure B-11
Radioactive and Mixed Waste Management Facility, Building 6921, Resource Conservation and Recovery Act-Regulated Waste Management Areas

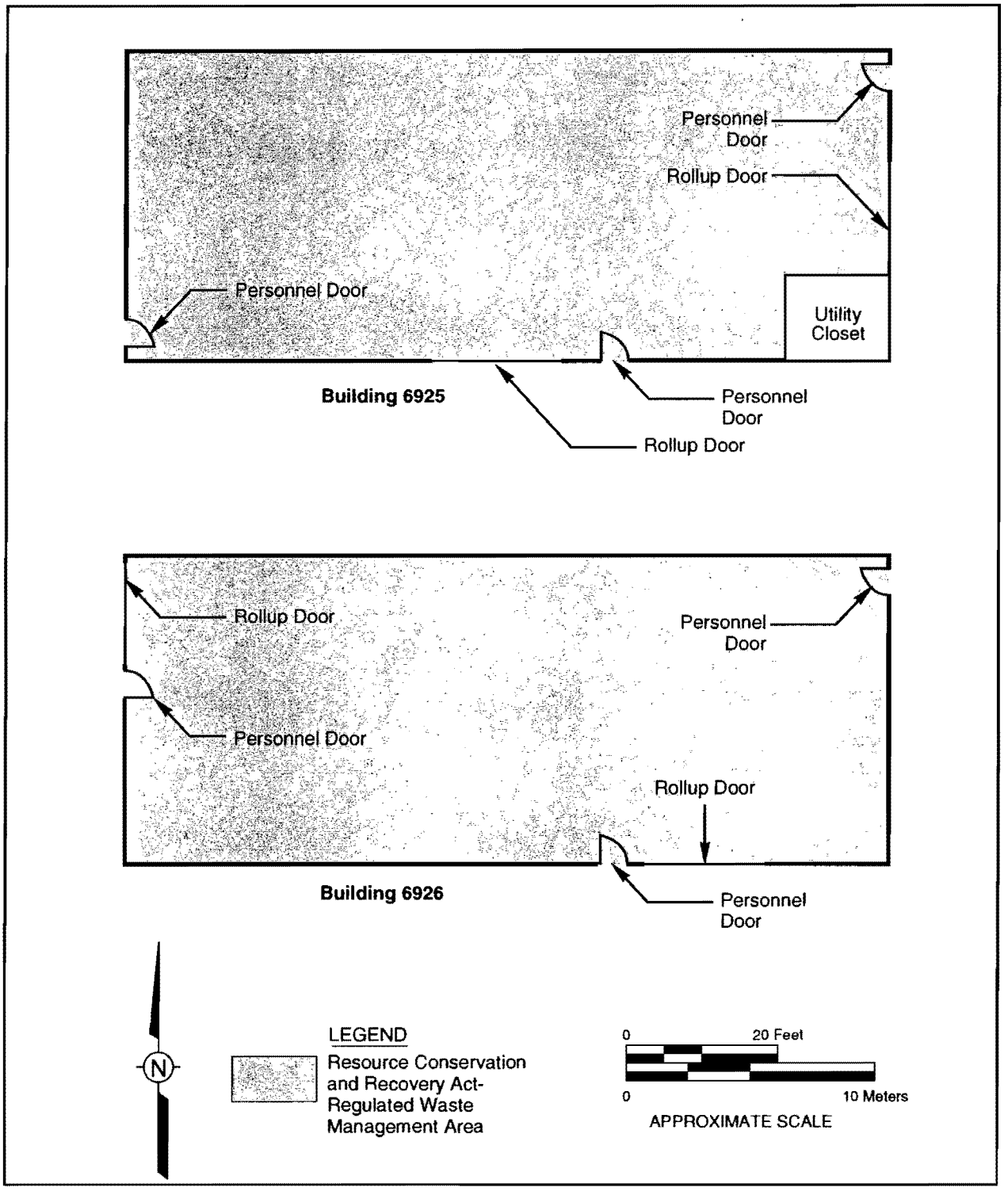


Figure B-12

Radioactive and Mixed Waste Management Facility Compound, Buildings 6925 and 6926, Resource Conservation and Recovery Act-Regulated Waste Management Areas

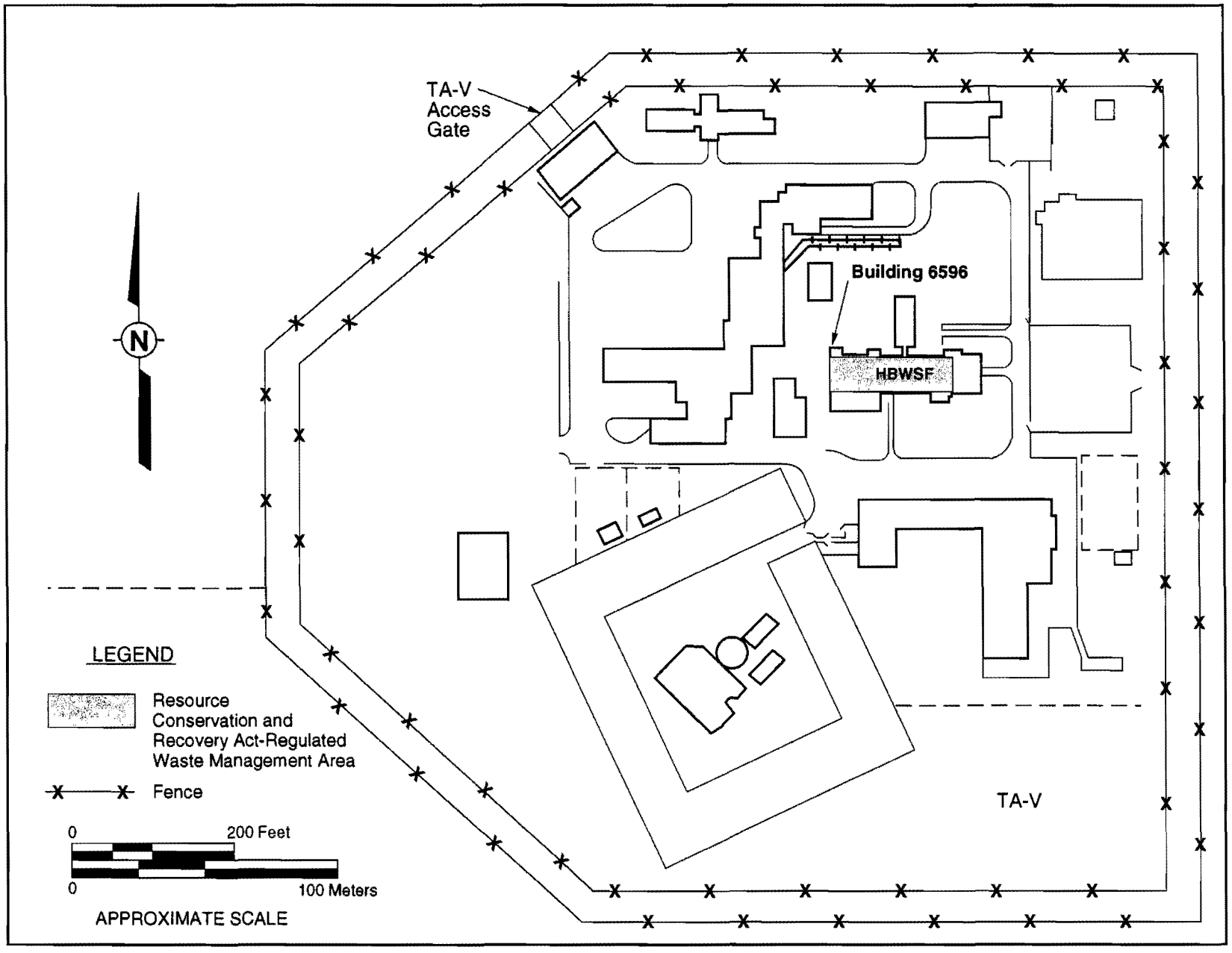


Figure B-13
Location of the High Bay Waste Storage Facility (HBWSF) in Technical Area (TA) V

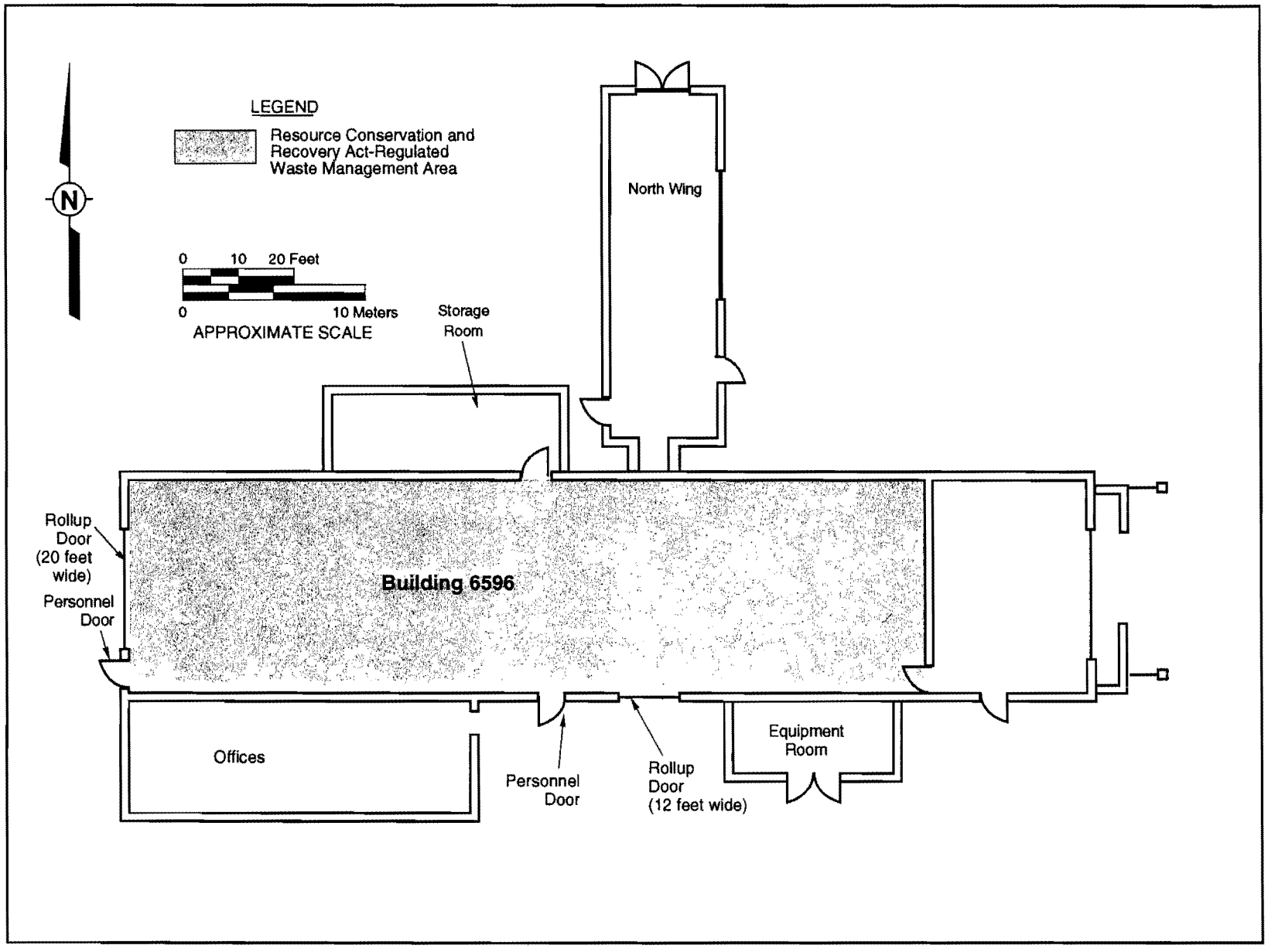


Figure B-14
High Bay Waste Storage Facility,
Resource Conservation and Recovery Act-Regulated Waste Management Area

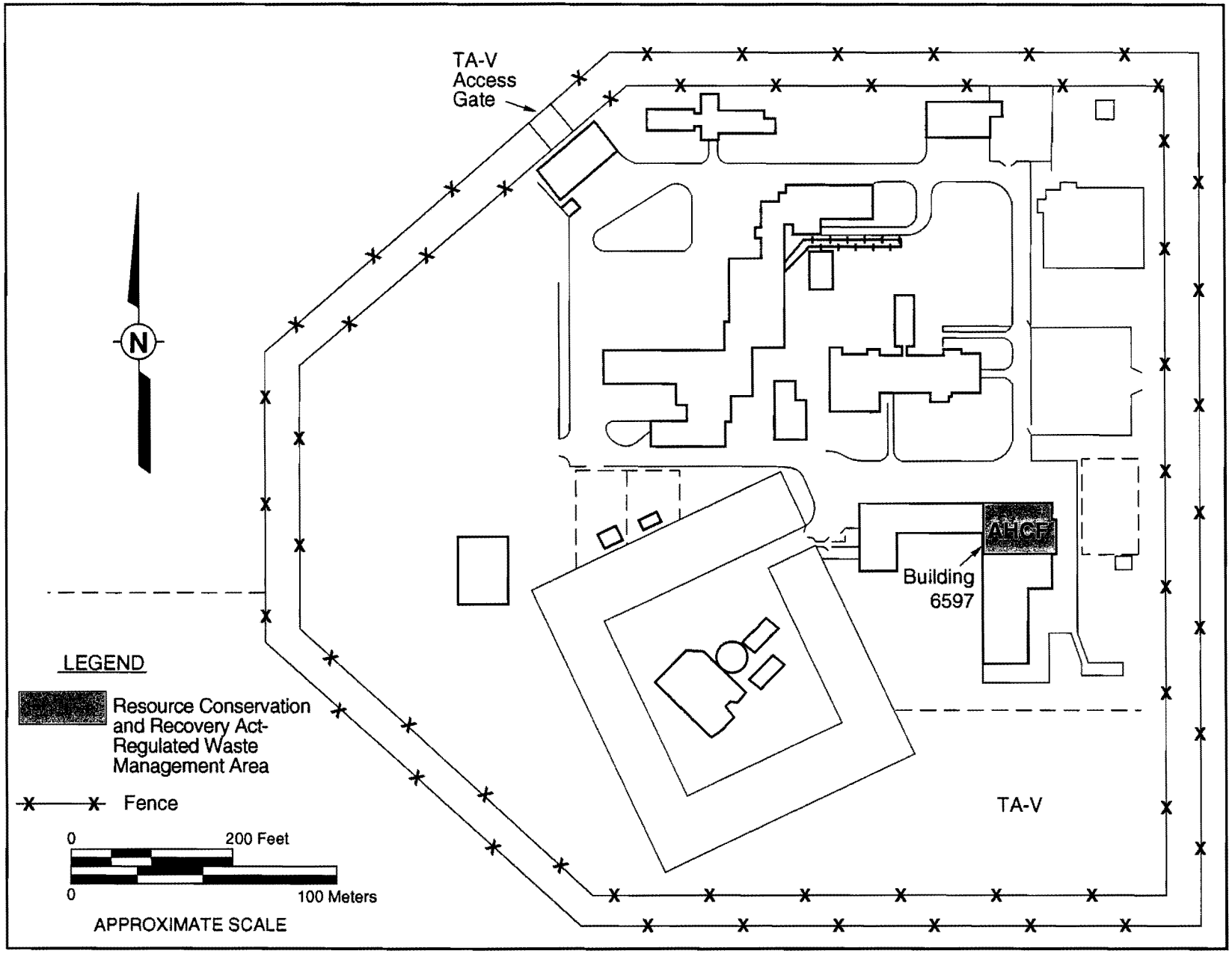
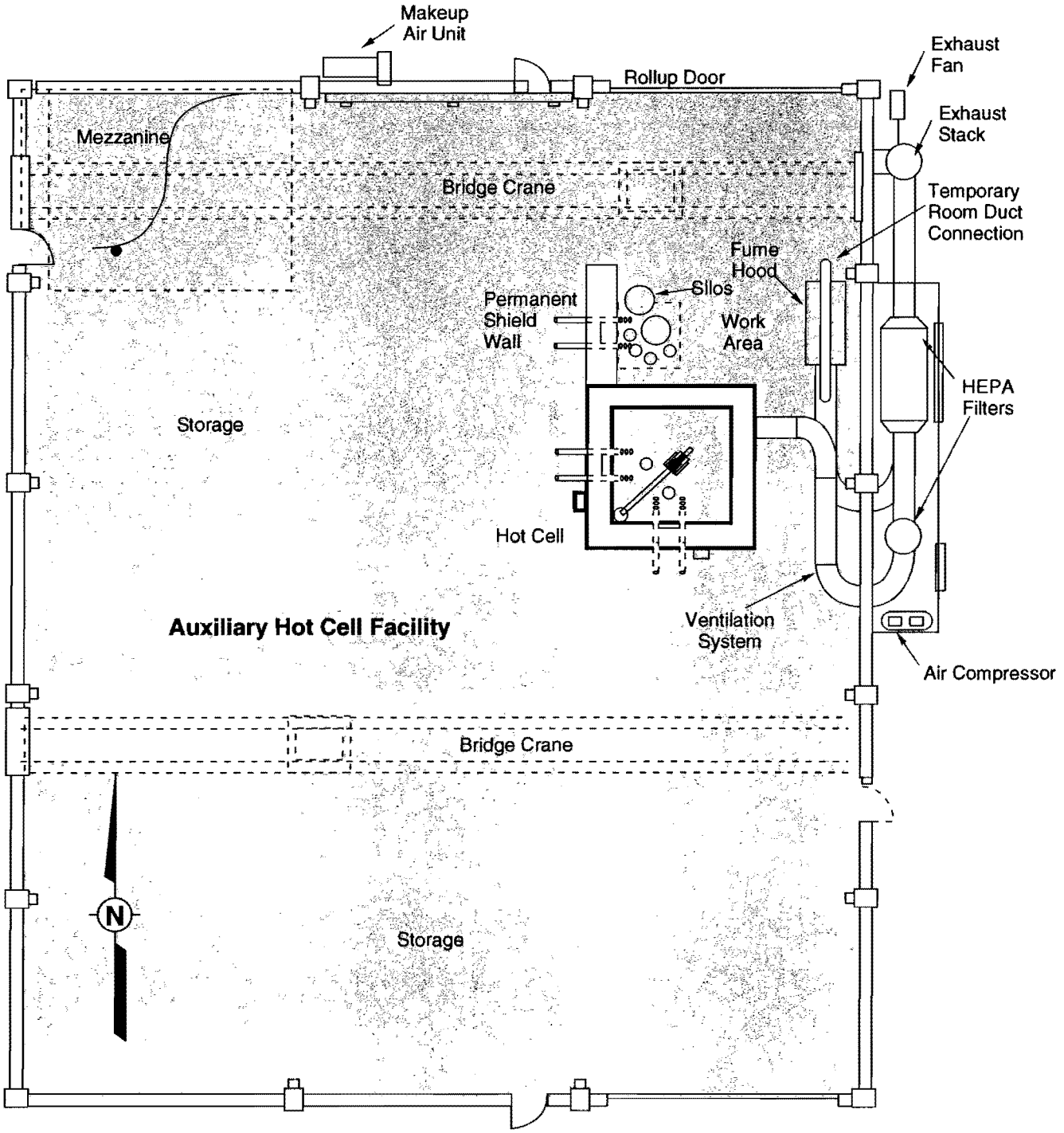


Figure B-15
Location of the Auxiliary Hot Cell Facility (AHCF) in Technical Area (TA) V



LEGEND

Resource Conservation and Recovery Act-Regulated Waste Management Area

Figure B-16
Auxiliary Hot Cell Facility, Resource Conservation and Recovery Act-Regulated Waste Management Areas

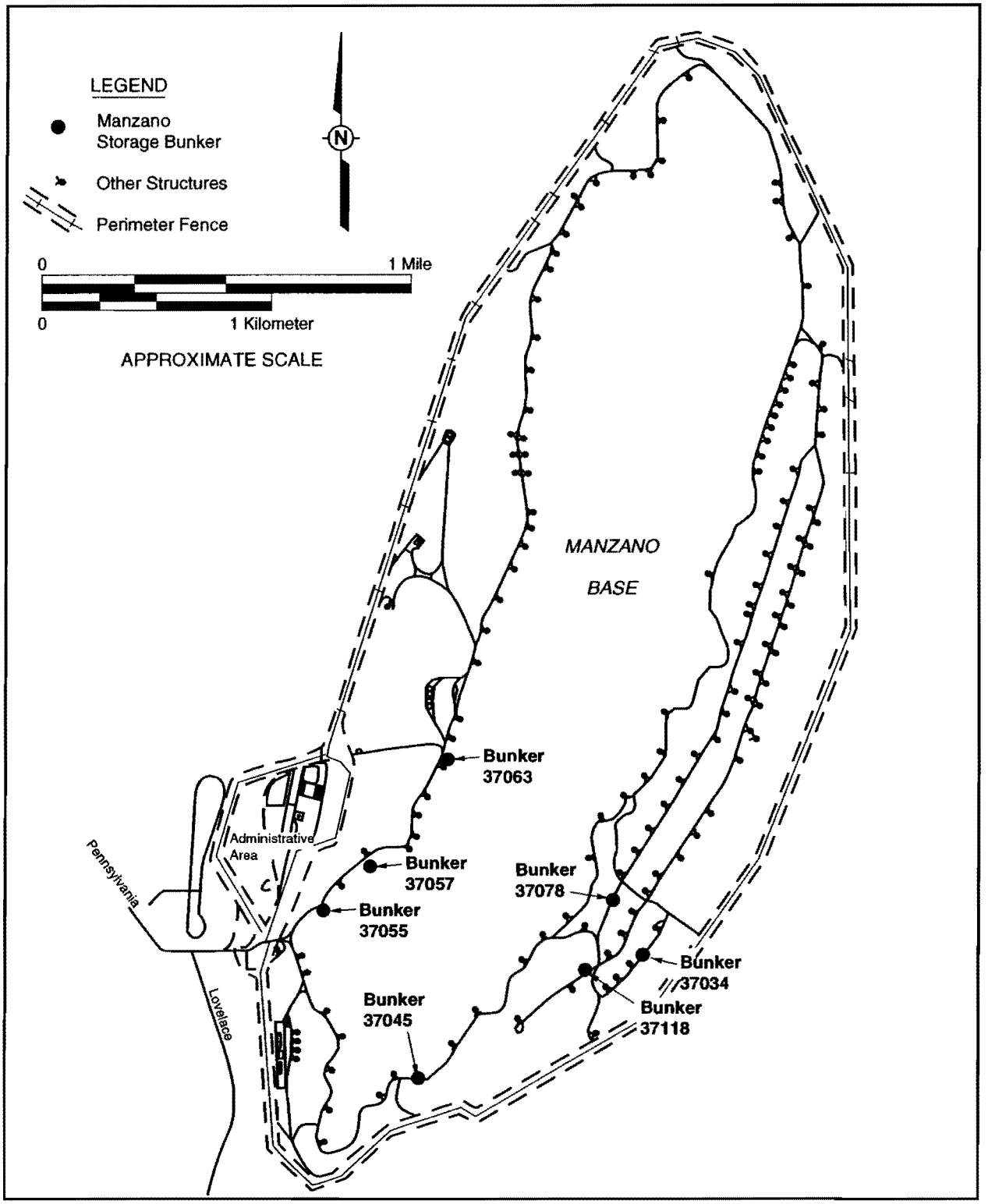


Figure B-17
Location of the Manzano Storage Bunkers at Manzano Base

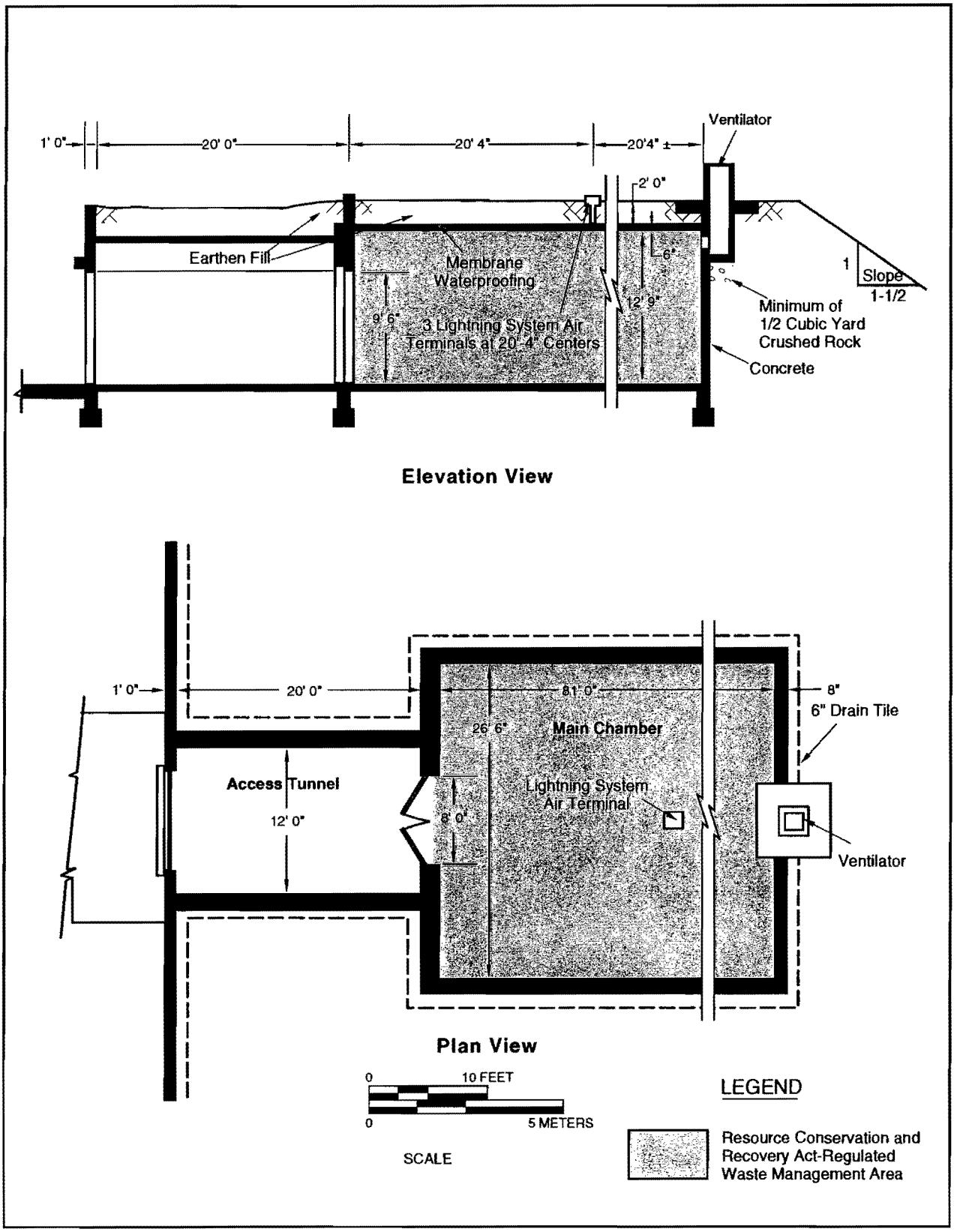


Figure B-18
Manzano Storage Bunkers, Type B, Bunkers 37034 and 37063

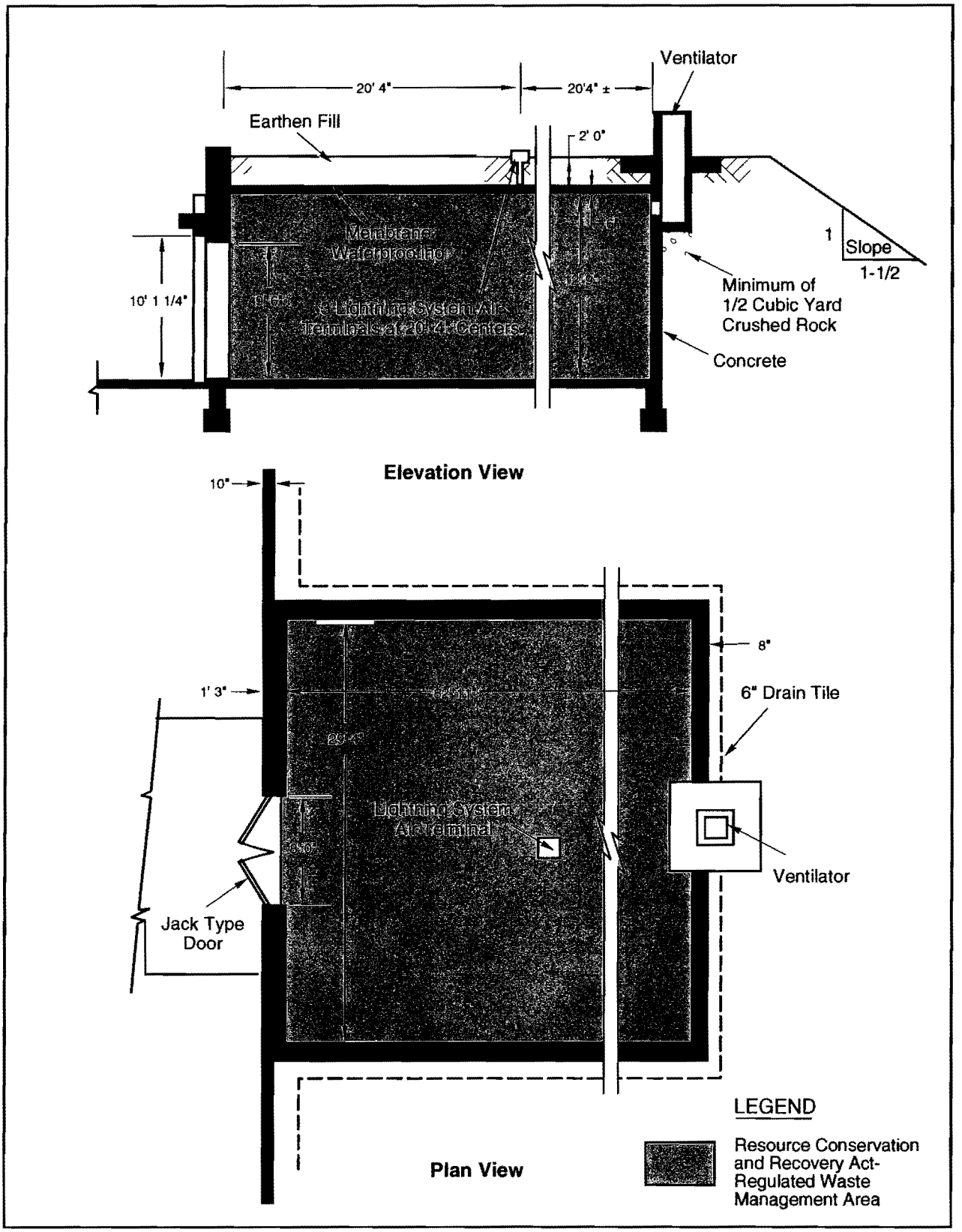


Figure B-19
Manzano Storage Bunkers, Type C, Bunkers 37078 and 37118

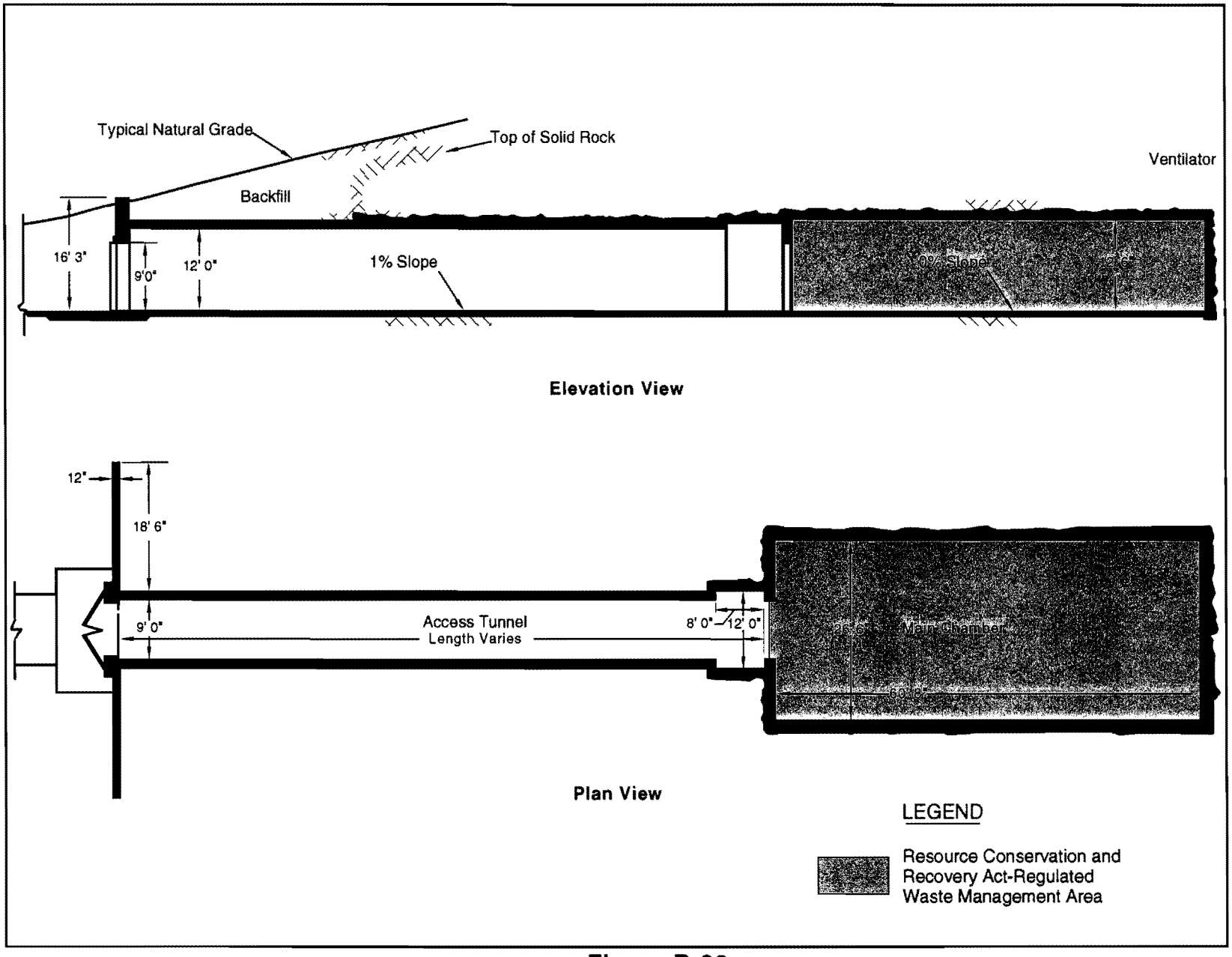
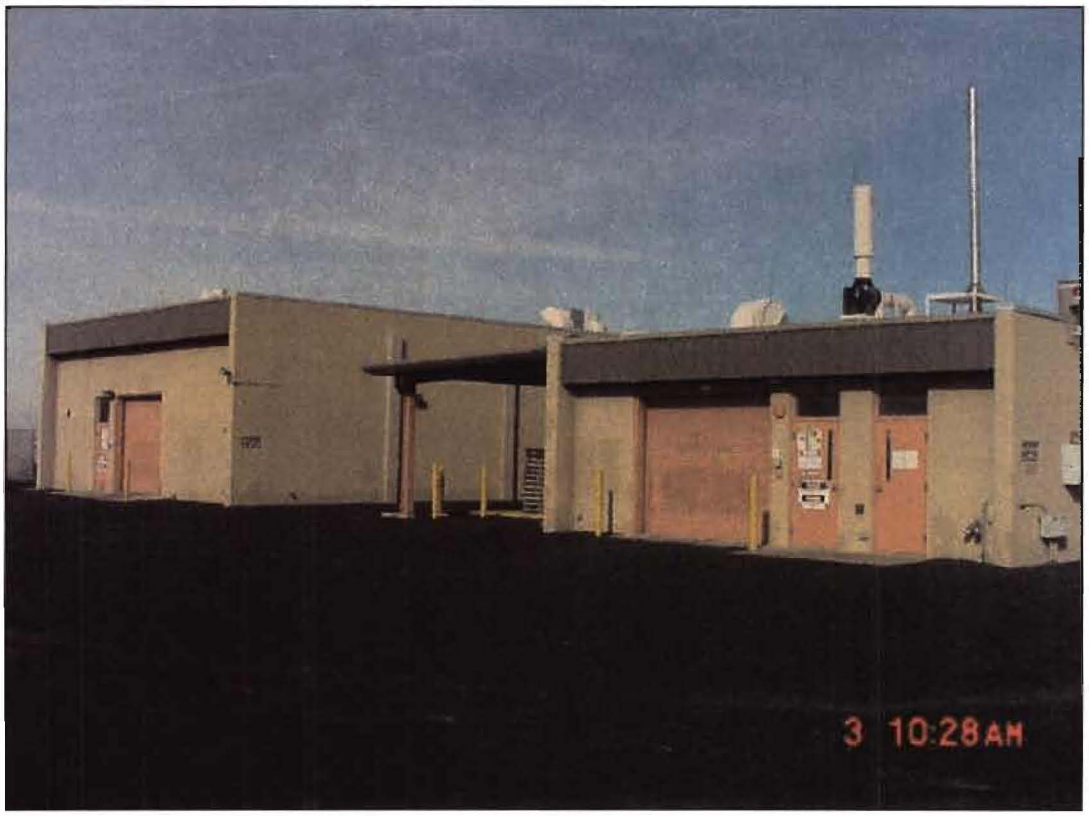


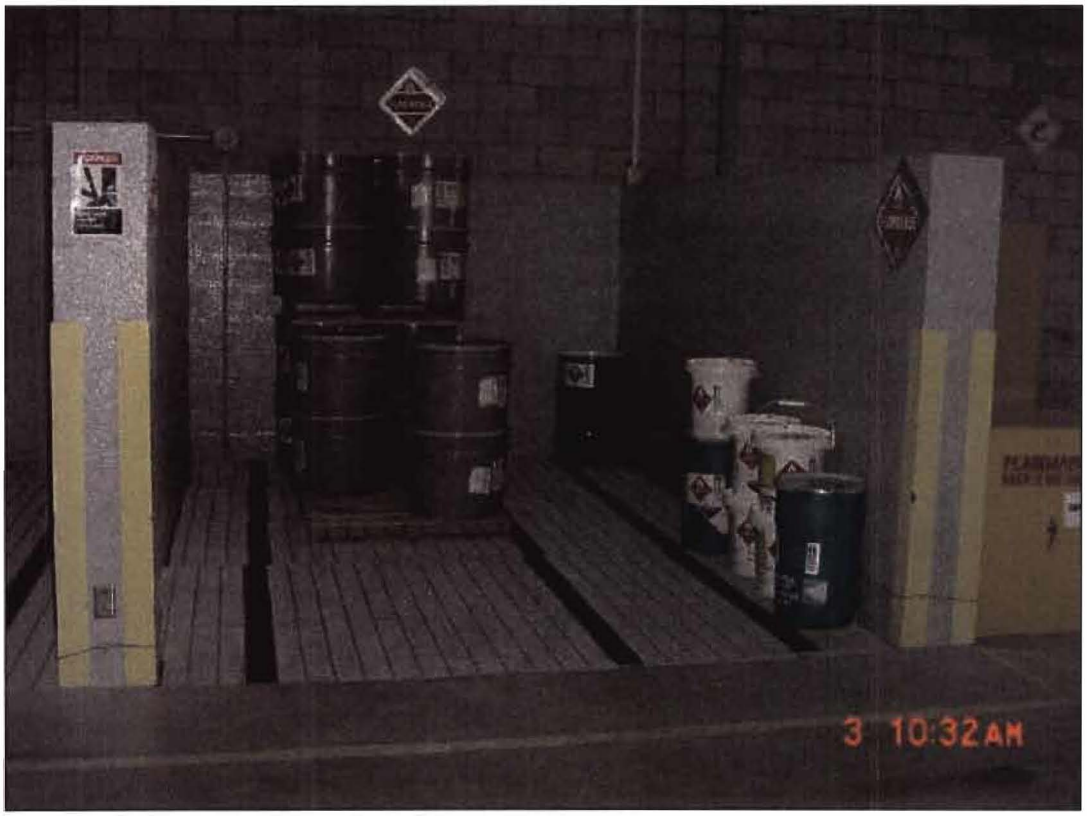
Figure B-20
Manzano Storage Bunkers, Type D
Bunkers 37045, 37055, and 37057

PHOTOGRAPHS



Hazardous Waste Management Facility, Buildings 958 and 959
Photograph Taken on January 3, 2002
Process Code: S01

Building 958 is on the left, and Building 959 is on the right.



Hazardous Waste Management Facility, Flammable Waste Storage Bay in Building 958
Photograph Taken on January 3, 2002
Process Code: S01

Hazardous Waste Management Facility, Waste Storage Bays in Building 959
Photograph Taken on September 2, 1999
Process Code: S01

Hazardous Waste Management Facility, Waste Storage Bays in Building 959
Photograph Taken on January 3, 2002
Process Code: S01

The drum at the far end of the building near the door contains absorbent for spill control. The bucket on the wall above it contains clean up materials.

Containers of RCRA-regulated wastes (solids and liquids) are segregated into the bays by compatibility and are stored on shelves over secondary containment in the bays.

Hazardous Waste Management Facility,
Modular Storage Buildings (958B and 958C) for Reactive and Ignitable Wastes
Photograph Taken on January 3, 2002
Process Code: S01

Thermal Treatment Facility (Viewed from the Roof of Building 6715)
Photograph Taken on December 20, 2001
Process Code: X03

The sheet metal housing for propane burners is on the left side of the burn cage. The sheets of steel on the right side and the back of the burn cage are attached at the top and provide protection from wind during waste treatment.

The entire surface of the concrete foundation pad and the inside edge of the concrete pad curb are lined with steel. Runoff water is directed toward the right front corner of the pad, through a filter, and into a covered catchment tank that is visible at the lower right corner of the photograph.

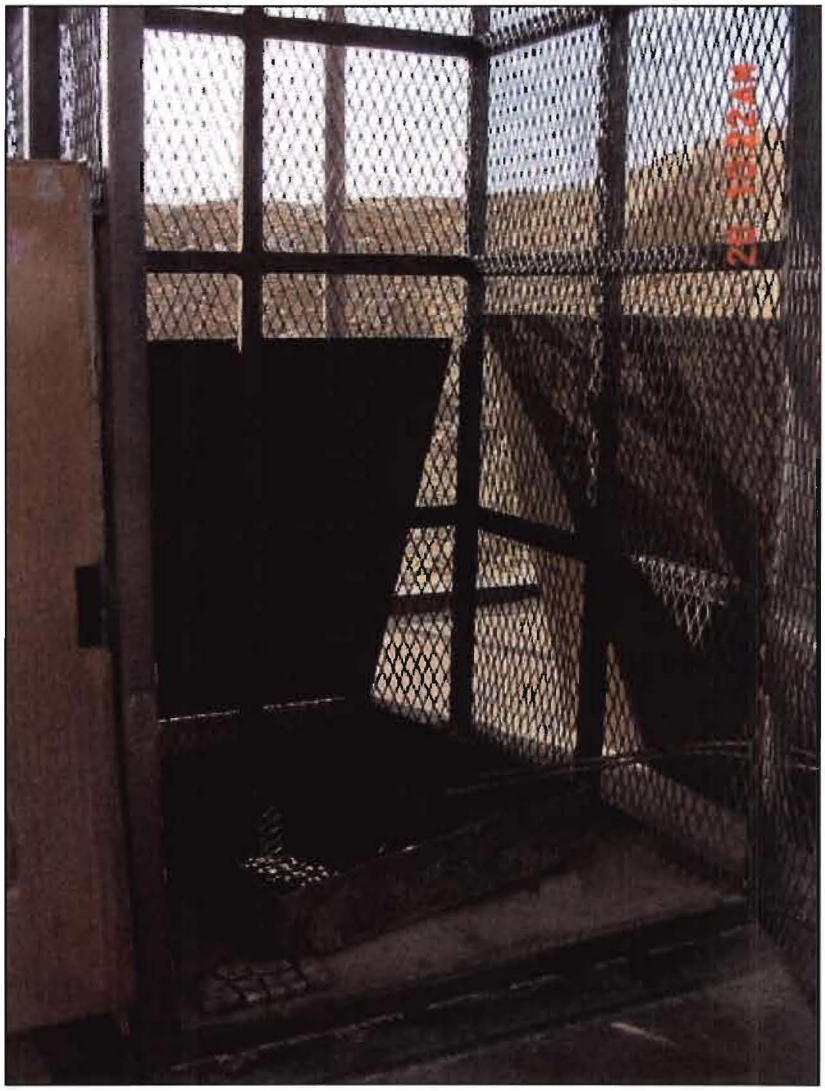
The burn pan lid is in the lowered position. The burn cage is surrounded by an earthen berm.

.

Thermal Treatment Facility (Viewed from the Top of the Earthen Berm)
Photograph Taken on December 20, 2001
Process Code: X03

The lid of the burn pan is raised and is visible near the top of the burn cage. The counterweight used to raise and lower the lid is resting on the foundation pad to the left (at the back) of the cage.

The sheet metal housing for the propane burners is visible on the right side of the burn cage.



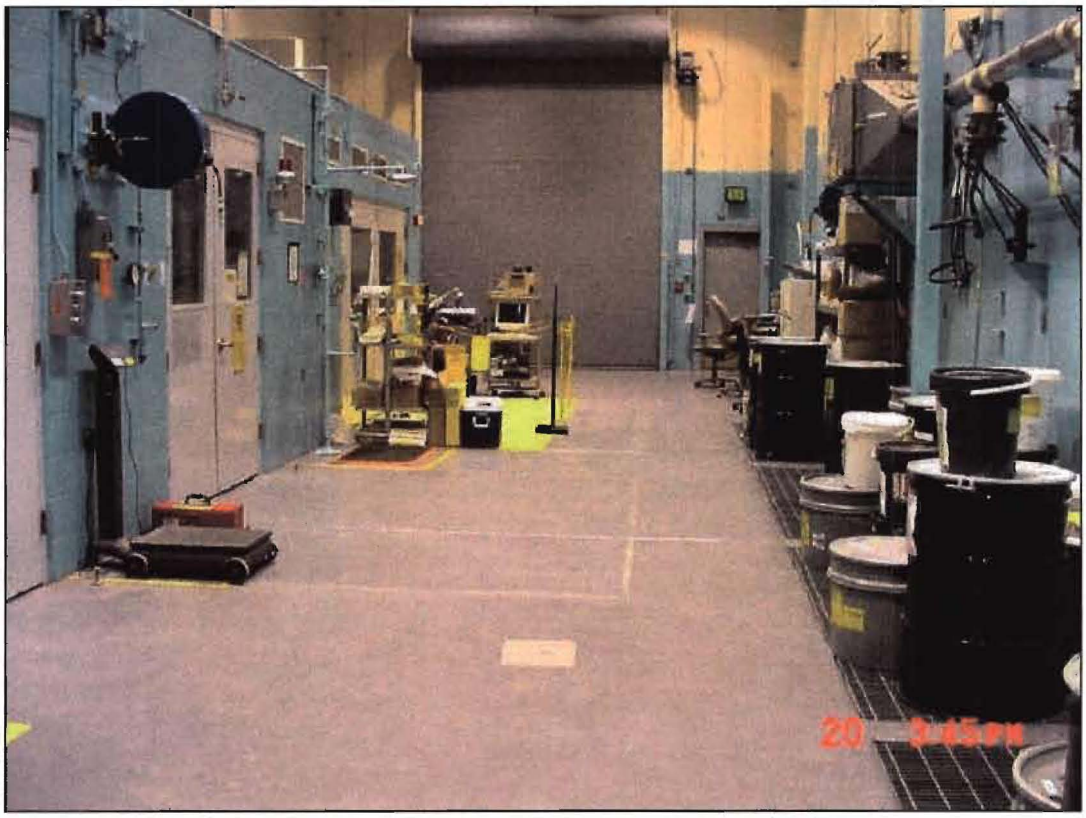
Thermal Treatment Facility (Burn Pan Inside Burn Cage)
Photograph Taken on December 20, 2001
Process Code: X03

Solid RCRA-regulated wastes are placed inside the metal baskets inside the burn pan. The pieces of fire brick on the floor of the burn cage are used to hold the wastes in position for treatment. The tubing on the right would be used to pump liquid RCRA-regulated wastes into the burn pan. The liquid waste feed system is not currently in service.

The burn cage door is open, and the burn pan lid is in the raised position. The steel sheets on the outside of the burn cage provide protection from wind during treatment. The sheet metal housing for the propane burners is visible to the left of the burn cage.

Radioactive and Mixed Waste Management Facility, East Side of Building 6920
Photograph Taken on December 5, 2001
Process Codes: S01, T04, X02

Radioactive and Mixed Waste Management Facility, West Side of Building 6920
Photograph Taken on December 5, 2001
Process Codes: S01, T04, X02



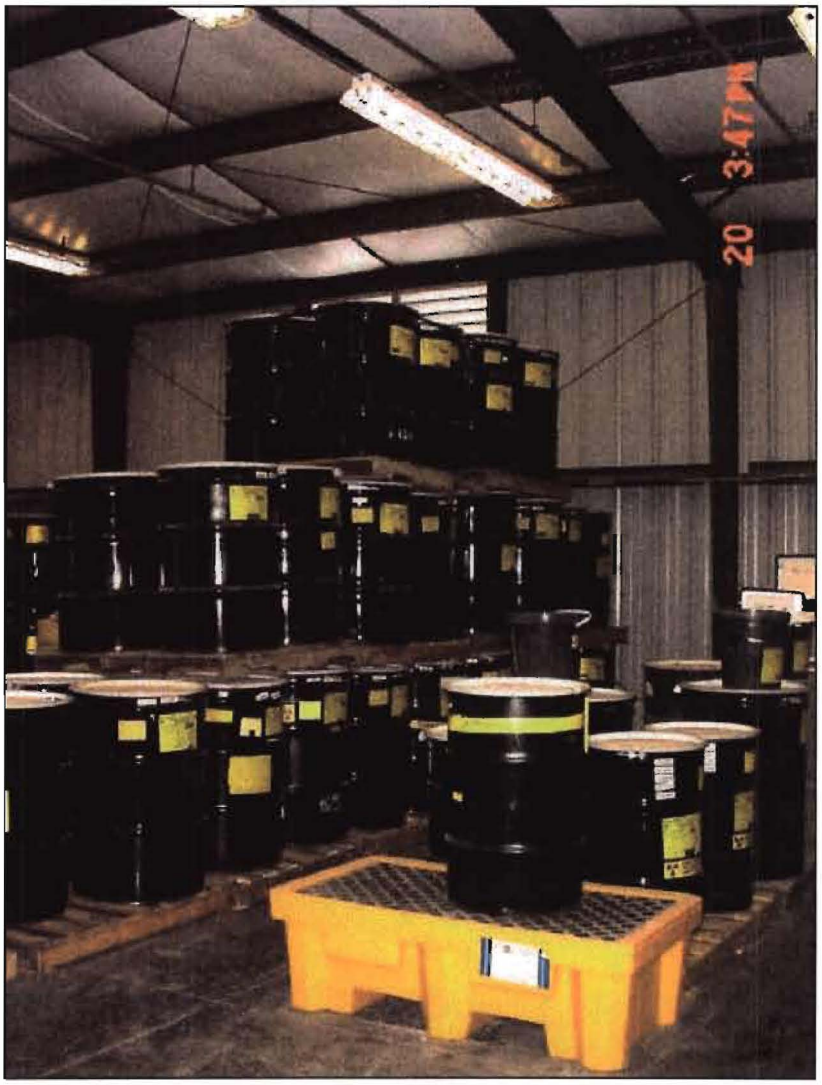
Radioactive and Mixed Waste Management Facility, Building 6920, Room 122
Photograph Taken on December 20, 2001
Process Codes: S01, T04, X02

The door to Room 118 is partially visible at the left edge of the picture. The doors to Rooms 119 and 120 are visible on the left beyond the door to Room 118. The roll-up door at the far end of the room leads to Room 125.

Containers of liquid RCRA-regulated waste are stored over the secondary containment sump shown on the right in the photograph. Containers of solid RCRA-regulated waste may also be stored over the sump.

Radioactive and Mixed Waste Management Facility, Building 6921
Photograph Taken on December 5, 2001
Process Codes: S01, T04

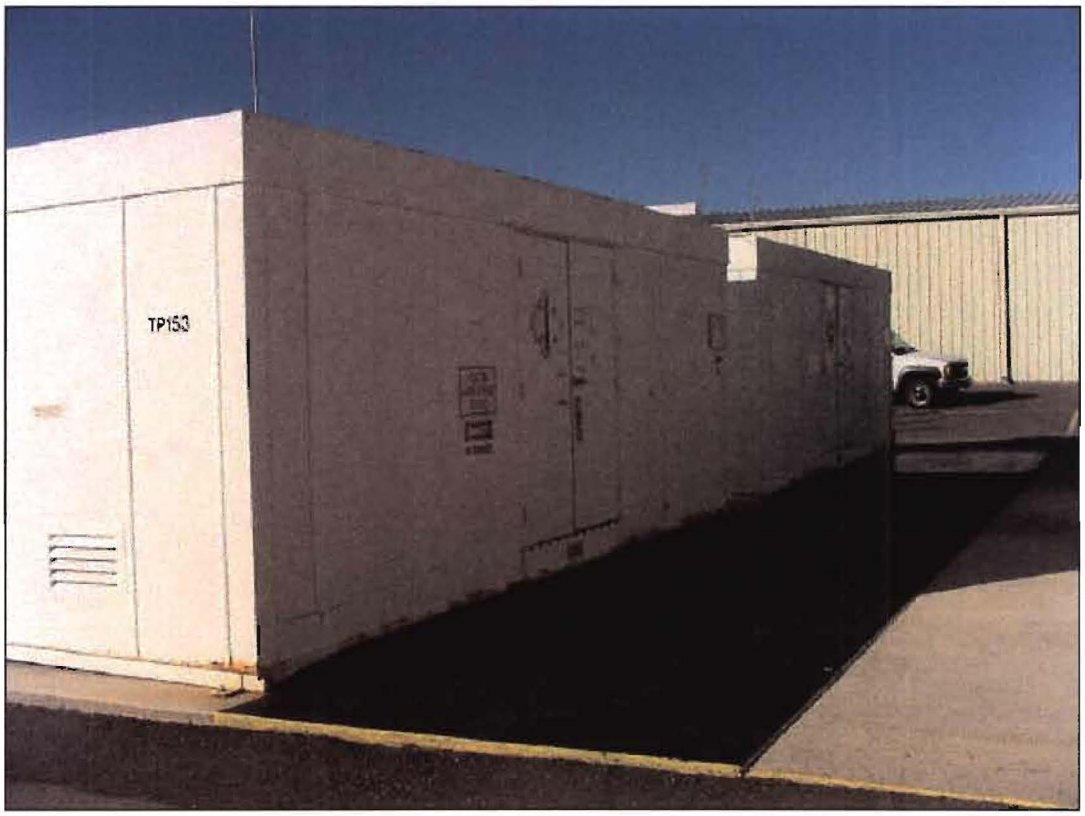
Radioactive and Mixed Waste Management Facility, Building 6925
Photograph Taken on December 5, 2001
Process Codes: S01



Radioactive and Mixed Waste Management Facility, Building 6925, Interior
Photograph Taken on December 20, 2001
Process Codes: S01

The drum in the front of the row on the right contains liquid RCRA-regulated waste and is stored on a portable spill containment pallet.

Radioactive and Mixed Waste Management Facility, Building 6926
Photograph Taken on December 5, 2001
Process Codes: S01



Radioactive and Mixed Waste Management Facility, Modular Storage Buildings
Photograph Taken on December 5, 2001
Process Code: S01

High Bay Waste Storage Facility, South Side of Building 6596
Photograph Taken on December 5, 2001
Process Code: S01

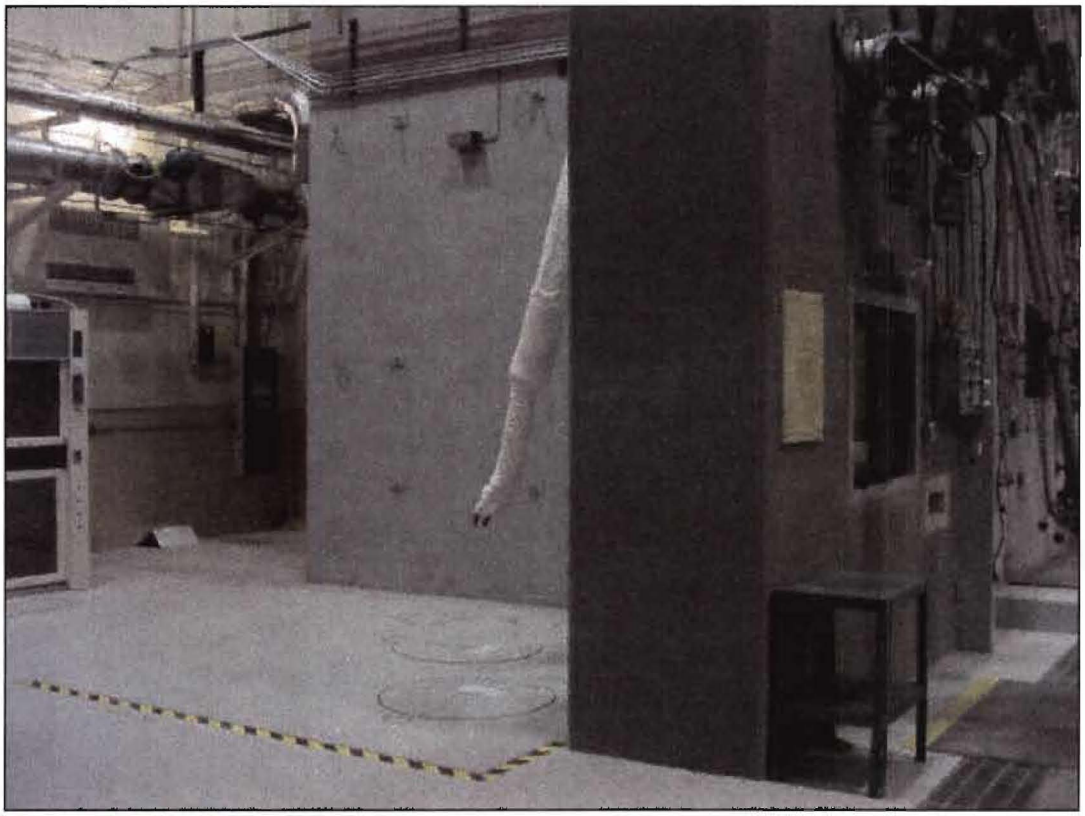
High Bay Waste Storage Facility, West Side of Building 6596
Photograph Taken on December 5, 2001
Process Code: S01

Auxiliary Hot Cell Facility, North Side of Building 6597
Photograph Taken on January 7, 2002
Process Codes: S01, T04, X02

The work area and permanent shield wall are visible inside the building.

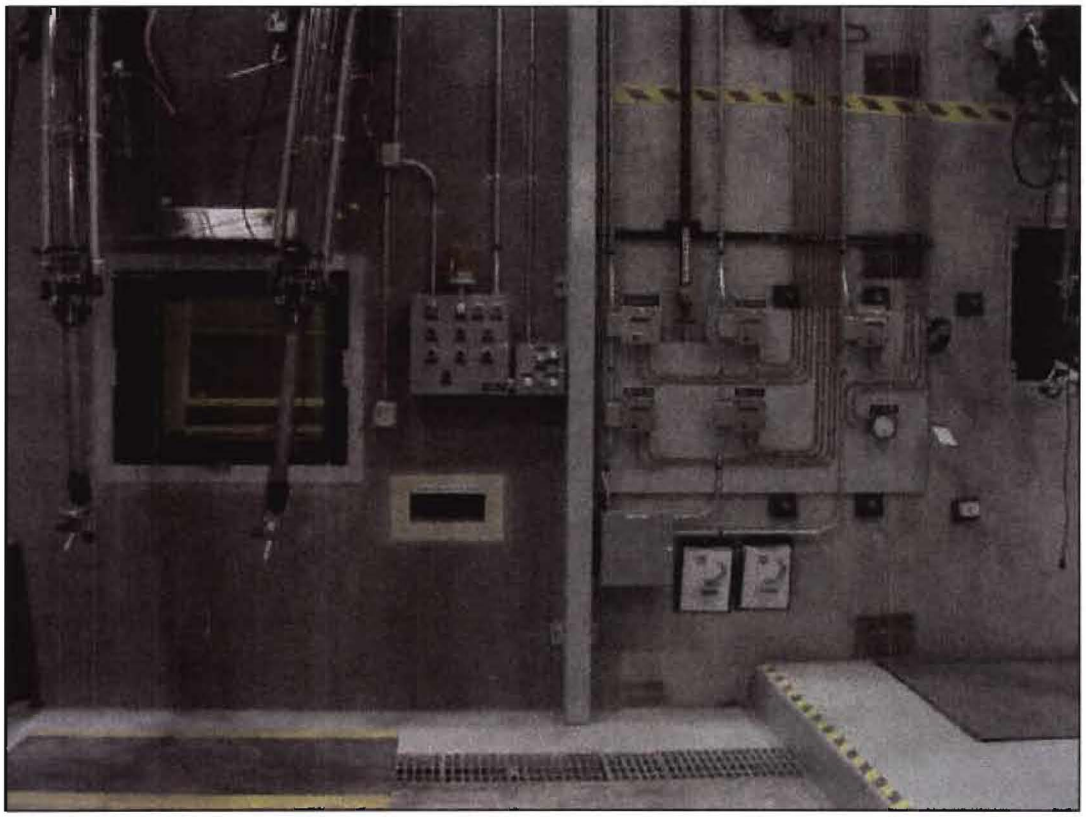
Auxiliary Hot Cell Facility, Work Area North of Auxiliary Hot Cell
Photograph Taken on January 7, 2002
Process Codes: S01, T04, X02

The permanent shield wall is visible inside the building at the right edge of the opening. The manipulator arms extend from the permanent shield wall into the work area. The north wall of the hot cell is visible behind the manipulator arms at the center of the picture. The fume hood is visible at the left edge of the work area.



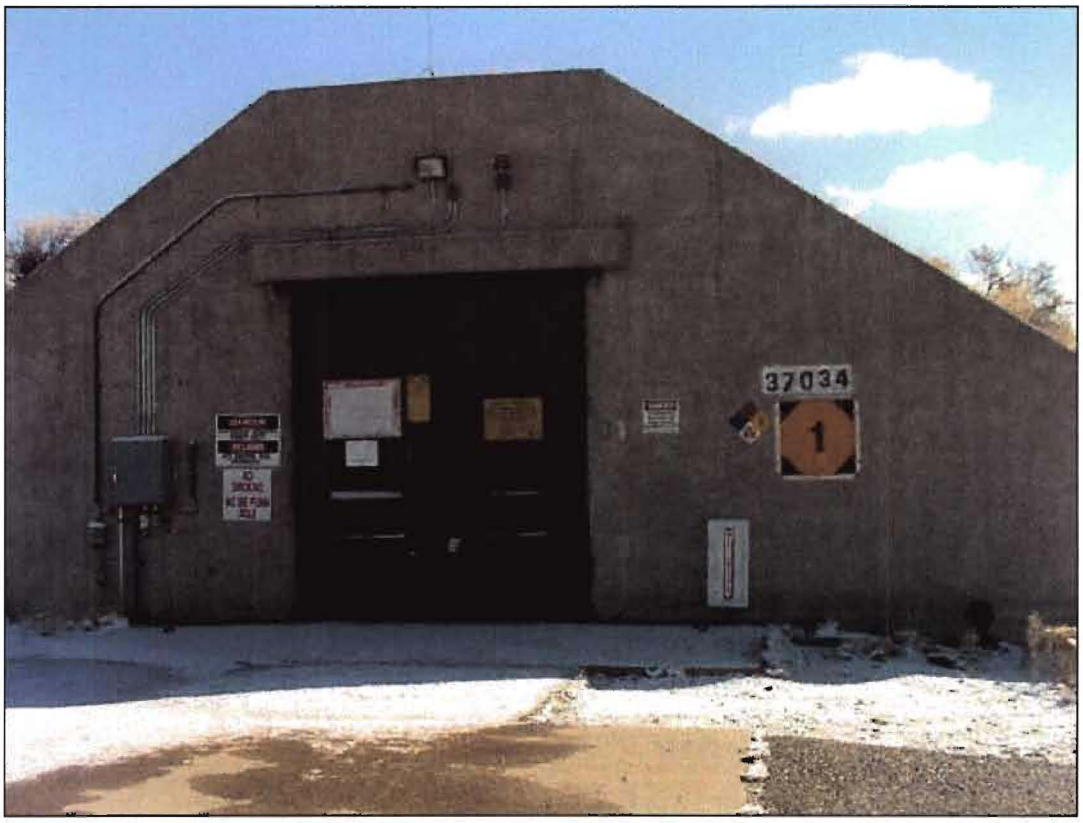
Auxiliary Hot Cell Facility, Fume Hood and Work Area North of Auxiliary Hot Cell
Photograph Taken on January 7, 2002
Process Codes: S01, T04, X02

One of the manipulator arms is visible. It extends from the permanent shield wall into the work area. The operator controls for the manipulator arms are on the right side (outside) of the permanent shield wall at the right edge of the picture. The fume hood is visible at the left edge of the picture.



Auxiliary Hot Cell Facility, Operator Controls for Work Area and Hot Cell
Photograph Taken on January 7, 2002
Process Codes: S01, T04, X02

The permanent shield wall is on the left, and the hot cell is located on the right. The operator controls for the manipulator arms in the permanent shield wall are visible on the left. The fume hood at the back of the work area is visible through the shield wall window. Similar operator controls and a window are located on the hot cell wall to the right.

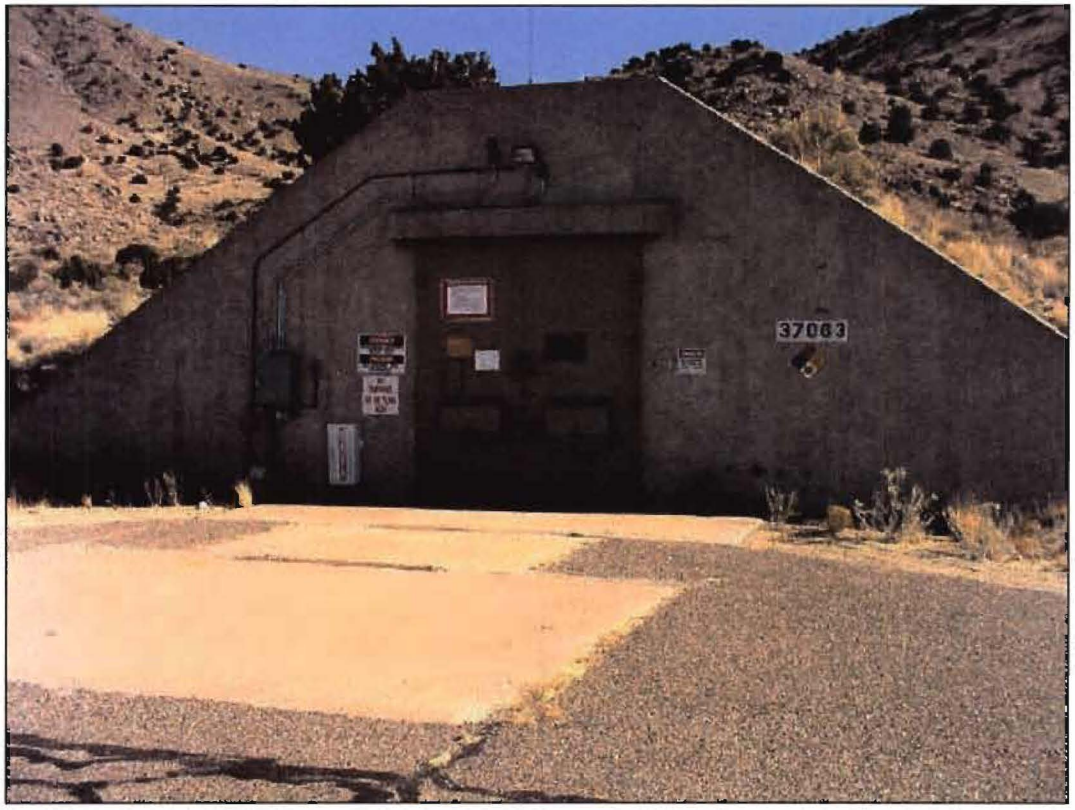


Manzano Storage Bunkers, Type B, Front View of Bunker 37034
Photograph Taken on December 13, 2001
Process Code: S01

The drain shown near the right edge of the picture serves a drain tile on the outside of the bunker, allowing drainage of water (from precipitation) that may accumulate in the soil behind the concrete wall.

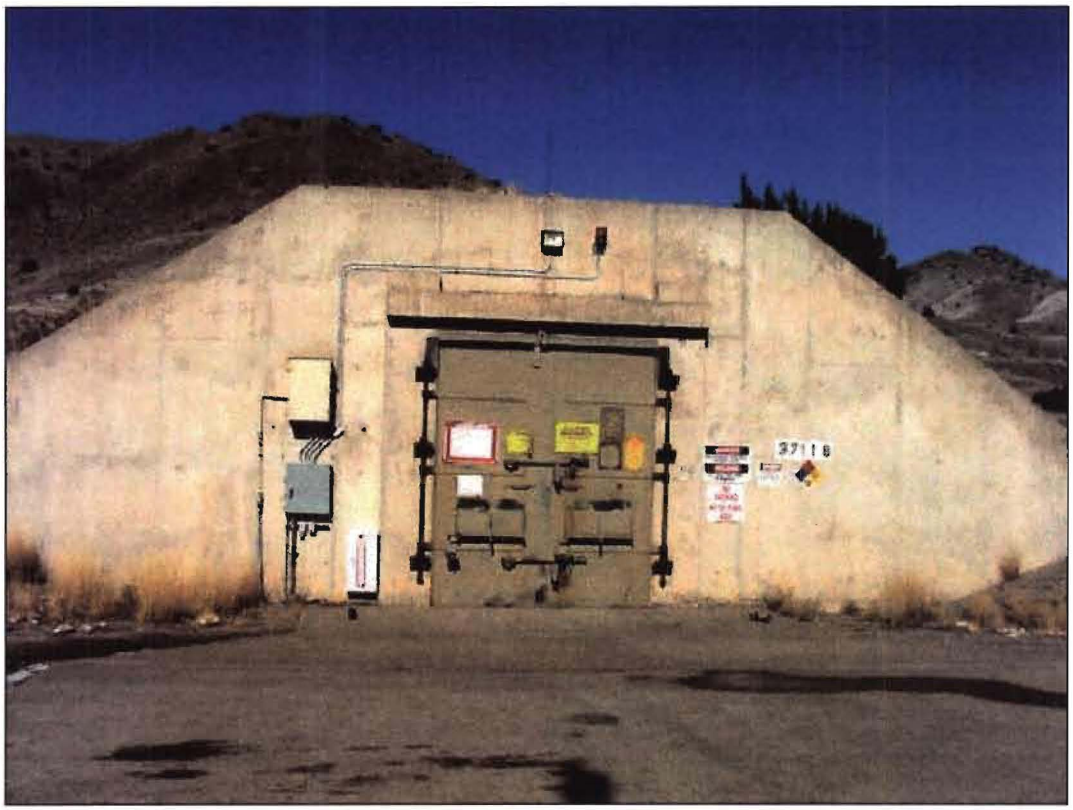
The large orange sign indicates that explosive (D003) waste is currently stored in this bunker. The fire extinguisher is located in the white box below and to the left of the orange sign.

The concrete pad in front of the bunker doors is level or slopes slightly away from the bunker, preventing surface water runon into the bunker.



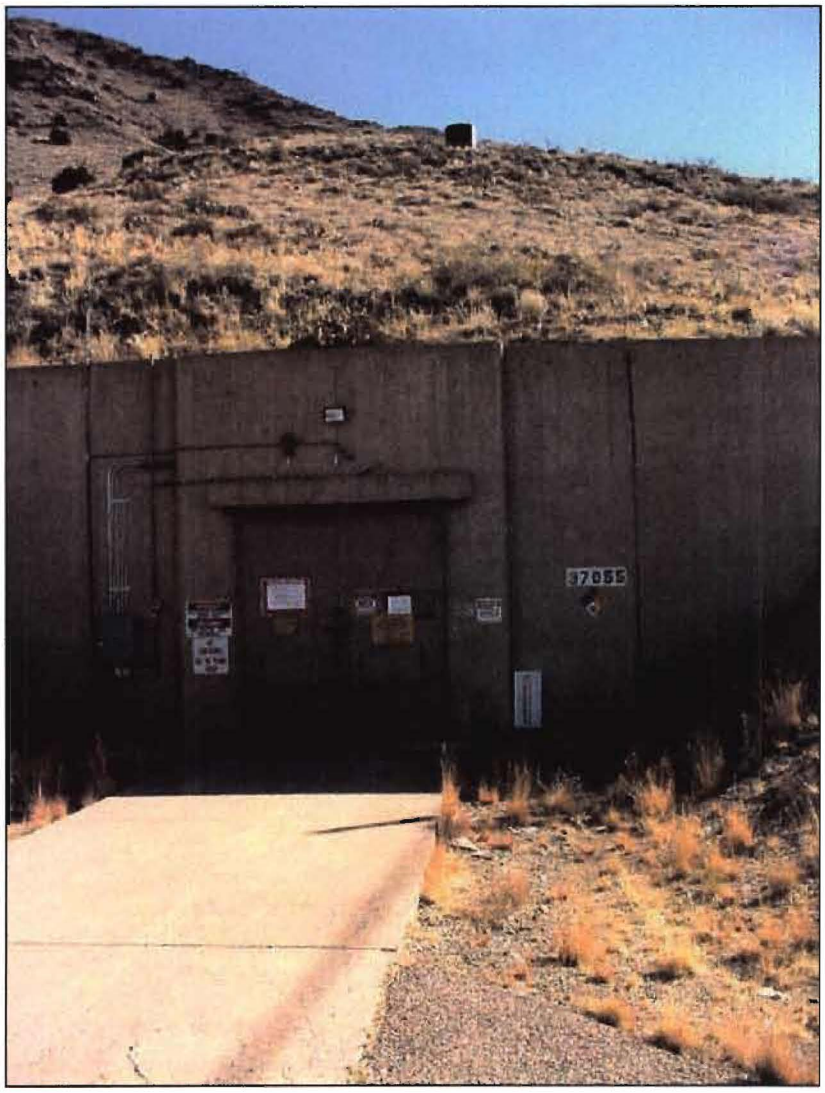
Manzano Storage Bunkers, Type B, Front View of Bunker 37063
Photograph Taken on December 5, 2001
Process Code: S01

Manzano Storage Bunkers, Type C, Front View of Bunker 37078
Photograph Taken on December 13, 2001
Process Code: S01



Manzano Storage Bunkers, Type C, Front View of Bunker 37118
Photograph Taken on December 13, 2001
Process Code: S01

Manzano Storage Bunkers, Type D, Front View of Bunker 37045
Photograph Taken on December 13, 2001
Process Code: S01



Manzano Storage Bunkers, Type D, Front View of Bunker 37055
Photograph Taken on December 5, 2001
Process Code: S01

Manzano Storage Bunkers, Type D, Front View of Bunker 37057
Photograph Taken on December 5, 2001
Process Code: S01

Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application

Revision 2.0

April 2003

Prepared by
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185

Prepared for
The U.S. Department of Energy

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B	Site-Wide Waste Analysis Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units
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LIST OF MODULES

Module	Title
I	HWMF-Hazardous Waste Management Facility
II	TTF-Thermal Treatment Facility
III	RMWMF-Radioactive and Mixed Waste Management Facility
IV	Reserved
V	AHCF-Auxiliary Hot Cell Facility
VI	MSB-Manzano Storage Bunkers

ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	microgram(s) per cubic meter
20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
A/BCAQCB	Albuquerque/Bernalillo County Air Quality Control Board
AHCF	Auxiliary Hot Cell Facility
ALARA	as low as reasonably achievable
ARPA	Archeological Resources Protection Act
ASTM	American Society for Testing and Materials
CMU	concrete masonry unit
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
DQO	data quality objective
DR	disposal request
EC	Emergency Coordinator
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
ER	Environment Restoration
ERO	Emergency Response Organization
^{O}F	degree(s) Fahrenheit
ft	foot/feet
ft^2	square foot/feet

ACRONYMS AND ABBREVIATIONS (Continued)

ft^3	cubic foot/feet
HEPA	high efficiency particulate air
HSWA	Hazardous and Solid Waste Amendments
HWMF	Hazardous Waste Management Facility
IC	Incident Commander
ICS	Incident Command System
ID	inner diameter
in.	inch(es)
KAFB	Kirtland Air Force Base
KOP	knowledge of process
lb/ft^2	pound(s) per square foot/feet
LDR	land disposal restriction
m^3	cubic meter(s)
mi	mile(s)
mph	mile(s) per hour
MSB	Manzano Storage Bunkers
MSDS	Material Safety Data Sheet
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NMED	New Mexico Environment Department
OKSO	Office of Kirtland Site Operations
ppmw	part(s) per million by weight

ACRONYMS AND ABBREVIATIONS (Concluded)

PPE	personal protective equipment
psi	pounds per square inch (pressure)
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
R&D	research and development
RMWMF	Radioactive and Mixed Waste Management Facility
Sandia	Sandia Corporation
SASN	silver acetylide/silver nitrate
SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TA	Technical Area
TSDF	treatment, storage, and disposal facility
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit
USC	United States Code
USFS	U.S. Forest Service
VOC	volatile organic compound
WAP	waste analysis plan
WMA	waste management area

DEFINITIONS

Characterization: The identification of hazardous characteristics or constituents of waste, using sampling and analysis, acceptable knowledge, or a combination of chemical analysis and acceptable knowledge.

Emergency: Any imminent or existing fire, explosion, or unplanned sudden or nonsudden release of Resource Conservation and Recovery Act (RCRA)-regulated waste or hazardous constituents to air, soil, or surface water that significantly threatens human health or the environment outside the Unit.

RCRA-Regulated Waste: For the purposes of this permit renewal request/application and Unit-specific modules, a waste that meets the regulatory definition of either hazardous waste or hazardous/radioactive mixed waste.

RCRA-Regulated Waste Management Area (WMA): For the purposes of this permit renewal request/application and Unit-specific modules, an area used for the treatment or storage of RCRA-regulated waste within a RCRA-regulated Waste Management Unit.

RCRA-Regulated Waste Management Unit (Unit): For the purposes of this permit renewal request/application and Unit-specific modules, a specific operational area subject to a RCRA permit that is used for the treatment and/or storage of RCRA-regulated waste. The Units that are the subjects of this permit renewal request/application are described in Unit-specific modules.

Regulated Unit: A surface impoundment, waste pile, land treatment unit, or landfill that received hazardous waste after July 26, 1982.

SANDIA NATIONAL LABORATORIES/NEW MEXICO GENERAL PART B PERMIT RENEWAL REQUEST/APPLICATION

This "Sandia National Laboratories/New Mexico (SNL/NM) General Part B Permit Renewal Request/Application," hereinafter referred to as the SNL/NM General Part B, is submitted by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, to address requirements applicable to Resource Conservation and Recovery Act (RCRA)-regulated waste storage and treatment operations at SNL/NM RCRA-regulated waste management units (Units) (Figure 1). The U.S. Environmental Protection Agency (EPA) Identification Number for SNL/NM is NM5890110518.

Sandia National Laboratories/New Mexico (SNL/NM) is located on Kirtland Air Force Base (KAFB) southeast of Albuquerque, New Mexico. SNL/NM consists of five technical areas (TAs) and several remote testing areas situated on the 80-square-mile KAFB. Sandia generates and manages wastes that are regulated under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act and implementing regulations, specifically the New Mexico Administrative Code (NMAC) Title 20, Chapter 4. In this comprehensive Part B permit request, these wastes are referred to as RCRA-regulated wastes (i.e., wastes that meet the regulatory definition of hazardous or mixed wastes). RCRA-regulated wastes are generated during SNL/NM operations and ongoing corrective actions for solid waste management units (SWMUs). The corrective actions are conducted under the SNL/NM Environmental Restoration (ER) Project.

There are 12 RCRA-regulated waste management units (Units) included in this comprehensive Part B permit request. Nine of the Units (listed in Table 1) are used for management of wastes from ongoing operations and from the ER project. These units are addressed in this part (Part 2) of the comprehensive Part B permit request. The remaining three units are corrective action units used exclusively for management of remediation wastes generated through the ER project. They are addressed in Part 5 of the comprehensive Part B permit request. Three additional units will be undergoing closure under interim status. They are not included in this Part (Part 2).

The information in Part 2 is separated into site-wide and Unit-specific information to minimize redundancy. Part 2 information for the Units listed in Table 1 includes:

- General information (the General Part B) that serves as an "umbrella" document addressing the general requirements of the New Mexico Hazardous Waste Act and implementing regulations, specifically the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00]. 20 NMAC 4.1.500 and .900 adopt, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270). Information that is applicable to most or all of the Units is included in the SNL/NM General Part B.

  Appendices containing site-wide information addressing a specific topic (e.g., waste analysis, training, or closure).

Table 1
Resource Conservation and Recovery Act – Regulated Waste Management Units Included in Part 2 of Comprehensive Part B Permit Request

Name	Acronym	Location, Size	Types of Operations	Types of Waste	Operating Status	Permit Status
Hazardous Waste Management Facility	HWMF	South of TA-I, north of entrance to TA-II. 1.35 acres	Storage, Repackaging	All wastes listed in General Part A	Existing, operational	Permit expired August 6, 2002. Submitted renewal request February 6, 2002. Requesting that permit be updated and renewed for continued operation.
Thermal Treatment Facility	TTF	Northern part of TA-III. 196 square feet	Treatment	Ignitable, reactive, toxic, and listed wastes	Existing, on standby	Permit expires November 4, 2004. Requesting that permit be updated and renewed for continued operation.
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. 3.11 acres	Storage, Treatment, Repackaging	All wastes listed in General Part A	Existing, operational	Interim status. Requesting that permit be issued using updated information provided in this application.
Auxiliary Hot Cell Facility	AHCF	TA-V. 5578 square feet	Storage, Treatment, Repackaging	All wastes listed in General Part A	Existing, expected to start operations in 2003	Added under interim status. Requesting that permit be issued using information provided in this application.
Manzano Storage Bunkers (set of 5 Units)	MSB	In Manzano Area on KAFB. 0.4 acres occupied by 5 bunkers (approximately 1600 to 2100 square feet in each bunker)	Storage	All wastes listed in General Part A	Existing, operational	Interim status. Requesting that permit be issued using updated information provided in this application.

- Unit-specific Part B modules addressing Unit-specific requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [6-14-00]. There is one module for the set of five Manzano Storage Bunkers, and one module for each of the other four Units listed in Table 1. For clarity and consistency, the information in each Unit-specific Part B module is arranged in the same general order as the information in the SNL/NM General Part B.

Together, the information in this General Part B, the appendices, and each Unit-specific Part B module address the applicable regulatory requirements for that Unit.

The information in this SNL/NM General Part B and in the Unit-specific modules is arranged as follows:

- General Unit description and operations, including preparedness and prevention – Section 1.0
- Site description, including features, security, and access control – Section 2.0 and Appendix A
- Waste analysis – Section 3.0 and Appendix B
- Inspections – Section 4.0 and Appendix C
- Training – Section 5.0 and Appendix D
- Emergency response and contingency plan – Section 6.0 and Appendix E
- Closure – Section 7.0 and Appendix F
- Treatment – Section 8.0
- Recordkeeping – Section 9.0

Sandia/DOE are also submitting a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" hereinafter referred to as the SNL/NM General Part A (SNL/NM, 2003), with this General Part B. The General Part A is included as Part 1 of this comprehensive Part B permit request and serves as a companion document to this SNL/NM General Part B. The SNL/NM General Part A identifies the RCRA-regulated waste management operating Units at SNL/NM as of March 31, 2003, that are or will be subject to:

- 20 NMAC 4.1.500/40 CFR 264 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270 [6-14-00]. These nine Units are listed in Table 1.
- 20 NMAC 4.1.600/40 CFR 265 [6-14-00]. These three Units will be closed under interim status and are not included in this General Part B.

In the General Part A, this General Part B, the appendices, and the Unit-specific modules, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., the Hazardous Waste Management Facility). The term "facility," as it appears in this context, is used only to denote building or Unit names and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

In this WAP and in the rest of the General Part B, the personnel associated with a RCRA-regulated waste at a given point during management at SNL/NM may sometimes be referred to as the "generator" (e.g., the "generator" completes a disposal request). The term "generator," as it appears in this context, is used only to denote an individual person and does not imply the regulatory meaning of "generator" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], particularly with respect to RCRA-regulated waste determination as required in 20 NMAC 4.1.300/40 CFR 262.11 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], Sandia Corporation is a "generator" and a "person" responsible for determining whether a waste is subject to regulation in accordance with 20 NMAC 4.1.300/40 CFR 262.11 [6-14-00]. SNL/NM is a large research facility, and many individuals (including those employed through contract to Sandia Corporation) are involved with generation and subsequent management of RCRA-regulated wastes. These include personnel performing research and other waste-generating activities, and personnel performing environment, safety, and health activities (including waste management) to support Sandia operations and comply with regulatory requirements. RCRA-regulated waste determination at SNL/NM is a collaborative effort between the individuals involved with the generation of RCRA-regulated waste and the Unit personnel. This approach is consistent with the process described in EPA's clarifying memo (Cotsworth, 2002).

Table 2 provides a list of regulatory references and the corresponding section locations in this SNL/NM General Part B.

Table 2
Regulatory References and Corresponding
Permit Renewal Request/Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Document
§270.14(b)(1)	General facility description	Appendix A[a]
§270.14(b)(2)	Chemical and physical analyses	Appendix B[a]
§270.14(b)(3)	Waste analysis plan	Appendix B[a]
§264.13(b)	Written waste analysis plan	Appendix B[a]
§264.13(c)	Off-site waste analysis requirements	Appendix B[a]
§270.14(b)(4)	Security procedures and equipment	Appendix A[a]
§264.14	Security	Appendix A[a]
§270.14(b)(5)	General inspection schedule	Appendix C[a]
§264.15(b)	Written inspection schedule	Appendix C[a]
§264.174	Containers	1.2, Appendix C[a]
§264.602	Miscellaneous units	Appendix C[a]
§264.1086	Standards: Containers	1.2, Appendix C
§264.1088	Inspection and monitoring requirements	4.0, Appendix C[a]
§270.14(b)(6)	Request for waiver from preparedness and prevention requirements of Part 264, Subpart C	NA
§270.14(b)(7)	Contingency plan	Appendix E[a]
§270.14(b)(8)	Preparedness and prevention requirements	1.1.3[a], 1.1.4[a]
§270.14(b)(8)(i)	Preventing hazards in unloading operations	1.1.4.1[a]
§270.14(b)(8)(ii)	Preventing runoff/flooding	1.1.4.2[a]
§270.14(b)(8)(iii)	Preventing contamination of water supplies	1.1.4.3[a]
§270.14(b)(8)(iv)	Mitigating effects of equipment failure and power outages	1.1.4.4[a]
§270.14(b)(8)(v)	Preventing undue exposure of personnel	1.1.4.5[a]
§270.14(b)(8)(vi)	Preventing releases to the atmosphere	1.1.4.6[a]
§270.14(b)(9)	Preventing accidental ignition or reaction	1.1.2.1[a]
§264.17	General requirements for ignitable, reactive, or incompatible wastes	1.1.2[a]
§270.14(b)(10)	Traffic pattern, volume, and controls	Appendix A[a]
§270.14(b)(11)	Facility/unit location information	Appendix A[a]
§270.14(b)(11)(i)	Seismic standard applicability [264.18(a)]	Appendix A[a]
§264.18(a)	Seismic considerations	Appendix A
§270.14(b)(11)(ii)	Seismic standard requirements	Appendix A[a]
§264 Appendix VI	Political jurisdictions requiring compliance with 264.18(a)	Appendix A
§270.14(b)(11)(ii)(A)	No fault within 3,000 feet (ft) with displacement in Holocene time	Appendix A[a]
§270.14(b)(11)(iii)	100-year floodplain standard	Appendix A
§270.14(b)(11)(iv)	Floodplain requirements	NA
§270.14(b)(11)(v)	Plan to show how the facility will be brought into compliance with 264.18(b)	NA
§270.14(b)(12)	Personnel training program	Appendix D[a]
§264.16	Personnel training	Appendix D[a]
§270.14(b)(13)	Closure and post-closure plans	Appendix F[a]

Refer to footnotes at end of table.

Table 2 (Continued)
Regulatory References and Corresponding Permit Renewal Request/Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Document
§264.112	Closure plan	Appendix F[a]
§264.118	Post-closure plan	Appendix F[a]
§264.178	Closure—containers	Appendix F[a]
§264.601	Environmental performance standards—miscellaneous units	Module II
§264.603	Post-closure care—miscellaneous units	Appendix F
§270.14(b)(14)	Post-closure notices (264.119)	Appendix F
§264.119	Post-closure notices	Appendix F
§270.14(b)(15)	Closure cost estimate (264.142)	Appendix F
	Financial assurance (264.143)	Appendix F
§264.142	Cost estimate for closure	Appendix F
§264.143	Financial assurance for closure	Appendix F
§270.14(b)(16)	Post-closure cost estimate (264.144)	Appendix F
	Post-closure care financial assurance (264.145)	Appendix F
§264.144	Cost estimate for post-closure care	Appendix F
§264.145	Financial assurance for post-closure care	Appendix F
§270.14(b)(17)	Liability insurance (264.147)	Appendix F
§264.147	Liability requirements	Appendix F
§270.14(b)(18)	Proof of financial coverage (264.149-150)	Appendix F
§270.14(b)(19)	Topographic map requirements	Appendix A[a]
§270.14(b)(19)(i)	Map scale and date	Appendix A[a]
§270.14(b)(19)(ii)	100-year floodplain area	Appendix A[a]
§270.14(b)(19)(iii)	Surface waters	Appendix A[a]
§270.14(b)(19)(iv)	Surrounding land uses	Appendix A[a]
§270.14(b)(19)(v)	Wind rose	Appendix A[a]
§270.14(b)(19)(vi)	Map orientation/north arrow	Appendix A[a]
§270.14(b)(19)(vii)	Legal boundaries	Appendix A[a]
§270.14(b)(19)(viii)	Access controls	Appendix A[a]
§270.14(b)(19)(ix)	Wells (injection and withdrawal)	Appendix A
§270.14(b)(19)(x)	Buildings or other structures	Appendix A
§270.14(b)(19)(xi)	Barriers—drainage or flood control	Appendix A[a]
§270.14(b)(19)(xii)	Location of operational units	Appendix A
§270.14(b)(20)	Other federal laws (270.3)	10.0
§270.14(b)(21)	Notice of extension approval for land disposal facilities	NA
§270.14(b)(22)	Summary of pre-application meeting	Overview
§270.14(c)	Groundwater monitoring requirements	Appendix A[b]
§264.90(b)	Exemptions from regulation of releases	NA
§270.14(d)	Information requirements for solid waste management units	11.0[c], Part 4
§270.15	Specific information requirements—containers	1.2[a]
§264.170	Subpart I applicability	1.1[a]
§264.175	Containment	1.1, 1.2[a]
§264.176	Special requirements for ignitable or reactive waste	1.1.2[a]

Refer to footnotes at end of table.

Table 2 (Concluded)
Regulatory References and Corresponding Permit Renewal Request/Application Location

Regulatory Citation(s)	Description of Requirement	Location in this Document
§264.177	Special requirements for incompatible waste	1.1[a]
§264.17	General requirements for ignitable, reactive, or incompatible wastes	1.1[a]
§270.23	Specific information requirements—miscellaneous units	Module II[a]
§264.600	Subpart X applicability	Module II
§264.601	Environmental performance standards	Module II
§264.602	Monitoring analysis, inspection, response, reporting, and corrective action	Module II
§270.27	Specific information requirements—air emission controls for tanks, surface impoundments, and containers	1.1, 1.2[a]
§264 Subpart AA	Air emission standards for process vents	1.1.4.6
§264 Subpart BB	Air emission standards for equipment leaks	1.1.4.6
§264 Subpart CC	Air emission standards for tanks, surface impoundments, and containers	1.1.4.6

[a] Unit-specific information is provided in Unit-specific modules.
[b] Groundwater monitoring for regulated units is addressed in Part 3 of this comprehensive Part B permit request package.
[c] Corrective action is addressed in Parts 4 and 5 of this comprehensive Part B permit request package. Solid waste management units are discussed in Part 4. Operation of the waste management units associated with corrective action is addressed in Part 5.
NA = not applicable

1.0 GENERAL SITE OPERATIONS

This section provides an overview of RCRA-regulated waste management operations at the Units addressed in this SNL/NM General Part B.

The SNL/NM Units are used to store and/or treat RCRA-regulated wastes bearing EPA Hazardous Waste Numbers listed in the SNL/NM General Part A. Unless otherwise specified in a Unit-specific module, any of the wastes listed in the SNL/NM General Part A may be managed at any Unit.

The following general information applicable to the Units addressed in this SNL/NM General Part B is provided in this section:

- General Unit operations; containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and

- Container storage practices, including air emission controls. Sandia/DOE do not manage RCRA-regulated wastes in tanks at any Unit.

The general information provided in this section, together with the Unit-specific information provided in Modules I through VI, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264 [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14, 270.15, and 270.23 [6-14-00].

1.1 General Unit Operations

The following sections provide an overview of the general Unit operations applicable to the Units addressed in this SNL/NM General Part B. General Unit operations include containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; and hazards prevention.

1.1.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.15(a)(5); 20 NMAC 4.1.500/40 CFR 264.175[b][5])

20 NMAC 4.1.500/40 CFR 264.175(b)(1) [6-14-00] requires that containment systems be maintained in leak proof and fully operable conditions. 20 NMAC 4.1.500/40 CFR 264.175(b)(2) and (3) [6-14-00], respectively, require that secondary containment systems be designed to 1) contain at least 10 percent of the volume of potential liquid-bearing containers or the volume of the largest container, whichever is greater, and 2) prevent contact between containers and spilled material. 20 NMAC 4.1.500/40 CFR 264.175(b)(4) requires that run-on and run-off be prevented. These features of containment systems at each Unit are described in Section 1.0 of each Unit-specific module.

20 NMAC 4.1.500/40 CFR 264.175(b)(5) requires that secondary containment systems be managed to prevent overflow. Liquids that might accumulate at an SNL/NM Unit are contained within a secondary containment system that is sufficiently impervious to contain leaks, spills, or accumulated precipitation until the liquid is removed, as described in each Unit-specific module.

Unit personnel begin taking action to evaluate and remove accumulated liquids upon discovery to prevent overflow. Personnel evaluate the liquids for two purposes: to determine the most appropriate method of removing the liquid from the containment; and to characterize the removed liquid for appropriate further management.

Personnel attempt to find the source of liquids that accumulate in secondary containment for stored containers of RCRA-regulated wastes. If the source can be clearly identified (e.g., a leaking container in a small secondary containment area) personnel characterize the liquid based on knowledge of the source, as described in Appendix B, Section B.1.3.12, remove it, and manage it appropriately. If the source(s) cannot be identified, personnel may sample the liquid and characterize it as needed to determine the most appropriate method of removing the liquid from the containment. The liquid is then pumped into containers or collected onto absorbent material, picked up, and placed in containers. The containerized liquid is sampled and analyzed for the parameters listed in Appendix B, Table B-2 to characterize it for further management.

Accumulated liquids or waters generated during fire suppression activities may be characterized as a newly-generated waste using acceptable knowledge or may be analyzed, as applicable, for RCRA-regulated waste constituents known to be components of the wastes involved in the fire. In either case, the liquids will be characterized using the process described above. Containers of collected liquids are also stored with adequate secondary containment.

Accumulated liquids from precipitation or snowmelt, for which there is no evidence of a release, will be discharged to the ground or to the sanitary sewer after sampling (as needed) and approval, as needed.

1.1.2 Requirements for Ignitable, Reactive, and Incompatible Waste (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 270.15[d]; 20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177)

20 NMAC 4.1.900/40 CFR 270.14(b)(9) [6-14-00], requires a description of precautions taken to prevent accidental ignition or reaction of ignitable, reactive, or incompatible RCRA-regulated wastes as required to demonstrate compliance with 20 NMAC 4.1.500/40 CFR 264.17(c) [6-14-00]. 20 NMAC 4.1.900/40 CFR 270.15(d) [6-14-00], requires a description of procedures used to ensure compliance with 20 NMAC 4.1.500/40 CFR 264.17(b) and (c) [6-14-00], and 264.176 and 264.177.

1.1.2.1 Measures to Prevent Accidental Ignition or Reaction (20 NMAC 4.1.500/ 40 CFR 264.17[a])

At SNL/NM, appropriate measures are taken to prevent accidental ignition or reaction of ignitable and reactive RCRA-regulated wastes, as described below.

All containers are kept closed unless wastes are being added, removed, inspected, sampled, repackaged, or treated as noted in Section 1.2.2.

Ignitable and reactive wastes are labeled and separated from other wastes. Such wastes may be stored in designated WMAs at each Unit, as described in the Unit-specific modules. Open flames and welding activities are prohibited in the vicinity of ignitable or reactive wastes at all Units. If the wastes cannot be removed from the area before such activities take place, the wastes are protected by a non-combustible barrier before and during work. Hot surfaces, frictional heat, sources of sparks, and radiant heat (e.g., heat-generating wastes) are also prohibited in the vicinity of ignitable and reactive wastes. Unit personnel are not allowed to operate forklifts or other motorized equipment in the vicinity of open containers of ignitable or reactive wastes unless such equipment is designed for use in flammable environments. Ignitable and reactive wastes are stored under controlled conditions to prevent spontaneous combustion.

Spark-proof tools may be used to open and close containers holding ignitable or reactive wastes. When large quantities of flammable or reactive liquids are transferred from one container to another, grounding procedures are typically used. During such operations, each container is connected to a grounding cable that remains in place during liquid transfer to dissipate static charge created by liquid flow.

Smoking is not allowed within any Unit. “No Smoking” signs are conspicuously placed at the entrance to each Unit, as required by 20 NMAC 4.1.500/40 CFR 264.17(a) [6-14-00].

Water-reactive wastes are not stored in WMAs equipped with automatic water sprinkler systems. When water-reactive wastes are present in such WMAs (e.g. for treatment or temporary staging), Unit personnel will keep water from coming into contact with the waste.

1.1.2.2 Precautions to Prevent Uncontrolled Reactions (20 NMAC 4.1.500/40 CFR 264.17[b, c], 40 CFR 264.176, 40 CFR 264.177 and 40 CFR 264.17[b])

Unit personnel rarely mix incompatible wastes together or with other materials. Personnel perform treatment of ignitable and reactive wastes at the TTF, RMWMF, and AHCF. As described in Section 8.0 of Modules II, III, and V, Unit personnel plan such activities carefully to prevent reactions that could:

- Generate extreme heat or pressure, fire or explosions, or violent reaction;
- Produce uncontrolled toxic mists, fumes, dusts, or gases;
- Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
- Damage the structural integrity of the device or Unit;
- Through other like means, threaten human health or the environment.

In general, Unit personnel use characterization information for each waste (as described in Section B.3) and published data regarding chemical properties of RCRA-regulated constituents in the wastes (e.g., material safety data sheets [MSDSs], “NIOSH Pocket Guide to Chemical Hazards” [DHHS, 1994], *Bretherick’s Handbook of Handbook of Reactive Chemical Hazards,*

Urben, 1995) to identify potential consequences of treatment or other mixing activities. Additional information is included in each Unit-specific module.

Incompatible wastes are kept separated from each other during storage to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.177(c) [6-14-00]. Incompatible wastes are not packed in the same container, and no waste is placed in a container that previously held an incompatible waste (i.e., only new and/or clean containers are used to hold RCRA-regulated wastes), as required by 20 NMAC 4.1.500/40 CFR 264.177(a) and (b) [6-14-00], 20 NMAC 4.1.500/40 CFR 264.17(b), and 20 NMAC 4.1.900/ 40 CFR 270.15(d) [6-14-00]. Additional information is included in the Unit-specific modules.

Compatibility is determined in accordance with 20 NMAC 4.1.500/40 CFR 264, Appendix V [6-14-00], or equivalent information (e.g., NIOSH Pocket Guide to Chemical Hazards).

Containers holding ignitable or reactive wastes are located at least 50 feet from the SNL/NM facility property line at all times and are protected from sources of ignition or reaction as required by 20 NMAC 4.1.500/40 CFR 264.176 [6-14-00].

1.1.3 Preparedness and Prevention (20 NMAC 4.1.900/40 CFR 270.14(b)(8) and 20 NMAC 4.1.500/40 CFR 264, Subpart C)

20 NMAC 4.1.900/40 CFR 270.14(b)(8) [6-14-00], and 20 NMAC 4.1.500/40 CFR 264, Subpart C [6-14-00], require a description of how Units will comply with preparedness and prevention requirements. The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems.

1.1.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

Sandia/DOE maintain required equipment, including internal communications or alarm systems; devices to summon emergency assistance; fire control, spill control, and decontamination equipment; and adequate water volume and pressure for fire suppression equipment at each Unit.

Each Unit (except the TTF and MSB) is equipped with one or more automatic water sprinkler or dry chemical fire suppression systems. Building-specific fire suppression systems are described in Section 1.2 of each Unit-specific module.

Each Unit (except the MSB) is equipped with fire hydrants. The locations of the hydrants are shown in each Unit-specific module. Each fire hydrant meets the requirements of the Appendix B of the International Fire Code, and provides at least 1500 gallons per minute of water at 20 psi, which meets the requirements of 20 NMAC 4.1.500/40 CFR 264.32(d) [6-14-00].

A list of the required equipment, with the location and capabilities of the equipment, is provided in tables in each Unit-specific module.

1.1.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Sandia/DOE assure that communications and alarm systems and fire protection, spill control, and decontamination equipment are inspected and/or tested according to the inspection plans and schedules detailed in Appendix C of this SNL/NM General Part B and in Section 4.0 of each Unit-specific module. The frequency of inspection is sufficient to assure proper operation in the event of an emergency. Maintenance, repair, and replacement of emergency equipment are performed as needed.

Sandia personnel test fire suppression equipment on monthly, quarterly, and annual schedules, in accordance with the requirements of National Fire Protection Association (NFPA) 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems" (NFPA, 2002).

1.1.3.3 Access to Communications or Alarm System (20 NMAC 4.1.500/40 CFR 264.34)

Sandia/DOE assure that whenever waste is being handled at a Unit, personnel involved have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another individual. In the event of an emergency, this communication equipment allows personnel to contact the Unit Emergency Coordinator and/or the Emergency Operations Center (refer to Appendix E of this SNL/NM General Part B). In addition to the communications and alarm systems described in each Unit-specific module, on-site personnel may carry pagers, two-way radios, and/or cellular telephones so that they can contact or be contacted by on-site and SNL/NM emergency support personnel at all times.

Unit personnel typically work in pairs and maintain contact when handling wastes, further enhancing safety.

1.1.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

SNL/NM Units are designed and operated to prevent hazards, i.e., to minimize the possibility of fire, explosion, or any unplanned or nonsudden releases of RCRA-regulated waste or constituents to the environment. Specific Unit design and construction information is presented in Section 1.1 of each Unit-specific Part B module. The following sections describe the general procedures, equipment, and structures that are currently used at SNL/NM Units to prevent hazards. These include preventing hazards during unloading of waste containers, preventing runoff and flooding, preventing contamination of water supplies, mitigating the effects of power outages, preventing undue exposure to personnel, and preventing releases to the atmosphere. Any additional information about procedures is included in Section 1.2 of each Unit-specific module.

1.1.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

Only closed waste containers are accepted for transport by vehicle to SNL/NM Units. Prior to transport, containers are inspected to ensure that they are properly closed, labeled, and in suitable condition for transport.

Loading and unloading operations typically occur outdoors in the area immediately in front of a WMA at a Unit to minimize the distance that the waste must be moved. Spills that might occur during loading or unloading operations will be promptly cleaned up in accordance with spill response procedures contained in Appendix E of this SNL/NM General Part B.

Except where noted in Unit-specific modules, all loading and unloading areas are level, and the asphalt or concrete pavement is in good condition. Loading and unloading areas are also typically free of overhead and other obstructions to visibility and operations.

Appropriate vehicles, forklifts, drum dollies, pallet jacks, and other tools for the safe transport and handling of wastes are used during loading and unloading operations. Small containers may be loaded or unloaded manually from waste-transport vehicles. A forklift or hydraulic lift is typically used to load or unload larger containers. For loads that are moved with a forklift, the containers of waste are typically held together on a pallet with straps or shrink-wrap. Fasteners and clamps are typically used with drum dollies. Waste-handling equipment is maintained and operated in accordance with manufacturers' guidance.

Only qualified personnel trained in RCRA-regulated waste management procedures are allowed to handle RCRA-regulated waste at Units, and they typically work in pairs. Personnel are trained to be aware of weather conditions and other operations that could affect waste movement, and to exercise caution in operating equipment such as forklifts.

1.1.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

Run-on of surface water from surrounding areas and runoff of waste is prevented at Units by Unit design and operating practices. Unit-specific runon/runoff features and operating precautions are described in each Unit-specific Part B module.

1.1.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Due to the depth to groundwater at SNL/NM and Unit operating procedures, it is not anticipated that there will be any impact to groundwater or other water supplies as a result of RCRA-regulated waste-handling operations at any Unit. Contamination of surface water and groundwater is prevented by Unit operating procedures as well as the spill containment features located within a specific WMA at a Unit. Spills are contained within the buildings or within secondary containment systems, and are cleaned up promptly. Spills occurring outside the buildings will be contained promptly and cleaned up so as not to come into contact with surface water or groundwater. Some units are supplied with potable water that is provided through pressurized underground water supply lines. These water supply lines are designed to withstand industrial activities that are typical of waste management operations, and they are not affected by Unit operations.

1.1.4.4 Mitigating Effects of Equipment Failure and Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

In the event of a power loss, it is usually possible for Unit personnel to place the affected equipment in a safe state, close or cover open containers of RCRA-regulated wastes that are present, and stop operations until power is restored.

The general types of equipment, utilities, and systems that would be affected by a power or equipment failure are listed below, together with features and activities to mitigate effects of a failure.

- Lights: Fixed battery-operated lights operate in the buildings in each Unit where available.
- Alarms: Fire alarm devices in each Unit (except the MSB) are equipped with emergency power supply.
- Pumps and other equipment: Personnel use portable manually- or pneumatically-operated equipment or wait for power to be restored.
- Container-handling equipment: Unit personnel obtain forklifts and drum-handling equipment from Sandia's transportation department.
- Personal Protective Equipment: Unit personnel replace equipment with supplies in the Unit storage areas.
- Vehicles: Unit personnel obtain replacements for vehicles from Sandia's transportation department.
- Telephone: Unit personnel use cellular telephones or portable radios.
- Fire sprinklers: Unit personnel use portable fire extinguishers.

Additional Unit-specific procedures (where applicable) are included in each Unit-specific module.

1.1.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

Only qualified personnel trained in RCRA-regulated waste management procedures are allowed to handle RCRA-regulated waste at Units. The training that these personnel receive includes use of appropriate equipment and personal protective equipment (PPE) for the RCRA-regulated wastes managed at SNL/NM Units.

Personnel at SNL/NM Units are required to use appropriate PPE to protect themselves from the hazards that are or may be found in the work place under normal conditions. Such hazards may include handling heavy containers, operating waste-handling equipment, weather conditions, and contact with RCRA-regulated wastes and constituents.

Operations at SNL/NM Units typically require that personnel handling closed containers of RCRA-regulated wastes wear PPE that includes safety shoes and appropriate gloves (e.g., heavy abrasion-resistant gloves with or without chemical-resistant outer gloves.

Depending on the work performed, they may also wear safety glasses or goggles, coveralls, and hard hats.

During treatment operations or other work that involves opening containers, personnel typically don additional PPE (e.g., safety glasses, face shields, chemical-resistant gloves, and coveralls) to protect themselves from hazards that may be present. Such hazards may include the potential for contact with liquids, particles, or corrosive materials.

Increased PPE (e.g., respiratory protection) may also be required during an emergency or unusually hazardous situation.

1.1.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

Subpart AA

Sandia/DOE do not use any of the processes identified in 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00] during storage of RCRA-regulated wastes. Therefore, the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00] do not apply to SNL/NM.

Subpart BB

Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations $\geq$ 10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00] during storage. Equipment used in such service will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052-.1060 as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f). A list of such equipment will be maintained with other Unit records, as described in Section 9.0. Further information is provided in Modules II, III, and V.

Subpart CC

RCRA-regulated wastes stored in containers at SNL/NM may be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/40 CFR 264.1080 [6-14-00]. These standards are not applicable to:

1. Containers that held RCRA-regulated waste prior to December 6, 1996, and to which no RCRA-regulated waste has been added on or after December 6, 1996;

2. Containers having a design capacity of less than or equal to 0.1 cubic meter (m^3) or approximately 26 gallons;

3. Containers used solely for on-site management of RCRA-regulated waste placed in the Unit as a result of implementing remedial activities under corrective action authorities;

4. Containers used solely for the management of radioactive mixed waste; or

5. Containers equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation (20 NMAC 4.1.500/40 CFR 264.1080[b] [6-14-00].

Furthermore, a container is exempt from the 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] container standards in 20 NMAC 4.1.500/40 CFR 264.1086 [6-14-00] if:

- The RCRA-regulated waste in a container has an average volatile organic concentration at the point of waste origin of less than 500 parts per million by weight (ppmw), or

- The organic content of all RCRA-regulated waste entering a container has been reduced by an organic destruction or removal process achieving any one of the conditions specified in 20 NMAC 4.1.500/40 CFR 264.1082(c)(2)(i)-(vi) [6-14-00] (20 NMAC 4.1.500/40 CFR 264.1082 [6-14-00]), or

- The RCRA-regulated waste in the container meets the treatment standards in 20 NMAC 4.1.800/40 CFR 268.40 for organic hazardous constituents present in the waste.

Sandia personnel assume that each container of RCRA-regulated wastes that meets the applicability criteria for Subpart CC (i.e., each container that is not included in any of items 1 through 5 above) is subject to the Subpart CC requirements, unless a waste determination is made in accordance with 20 NMAC 4.1.500/40 CFR 264.1083 to establish that one or more of the exemptions is applicable. The waste determination process is described in Appendix B of this General Part B, and the results are included in the operating record as described in Section 9.0.

At SNL/NM, RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements are managed in primary containers that are U.S. Department of Transportation-approved and have a design capacity of greater than 0.1 m^3 but less than 0.46 m^3 while in the container storage Units. Such containers are subject to Container Level 1 standards in 20 NMAC 4.1.500/40 CFR 264.1086(c).

Releases to the atmosphere are not anticipated at any of the container storage Units because containers are kept closed during storage. Covers of containers that are subject to the Container Level 1 standards are secured and maintained in closed and sealed conditions (i.e., no cracks, holes, gaps, or other open spaces) while the containers are in storage. Covers are opened only for access for the purposes described in 20 NMAC 4.1.500/40 CFR 264.1086(c) (1)-(5) [6-14-00]: these include adding waste to or removing waste from the container; repackaging the contents; and inspecting or sampling the waste in the container. At each Unit where containers subject to Container Level 1 standards are stored, personnel take the following steps:

- Check containers and the condition and placement of their covers during inspections of stored containers.

- Take remedial actions if needed.

- Record container condition and remedial actions taken in the inspection reports.

These activities are described in Appendix C of this General Part B and in Section 4.0 of the Unit-specific module for each Unit where containers are stored.

Unit personnel maintain records of waste addition to containers as part of the operating record described in Section 9.0. Thus, primary containers that become subject to the Container Level 1 standards are identified at the time they first become subject to the standards, and are subsequently managed in accordance with the standards. If Unit personnel discover that a container should have been managed in accordance with the Container Level 1 standards but was not, Sandia/DOE will file a written report to NMED within 15 days as required in 20 NMAC 4.1.500/40 CFR 264.1090(a).

Sandia/DOE do not store RCRA-regulated wastes in containers that are subject to Container Level 2 or Level 3 standards. Additional Unit-specific information is provided in Section 1.0 of each Unit-specific Part B module for container storage areas (if applicable).

Air emissions control requirements for treatment are addressed in Section 8.0.

1.2 Container Storage

The information provided in this section is submitted to address the applicable container storage requirements of 20 NMAC 4.1.900/40 CFR 270.15 [6-14-00], and 20 NMAC 4.1.500/ 40 CFR 264, Subpart I (6-14-00). The following sections provide brief descriptions of waste management practices applicable to all Units used for container storage of RCRA-regulated wastes at SNL/NM.

Additional Unit-specific information is provided in Section 1.3 of each Unit-specific Part B module.

1.2.1 Container Types and Labeling

Containers that may be used to store RCRA-regulated waste stored at Units qualify as “containers” as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. That is, they are “portable devices in which a material is stored, transported, disposed of, or otherwise handled.”

A number of container types are used for RCRA-regulated waste storage, depending on the type of waste and the ultimate disposition of the waste. Waste containers that may be stored at the SNL/NM Units include, but are not limited to, 30-, 55-, 83-, 85-, and 110-gallon steel, polyethylene, and fiber drums; fiberglass-reinforced plastic or plywood boxes; various steel boxes; metal overpack boxes; cardboard shipping containers; gas cylinders; roll-off bins; labpack containers; various small containers (e.g., 1-, 2-, 5-, 10-, and 20-gallon drums or pails); bags; and some oversized, irregularly-shaped containers.

RCRA-regulated waste containers are clearly labeled with the words “hazardous waste” and a description of container contents (i.e., hazardous constituents). The accumulation start date is clearly marked on each container holding RCRA-regulated waste at a SNL/NM Unit.

1.2.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

As required by 20 NMAC 4.1.500/40 CFR 264.173(b) [6-14-00], RCRA-regulated waste containers at SNL/NM are handled in a manner that will not cause them to rupture or leak. As required by 20 NMAC 4.1.500/40 CFR 264.173(a) [6-14-00], stored containers at SNL/NM are kept closed during storage except when waste is added to or removed from a container, the contents of a container need to be repackaged, or waste is being inspected or sampled.

Waste-handling equipment is maintained and operated in accordance with manufacturers' guidance.

1.2.2.1 Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)

Prior to transportation or storage, additional containment is provided for each container that is not in good condition (e.g., severe rusting, apparent structural defects). The container may be overpacked or the waste may be repackaged in containers that are in good condition (20 NMAC 4.1.500/40 CFR 264.171 [6-14-00]).

Containers are handled with care, maintained in good condition, and inspected according to the schedule outlined in Appendix C and Section 4.0 of each Unit-specific module. During storage, if a container holding RCRA-regulated waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, Unit personnel begin taking action to remediate the situation upon discovery. Remedial actions include transferring the RCRA-regulated waste from that container to a container that is in good condition or overpacking the container.

1.2.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

Storage configuration of containers depends upon the type of container, its size, and its weight restrictions as well as the load-bearing and/or secondary containment capacity of the specific Unit. Aisle space is maintained to enable the unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency (20 NMAC 4.1.500/40 CFR 264.35 [6-14-00]). Additional information is provided in Unit-specific modules.

1.2.2.3 Compatibility of Waste with Containers (20 NMAC 4.1.500/40 CFR 264.172)

As required by 20 NMAC 4.1.500/40 CFR 264.172 [6-14-00], only containers made of or lined with materials that will not react with and are otherwise compatible with the RCRA-regulated waste stored in them are managed at SNL/NM Units. Unit personnel will evaluate the compatibility of the waste to the container by considering one or more of the following as appropriate:

- Physical properties of the waste.

- Chemical properties of the original raw material(s) or commercial chemical product(s) used in the activity that generated the waste (obtained through material safety data sheets or other published information)
- Physical and chemical similarities between the waste and the original material.
- Features of the container(s) used for the original material(s), and compatibility of those features with the physical and chemical properties of the waste.
- Chemical properties of the waste (obtained through knowledge of generating processes, material safety data sheets, and/or published information)
- Data from waste characterization activities as described in Appendix B of the General Part B.
- Information about the containers being considered (supplied by manufacturers of containers).
- US DOT hazardous materials information and packaging specifications (49 CFR 172.101).

Any additional Unit-specific information is included in Section 1.3 of each Unit-specific module.

1.2.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

Containers that do not contain free liquids are not required to be stored in areas equipped with secondary containment. Before storing containers in areas without secondary containment, Unit personnel will verify that the containers do not contain free liquids by reviewing the information provided by the initial waste generator (described in Section B.3.1 of the Waste Analysis Plan [Appendix B]). Any additional Unit-specific information is included in Section 1.3 of each Unit-specific module.

2.0 SITE DESCRIPTION

SNL/NM is located on Kirtland Air Force Base immediately southeast of Albuquerque, New Mexico. General information about the SNL/NM site is included "Site-Wide Description for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix A of this SNL/NM General Part B. Additional Unit-specific information is included in Section 2.0 of each Unit-specific module.

The information in Appendix A includes site description, security procedures, traffic patterns, location information for compliance with seismic and floodplain standards, a topographic map, and groundwater protection information.

3.0 WASTE ANALYSIS PLAN

RCRA-regulated wastes are stored and/or treated at Sandia waste management Units. Information about waste analysis at SNL/NM is included in “Site-Wide Waste Analysis Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units” in Appendix B of this SNL/NM General Part B.

The information in Appendix B includes descriptions of waste streams, waste analysis parameters, characterization procedures, waste acceptance procedures, and special requirements.

4.0 INSPECTION PLAN

Sandia personnel inspect Unit waste management areas and associated systems on a regular basis to assure their integrity, maintenance, and safe operation. The inspection program is described in "Site-Wide Inspection Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix C to this SNL/NM General Part B.

The information in Appendix C includes daily inspection forms, weekly/monthly inspection forms, and requirements for inspection of various types of units. Unit-specific inspection plans are included in Section 4.0 of each module.

5.0 PERSONNEL TRAINING PLAN

Sandia Unit personnel receive training relevant to their positions. The training program is described in "Site-Wide Personnel Training Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix D to this SNL/NM General Part B. Any additional Unit-specific information is included in Section 5.0 of each Unit-specific module.

The information in Appendix D includes training content, frequency, techniques, and requirements for various waste management and Unit personnel.

6.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

Sandia/DOE have developed emergency response and contingency measures in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart D. The plan is described in "Site-Wide Contingency Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix E to this SNL/NM General Part B. Unit-specific information is included in Section 6.0 of each Unit-specific module.

The information in Appendix E includes description of Sandia/DOE emergency response system, general procedures to be followed by Unit personnel in the event of an emergency, and post-emergency actions. Unit-specific information that is included in Section 6.0 of each module includes: description of the Unit, description and location of emergency equipment, and emergency coordinators.

7.0 CLOSURE PLAN

Sandia/DOE have developed closure information and plans in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart G. The closure plan is described in "Site-Wide Closure Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units" in Appendix F to this SNL/NM General Part B. Additional Unit-specific information is included in Section 7.0 of each Unit-specific module.

Closure information provided in Appendix F is applicable to partial closure and/or final closure of the entire SNL/NM facility. Partial closure is defined as closure of one or more Units while leaving other Units in operation. Partial closure will include removal of RCRA-regulated waste from the Unit to be closed, and decontamination or removal of structures and equipment that have been contaminated by waste materials. Such Unit closures will minimize the need for further maintenance, preclude the release of RCRA-regulated waste or constituents to environmental media, and be protective of human health.

Final closure will occur when all SNL/NM Units are closed either by waste removal and decontamination or by disposal of contaminated structures and equipment.

8.0 TREATMENT

Sandia/DOE perform and plan to perform limited RCRA-regulated waste treatment at some SNL/NM Units (i.e., TTF, RMWMF, AHCF). Treatment will be performed to render RCRA-regulated wastes nonhazardous and/or safer to manage on site and/or dispose of off site. Treatment operations requiring a permit are described in Section 8.0 of the Unit-specific module for each Unit where treatment is performed.

8.1 Handling and Treatment of Unstable Wastes

Because of the nature of Sandia/DOE activities, there are a number of chemicals that are used in various laboratories that, with age or improper storage, may become explosive, unstable, or dangerous to handle. Examples of such chemicals include unknown or damaged compressed gas or liquid cylinders; or expired, sensitized chemicals, such as picric acid, crystallized ether, tetrahydrofuran, heavy metal azides, or organic peroxides. Unit personnel may be required to handle and dispose of unstable chemicals.

If the material has deteriorated such that handling the chemical would pose an imminent and substantial threat of a release that could be harmful to human health or the environment, on-site stabilization may be performed to render the material nonhazardous. Treatment may include venting of known, nonhazardous gas cylinders or stabilizing (e.g., rehydrating) the chemical. Unknown gas cylinders are not vented to the atmosphere; however, a sample of the gas may be taken and analyzed to characterize the gas. According to 20 NMAC 4.1.500/ 40 CFR 264.1(g)(8) [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.1(c)(3)(i) [6-14-00], treatment of this type is exempt from permitting requirements and from 20 NMAC 4.1.500/40 CFR 264. Once the material has been stabilized and is safe to handle, it will be disposed of according to normal procedures through the appropriate Unit.

8.2 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

Subpart AA

Sandia/DOE do not use any of the processes identified in 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00] for the treatment of RCRA-regulated wastes. Therefore, the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00] do not apply to SNL/NM.

Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations $\geq$ 10 percent by weight in process equipment identified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart BB [6-14-00] except during treatment at the TTF. Sandia/DOE occasionally manage such waste using process equipment identified above at the RMWMF and AHCF.

Equipment at the Units is used less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052-.1060 as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f). A list of the equipment will be maintained in the Unit records, as described in Section 9.0.

Subpart CC

RCRA-regulated wastes are treated in containers at the RMWMF and AHCF. Such wastes and treatment processes may be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/40 CFR 264.1080 [6-14-00]. These standards are not applicable to:

1. Containers that held RCRA-regulated waste prior to December 6, 1996, and to which no RCRA-regulated waste has been added on or after December 6, 1996;

2. Containers having a design capacity of less than or equal to 0.1 cubic meter (m^3) or approximately 26 gallons;

3. Containers used solely for on-site management of RCRA-regulated waste placed in the Unit as a result of implementing remedial activities under corrective action authorities;

4. Containers used solely for the management of radioactive mixed waste; or

5. Containers equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation (20 NMAC 4.1.500/40 CFR 264.1080[b] [6-14-00].

Furthermore, a container is exempt from the 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] container standards in 20 NMAC 4.1.500/40 CFR 264.1086 [6-14-00] if:

- The RCRA-regulated waste in a container has an average volatile organic concentration at the point of waste origin of less than 500 parts per million by weight (ppmw), or

- The organic content of all RCRA-regulated waste entering a container has been reduced by an organic destruction or removal process achieving any one of the conditions specified in 20 NMAC 4.1.500/40 CFR 264.1082(c)(2)(i)-(vi) [6-14-00] (20 NMAC 4.1.500/40 CFR 264.1082 [6-14-00]), or

- The RCRA-regulated waste in the container meets the treatment standards in 20 NMAC 4.1.800/40 CFR 268.40 for organic hazardous constituents present in the waste.

Sandia personnel assume that each container of RCRA-regulated wastes undergoing treatment that meets the applicability criteria for Subpart CC (i.e., each container that is not included in any of items 1 through 5 above) is subject to the Subpart CC requirements, unless a waste determination is made in accordance with 20 NMAC 4.1.500/40 CFR 264.1083 to establish that one or more of the exemptions is applicable. The waste determination process is described in

Section B.5.3 in Appendix B of this General Part B, and the results are included in the operating record as described in Section 9.0.

At SNL/NM, RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements are treated in primary containers that have a design capacity of less than 0.1 m^3. These treatment activities are exempt from Subpart CC standards, as noted above. Sandia/DOE do not perform treatment activities that are subject to Container Level 3 standards.

Management of releases to the atmosphere from containers during storage is addressed in Section 1.1.4.6.

Additional Unit-specific information is provided in Section 8.0 of each Unit-specific Part B module for Units where treatment is performed.

9.0 RECORDKEEPING

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart E, [6-14-00]. The following Unit-specific records are maintained by Sandia/DOE at each Unit unless specified otherwise in each Unit-specific Part B module.

- A current copy of sections of SNL/NM General Part B permit renewal request/application (or permit upon issuance) that govern Unit operations, including the site-wide waste analysis (Appendix B), inspection (Appendix C), training (Appendix D), contingency (Appendix E), closure (Appendix F), and treatment plans (where applicable);

- A current copy of the Unit-specific module sections in the current SNL/NM General Part B that provide additional information, including inspection (Section 4.0), contingency (Section 6.0), and closure (Section 7.0).

- A written or electronic operating record that describes:

  - the type and quantity of each RCRA-regulated waste received

  - the location of RCRA-regulated wastes and the quantity at each location

  - the method(s) and dates of storage and/or treatment of the RCRA-regulated waste

  - records and results of RCRA-regulated waste analyses and determinations

  - determinations that RCRA-regulated wastes are subject to the Federal Facilities Compliance Order between DOE, Sandia, and NMED (1995, as amended)

  - reports of any incidents that required activation of the Contingency Plan

  - inspection forms for the last three years

  - monitoring, testing, or analytical data and records of corrective actions taken (in the previous or current calendar year) to prevent or mitigate releases of RCRA-regulated waste to the environment

  - treatment notice and certification (as specified in 20 NMAC 4.1.800/40 CFR 268.7(b), (d), and (e) or 268.9(d) [6-14-00])

- Training records for current personnel;

- Written inspection schedule; and

- Air emissions records (as specified in 20 NMAC 4.1.500/40 CFR 264.1064 and 264.1089 [6-14-00]). These include a list of process equipment at the Unit that is identified in 20 NMAC 4.1.500/40 CFR 264 Subpart BB and is used for less than 300 hours per year for management of RCRA-regulated wastes with organic concentrations ≥ 10 percent by weight.

The following records are maintained at the SNL/NM Records Center, currently located in Building 869:

- A copy of the SNL/NM General Part B permit renewal request/application (or permit upon issuance);
- Correspondence and other documents from government agencies;
- Notices to off-site generators (as specified in 20 NMAC 4.1.500/40 CFR 264.12[b] [6-14-00]);
- Waste minimization certification;
- Training records for former employees (maintained for a minimum of three years from the date the employee last worked at a Unit);
- Manifest documents for RCRA-regulated waste shipped off site;
- A copy of the Hazardous Waste Report (Biennial Report);
- Copies of unmanifested waste reports;
- Certification and documentation that the Unit and any associated closed-vent system, control system, and containers meet the specifications of 20 NMAC 4.1.500/40 CFR 264.1084 and 1089 [6-14-00]; and
- Superseded versions of the SNL/NM General Part B permit renewal request/application, the permit, Contingency Plan, Inspection Plan, Waste Analysis Plan, Treatment Plans, and Training Plan.

9.1 Hazardous Waste Report (Biennial Report; 20 NMAC 4.1.500/40 CFR 264.75 and 20 NMAC 4.1.300/40 CFR 262.41)

Sandia/DOE will prepare and submit a hazardous waste report (biennial report) to the New Mexico Environment Department (NMED) by March 1 of each even-numbered year as required by 20 NMAC 4.1.500/40 CFR 264.75 and 20 NMAC 4.1.300/40 CFR 262.41 [6-14-00]. The biennial report will be submitted to the NMED on U.S. Environmental Protection Agency (EPA) Form 8700-13A/B (June 2000 or update) unless directed otherwise. The report will cover SNL/NM Unit activities during the previous calendar year and will include the information requested on the form and in the accompanying instructions, such as:

- The EPA identification number, name, and address of the facility;
- The calendar year(s) covered by the report;
- A description and the quantity of each RCRA-regulated waste received at each unit during the year;

- The method of treatment, storage, or disposal for each RCRA-regulated waste;
- For generators who treat, store, or dispose of RCRA-regulated waste on site, a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated;
- For generators who treat, store, or dispose of RCRA-regulated waste on site, a description in the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent such information is available for the years prior to 1984; and
- The certification signed by Sandia/DOE or an authorized representative.

9.2 Unmanifested Waste Report (20 NMAC 4.1.500/40 CFR 264.76)

Waste from off-site sources may be accepted at SNL/NM, provided that such waste is properly characterized and transported, and meets the requirements listed in Section B.4 of Appendix B. If Sandia/DOE accepts any wastes for treatment or storage from an off-site large quantity generator without an accompanying manifest, or without an accompanying shipping paper as described in 20 NMAC 4.1.500/40 CFR 264.76 [6-14-00], Sandia/DOE will prepare and submit an Unmanifested Waste Report (EPA Form 8700-13B) to the NMED within fifteen days after receiving the waste. The report will include the following:

- The EPA identification number, name, and address of the facility;
- The date the Unit received the waste;
- The EPA identification number, name, and address of the generator and transporter, if available;
- A description and the quantity of each unmanifested RCRA-regulated waste and facility received;
- The method of treatment, storage, or disposal for each RCRA-regulated waste;
- The certification signed by Sandia/DOE or an authorized representative; and
- A brief explanation of why the waste was unmanifested, if known.

9.3 Additional Reports (20 NMAC 4.1.500/40 CFR 264.77)

In accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264.77 [6-14-00], Sandia/DOE will also report the following to the NMED:

- Releases, fires, and explosions as specified in 20 NMAC 4.1.500/40 CFR 264.56(j) [6-14-00];
- Unit closures specified in 20 NMAC 4.1.500/40 CFR 264.115 [6-14-00];

- Manifest discrepancies that cannot be resolved within 15 days after receiving the waste as required by 20 NMAC 4.1.500/40 CFR 264.72(b) [6-14-00];

- Occurrence(s), if any, when RCRA-regulated waste is placed in a container in noncompliance with conditions specified in 20 NMAC 4.1.500/40 CFR 264.1090[a] [6-14-00] (20 NMAC 4.1.500/40 CFR 264.1082[c][1] or [2] [6-14-00]); and

- As otherwise required by 20 NMAC 4.1.500/40 CFR 264, Subparts F, BB, and CC [6-14-00].

10.0 OTHER FEDERAL LAWS

The following federal laws are required under 20 NMAC 4.1.900/40 CFR 270.3 and 270.14(b)(20) [6-14-00], to be given consideration when applying for a hazardous waste facility permit. When any of these laws is applicable, its procedures must be followed. Requirements and applicability of each law are briefly summarized.

1. *The Wild and Scenic Rivers Act (16 United States Code [USC] 1273 et seq.)*. This act provides for a national wild and scenic rivers system and prohibits construction of water resources projects that would have a direct adverse impact on wild and scenic river values. The Rio Grande, the closest river to SNL/NM Units at a distance of approximately 7 miles, is designated as a wild and scenic river. SNL/NM Unit operations do not involve any water resources project construction or development. Therefore, the Wild and Scenic Rivers Act does not apply.

2. *The National Historic Preservation Act (NHPA) of 1966 (16 USC 470 et seq.)*. This act establishes a program for the preservation of the nation's cultural resources including historic properties. Cultural resources at KAFB include prehistoric archaeological sites, which in the Albuquerque area date to before AD 1540 (the initiation of Spanish exploration of the area), and historic archaeological sites (sites, buildings, and structures from AD 1540 to 1948). Within the boundaries of KAFB and DOE buffer zones are 284 recorded prehistoric and historic archaeological sites. No traditional cultural properties have been identified at KAFB.

   Cultural resource investigations have recorded approximately 37 eligible and potentially eligible cultural properties in areas used by Sandia/DOE on Kirtland Air Force Base (KAFB) (Table 3). In addition, some Sandia/DOE structures on KAFB land could have Cold War significance or are approaching 50 years of age; these are in the process of being evaluated for potential inclusion in the National Register.

Table 3
Cultural Properties Used by Sandia/DOE on Kirtland Air Force Base

Land Jurisdiction	Cultural Properties		
	Eligible	Potentially Eligible	Total
USAF/USFS withdrawn: Sandia/DOE joint use	8	9	17
USAF: Sandia/DOE/Others joint use	15	5	20
Total	23	14	37

DOE = U.S. Department of Energy
Sandia = Sandia Corporation
USAF = U.S. Air Force
USFS = U.S. Forest Service

The NHPA has been amended by the Archeological and Historic Preservation Act *(16 USC 469a et seq.)*, which directs federal agencies to recover and preserve historic and archeological data that would otherwise be lost as a result of federal construction or other activities. It has also been amended by the Archeological Resources

Protection Act (ARPA) (*16 USC 470aa et seq.*), which requires a permit from the U.S. Department of the Interior (DOI) for excavation or removal of archeological resources from public or pueblo lands. Both of these statutes apply to known or future cultural properties recorded on KAFB land used by Sandia/DOE. Any excavations conducted on, or removal of archaeological resources from, KAFB land used by Sandia/DOE require an ARPA permit obtained through the DOI, National Park Service.

3. *The Endangered Species Act of 1973 (16 USC 1531 et seq.)*. This act provides for the protection of endangered and threatened species of flora and fauna. The act prohibits any action that would jeopardize the continued existence of any endangered or threatened species or its critical habitat. There are no federally-listed threatened or endangered species in the vicinity of SNL/NM Units. Consequently, neither formal consultation nor biological opinion processes have been required for SNL/NM Unit operations by the U.S. Fish and Wildlife Service under Section 7 of the Act.

4. *The Coastal Zone Management Act of 1972 (16 USC 1451 et seq.)*. This act establishes national policy for the management, use, protection, and development of land and water resources of the nation's coastal zones. Section 307(c) of the act and implementing regulations prohibit the EPA from issuing a permit for activity affecting coastal zone land or water without the certification from the applicant that the activity is in compliance with the state Coastal Zone Management Program. As an inland state, New Mexico does not have a State Coastal Zone Management Program with which Sandia/DOE must comply. None of the SNL/NM Units are located in an affected area (i.e., a coastal zone); therefore, the act does not apply.

5. *The Fish and Wildlife Coordination Act of 1934, as amended (16 USC 661-666c)*. This act provides for the protection of fish and wildlife resources potentially affected by development projects that modify any stream or other body of water 10 acres or greater in size. Because there are no natural bodies of surface water proposed for modification by SNL/NM Unit activities, the Fish and Wildlife Coordination Act does not apply.

Consideration will be given to Executive Orders, issued by the President, that are relevant to RCRA-regulated waste management activities at SNL/NM.

11.0 CORRECTIVE ACTION

In accordance with 20 NMAC 4.1.900/40 CFR 270.14(d) [6-14-00], information on solid waste management units is presented in Part 4 of this comprehensive Part B permit request. Solid waste management units are shown on Figure 1 in Part 4.

12.0 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.

_____ _____

Donald H. Blanton
Vice President, Human Resources and Protection Services
Sandia Corporation
Albuquerque, New Mexico
Co-Operator

Date Signed

_____ _____

Karen L. Boardman
Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Albuquerque, New Mexico
Owner and Co-Operator

Date Signed

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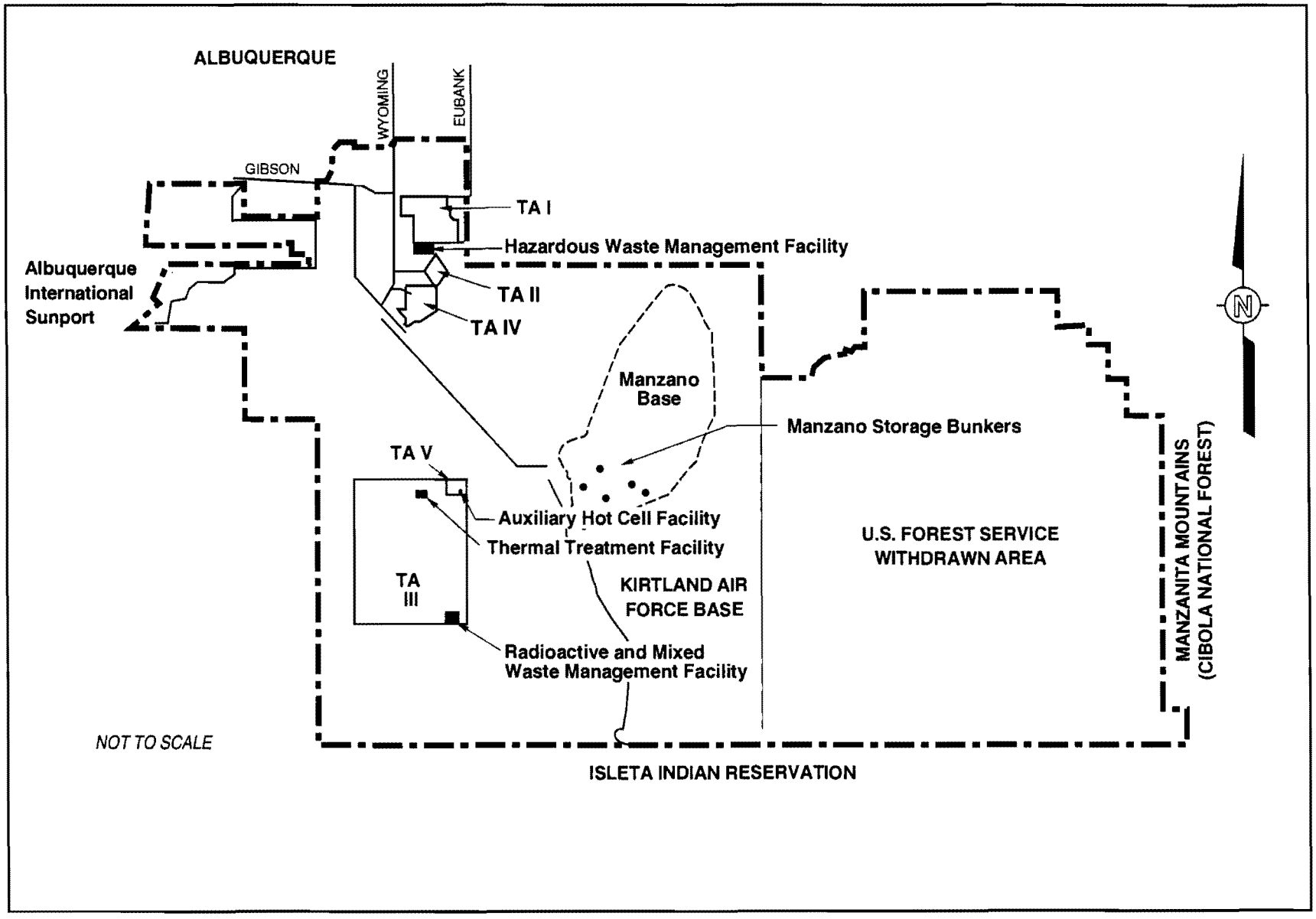

Figure 1

Sandia National Laboratories/New Mexico
Technical Areas (TAs) and Resource Conservation and Recovery Act-Regulated Waste Management Units in Relation to Kirtland Air Force Base

APPENDIX A

SITE-WIDE DESCRIPTION FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
AHCF	Auxiliary Hot Cell Facility
DOE	U.S. Department of Energy
ft	foot/feet
HWMF	Hazardous Waste Management Facility
KAFB	Kirtland Air Force Base
MSB	Manzano Storage Bunkers
RCRA	Resource Conservation and Recovery Act
RMWMF	Radioactive and Mixed Waste Management Facility
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TA	Technical Area
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit
USFS	U.S. Forest Service

SITE-WIDE DESCRIPTION FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

The information provided in this appendix is submitted in accordance with the applicable requirements of New Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.1500– and .900), Revised June 14, 2000 [6-14-00]./ [6-14-00] 40 CFR 260–266, 268, and 270 [6-14-00]. 20 NMAC 4.1.500 and .900 adopt, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270). The following subject areas are addressed in this appendix or in Section 2.0 of each Unit-specific module.

- A general description of the Sandia National Laboratories/New Mexico (SNL/NM) site (20 NMAC 4.1.900/40 CFR 270.14[b][1] [6-14-00]);
- Site-wide security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Site-wide traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Site location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/ 40 CFR 264.18[a] and [b] [6-14-00]);
- Site-wide topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]);
- Site-wide groundwater monitoring and protection information (20 NMAC 4.1.900/40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]); and
- Other permit activities.

Together, the information in this appendix, in the General Part B, and in each Unit-specific Part B module meets the applicable regulatory requirements. Individual Units are listed in Table A-1.

For the purposes of this permit renewal request/application, SNL/NM (the facility) is owned by DOE and co-operated by Sandia and DOE.

A.1 GENERAL SITE DESCRIPTION (20 NMAC 4.1.900/40 CFR 270.14[b][1])

SNL/NM is located on Kirtland Air Force Base (KAFB) immediately southeast of the Albuquerque city limits in Bernalillo County, New Mexico. SNL/NM occupies an area of approximately 2,842 acres within the 80-square-mile KAFB (Figure A-1).

SNL/NM (U.S. Environmental Protection Agency Identification Number NM5890110518) is a multidisciplinary laboratory engaged in research and development of weapons and alternative energy sources. SNL/NM is managed by Sandia, a wholly-owned subsidiary of Lockheed Martin, for the DOE, with work also performed for others. Activities at SNL/NM fall under North American Industry Classification System Numbers 92811 (National Security) and 54171 (Research and Development in the Physical, Engineering, and Life Sciences).

Table A-1
RCRA-Regulated Waste Management Units

Unit Name	Acronym	Location, size	Types of operations	Operating Status
Hazardous Waste Management Facility	HWMF	South of TA-I, north of entrance to TA-II. 1.35 acres	Storage, Repackaging	Existing, operational
Thermal Treatment Facility	TTF	Northern part of TA-III. 196 square feet	Treatment	Existing, on standby
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. 3.11 acres	Storage, Treatment, Repackaging	Existing, operational
Auxiliary Hot Cell Facility	AHCF	TA-V. 5578 square feet	Storage, Treatment, Repackaging	Existing, expected to start operations in 2003
Manzano Storage Bunkers (Set of five Units)	MSB	In Manzano Area on KAFB. 0.4 acres occupied by bunkers (approximately 1600 to 2100 square feet in each bunker)	Storage	Existing, operational

The major Sandia/DOE research and administration functions are located at five Technical Areas (TAs), designated I through V. TAs I, II, and IV are located north of Tijeras Arroyo and Arroyo del Coyote (Figures A-2 and A-3). TAs III and V occupy contiguous tracts of land south of Tijeras Arroyo and west of Arroyo del Coyote.

A.2 SECURITY PROCEDURES AND EQUIPMENT (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

In accordance with 20 NMAC 4.1.500/40 CFR 264.14(a) [6-14-00], an owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of a facility. The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of Units.

A.2.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

20 NMAC 4.1.500/40 CFR 264.14 [6-14-00] and 270.14[b][19][viii] [6-14-00], require that security be provided by 24-hour surveillance which is continuously monitored and controls access to the facility (20 NMAC 4.1.500/40 CFR 264.14[b][1] [6-14-00]), or if that requirement cannot be met, a natural or artificial barrier and means to control entry must be provided (20 NMAC 4.1.500/40 CFR 264.14[b][2] [6-14-00]). The design and operation of the SNL/NM facility fully meet the security requirements of 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The five TAs, Manzano Base, and Units outside TAs are surrounded by fences that prohibit access except through gated entrances. Only personnel with appropriate Sandia-issued access badges

and identification, or escorted visitors, are allowed access to the TAs and all Units. The gates and/or doors to all Units are closed and locked during non-operating hours.

Sandia/DOE security personnel periodically monitor the gates of all SNL/NM technical areas and RCRA-regulated waste management Units during non-operational hours. Any additional Unit-specific information on security procedures and access control is provided in each Unit-specific module.

The SNL/NM Units are located within the fenced boundaries of KAFB. Access to KAFB is controlled 24 hours per day, 7 days per week. Entrance is possible only though five gates, staffed by armed military police, upon recognition of identification stickers or passes issued to each vehicle. Visitors must have a base sponsor and sign an entry log prior to entering the base. The gates are shown in Figure A-4.

A.2.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

20 NMAC 4.1.500/40 CFR 264.14(c) [6-14-00], requires that signs meeting the requirements of that section be posted. Each SNL/NM Unit is posted with “Danger: Unauthorized Personnel Keep Out” (or functionally equivalent) signs in English and Spanish. The signs are legible from a distance of 25 feet and can be seen from any approach to any Unit. The signs and their placement meet the requirements of 20 NMAC 4.1.500/40 CFR 264.14(c) [6-14-00]. Any additional Unit-specific information on warning signs is provided in each Unit-specific module.

A.3 TRAFFIC PATTERNS, VOLUMES, AND CONTROLS (20 NMAC 4.1.900/ 40 CFR 270.14[b][10])

The traffic pattern information presented below is general in nature. More detailed information is provided in Section 2.2 of each Unit-specific module.

RCRA-regulated waste is generated during operations at sites throughout SNL/NM. Because RCRA-regulated waste may be generated throughout SNL/NM, waste transport may occur on nearly all roads within KAFB. Off-site wastes may be received at SNL/NM (see Appendix B of this SNL/NM General Part B). The Units included in this permit application can be reached from the KAFB entrance gates at Wyoming Boulevard, Truman Avenue, Gibson Boulevard, or Eubank Boulevard (Figure A-4). KAFB may restrict hazardous material traffic to one or more gates.

A system of interior roads, as shown in Figures A-4, A-5, A-6, and A-7, is maintained at SNL/NM. About 78 total miles of roadway exist; 33 of those miles are paved. The paved roads present at SNL/NM are generally built in conformance to the New Mexico State Highway Standards or the “City of Albuquerque Development Process Manual, Standards for Residential Streets” (City of Albuquerque, 1983 and amendments). These standards conform to specifications prepared by the American Association of State Highway Transportation Officials. Paved roads at SNL/NM are generally designed and constructed to accommodate light to moderate volumes of truck traffic, including 30- to 40-ton vehicles. The roads typically consist of a 1.5 - to 4-inch layer of asphaltic pavement over a 4- to-6 inch base course (not always present) and 8- to 12-inch compacted subgrade.

A.3.1 Traffic Patterns

Information addressing current Unit-specific travel routes is presented in Section 2.2 of each Unit-specific module. Traffic patterns are subject to change in response to KAFB security requirements.

A.3.2 Traffic Volumes

During the last official traffic study conducted at KAFB in 1984, the average number of vehicles passing through the continuously guarded KAFB gates during normal workday hours from Monday through Friday was estimated to be (Meyers, 1991):

- Carlisle-Gibson gate—5,200 vehicles
- Truman-Gibson gate—10,200 vehicles
- Louisiana-Gibson gate—18,000 vehicles
- Wyoming gate—21,600 vehicles
- Eubank gate—12,200 vehicles.

The majority of the 67,200 total vehicles consisted of commuting employees in personal automobiles and light-duty trucks. At the time of the traffic study, about 8,400 people were employed at SNL/NM (including Sandia personnel and contractors) and an estimated additional 21,000 people were employed at adjoining KAFB and DOE facilities (Jackson, 1991). Sandia personnel and contractors currently number about 6,450 people and an additional 17,000 are employed at KAFB and DOE facilities (Francis, 2001). The KAFB Security Forces squadron estimates that 40,000 to 50,000 vehicles currently pass through KAFB gates daily (Francis, 2001).

Therefore, Sandia/DOE believes the 1984 traffic data slightly overestimate the traffic volume for 2001.

A.3.3 Traffic Control Signals

Site wide traffic flow on KAFB is controlled by traffic lights, stop signs, yield signs, and one-way streets. Traffic lights are in place at major intersections on KAFB. Traffic signs are used at “T” intersections throughout KAFB, including SNL/NM. Any additional Unit-specific information addressing traffic control is presented in Section 2.2 of each Unit-specific module.

A.4 SITE LOCATION INFORMATION (20 NMAC 4.1.900/40 CFR 270.14[b][11])

A.4.1 Geologic Setting (20 NMAC 4.1.500/40 CFR 264.18[a] and 20 NMAC 4.1.900/40 CFR 270.14[b][11])

SNL/NM is located along the east-central edge of the Albuquerque Basin, one of a north-south-trending series of basins that make up the Rio Grande Rift. The Sandia, Manzanita, and Manzano

Mountains, which are uplifted fault blocks, form the eastern boundary of the basin. The Lucero uplift bounds the west side of the basin, the Ladron Mountains bound the south side, and there is limited topographic relief on the northwest side of the basin. The basin is approximately 100 miles long and 20 to 40 miles wide (Figure A-9).

The eastern section of the Albuquerque Basin shows major faulting (Figures A-2 and A-9). The Hubbell Springs, Sandia, and Tijeras faults form a series of down-dropped blocks to the west (SAIC, 1985; Machette, 1982; Grant, 1981; Kelley, 1977).

The Tijeras Fault zone trends northeast from SNL/NM through Tijeras Canyon. The fault zone consists of several subparallel faults with near-vertical dips and show normal and left lateral displacement (Maynard et al., 1991; Lisenbee et al., 1979).

Within the boundaries of KAFB, the Albuquerque Basin rocks are Precambrian to Holocene in age. The upper part of the basin fill within KAFB is comprised of the Ceja Member of the Tertiary Santa Fe Group, which is a complex sequence of gravel, sand, silt, clay, and caliche deposits. Quaternary and Holocene deposits, which include alluvium, landslide deposits, eolian deposits, caliche, and gravel pediments, also comprise Albuquerque Basin sediments within KAFB (Kelley, 1977).

A.4.2 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i and ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

SNL/NM is located in Bernalillo County, New Mexico, which is listed in Appendix VI of 20 NMAC 4.1.500/40 CFR 264 [6-14-00]. None of the SNL/NM Units are located within 3,000 feet (ft) of any fault with Holocene displacements (Machette, 1982). Therefore, all SNL/NM Units are compliant with the seismic standards in 20 NMAC 4.1.500/40 CFR 264.18(a) [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(11)(ii) [6-14-00].

A.4.3 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii through v]; 20 NMAC 4.1.500/40 CFR 264.18[b])

SNL/NM is located near the middle of the upper Rio Grande basin that originates in southern Colorado. SNL/NM occupies generally flat, gently west-sloping mesa land located between the Rio Grande Valley to the west and the Manzano and Manzanita Mountains to the east. The nearest surface water body is the Rio Grande, located about 7 miles west of SNL/NM.

The locations of the 100-year floodplains of Tijeras Arroyo and Arroyo del Coyote are shown in Figure A-2. The floodplain portion of Figure A-2 was derived from a U.S. Army Corps of Engineers map (COE, 1979), prepared using Federal Emergency Management Administration guidelines that are equivalent to the mapping techniques used to prepare Federal Insurance Administration floodplain maps. None of the SNL/NM Units are located within a 100-year floodplain, as defined in 20 NMAC 4.1.500/40 CFR 264.18(b)(2)(i) [6-14-00], and as regulated under 20 NMAC 4.1.500/40 CFR 264.18(b)(1) [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(11)(iv) [6-14-00]. Therefore, all SNL/NM Units are compliant with the floodplain standards.

A.5 TOPOGRAPHIC MAPS (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Figure A-2 is provided to meet the requirements of the 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Figure A-2 is a topographic map of KAFB that shows the SNL/NM TAs and includes the following:

- Map scale and date
- The 100-year floodplain area
- Surface water bodies, including intermittent streams
- Wind roses
- Map orientation (north arrow)
- Legal boundaries of the SNL/NM facility
- Access control features (i.e., fences and gates)
- Groundwater monitoring, withdrawal, and water supply wells both on site and off site at KAFB and SNL/NM in the vicinity of the Units
- Buildings and other structures (e.g., access and internal roads)
- Locations of the HWMF, TTF, RMWMF, AHCF, and MSB.
- Areas of residential land use within KAFB.

These items are also shown on topographic maps in the Unit-specific modules. The Unit-specific maps show Unit features and the area surrounding each Unit in greater detail.

A.5.1 Wells (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix])

There are no injection wells at SNL/NM. Groundwater monitoring wells and withdrawal wells located at SNL/NM are shown in Figure A-2. None of the wells shown in Figure A-2 are expected to be influenced by activities at any SNL/NM RCRA-regulated waste management Unit because waste management activities occur in contained areas. KAFB water-supply wells, City of Albuquerque wells, and other wells located within 1,000 ft of the KAFB boundaries are shown on Figure A-2.

A.5.2 Wind Rose (20 NMAC 4.1.900/40 CFR 270.14[b][19][v])

A network of meteorological towers is used to monitor weather conditions at SNL/NM. Data indicate that the overall prevailing winds at SNL/NM are from the east, except that winter winds at the 100-ft elevation are from the north. Rapid night time ground cooling after sunset on cloudless or near-cloudless nights produces strong temperature inversions in which temperature increases with

elevation (an atmospheric condition resulting from a reversal of the normal temperature lapse rate). This rapid cooling effect generates nighttime drainage winds out of the mountains, which are strongest at the mouths of the larger canyons. Nighttime winds in these areas are typically from the east and southeast, while daytime winds are typically from the southwest, west, and northwest. It also appears that Tijeras Arroyo diverts surface air flow between TAs III and V on the south and TAs I, II, and IV, and Albuquerque on the north. The channeling of wind through Tijeras Canyon can be seen by comparing the wind roses from these two areas (SNL/NM, 2002). Figure A-2 shows wind roses that summarize wind speeds and directions for TA-II (near the HWMF), the southeast corner of TA-III (near the RMWMF), and the northeast corner of TA-III (near the AHCF and TTF). Wind roses are also shown on the Unit-specific topographic maps.

A.5.3 Surrounding Land Use (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv])

Albuquerque is the largest population center in Bernalillo County and also the closest population center to KAFB and SNL/NM. According to Census 2000 data, the total population of the Albuquerque metropolitan area is 448,607 (U.S. Census Bureau, 2000). This population includes permanent residents of KAFB living in the KAFB housing areas. An additional 108,071 people live outside the Albuquerque metropolitan area but within Bernalillo County (U.S. Census Bureau, 2000).

SNL/NM is essentially surrounded by KAFB, with co-use agreements on some portions of KAFB. An additional 22,500-acre area to the east of KAFB has been withdrawn from the U.S. Forest Service (USFS) for the exclusive use of KAFB. High explosive tests, explosives storage, and other operations are buffered and barricaded by the mountainous terrain toward the eastern edge of this withdrawal area. Areas to the west and south, by agreements with the State of New Mexico and Isleta Pueblo, serve as buffer zones for other test operations.

Land use in the vicinity of SNL/NM and KAFB is urban to the northwest, north, and northeast. Undeveloped grazing land of Isleta Pueblo is located to the south. Undeveloped public grazing land lies to the west and southwest of KAFB and the buffer zones.

The urbanized area immediately northeast, north, and northwest of SNL/NM is predominantly residential, with commercial development along more heavily-traveled streets. Military (i.e., KAFB) housing is located north of F Street (adjacent to the northern edge of SNL/NM TA-I). Additional military housing is located west of Pennsylvania Avenue, north of Hardin Blvd (west of SNL/NM TA-1), as shown on Figure A-2. Albuquerque International Sunport is located west of the northern part of KAFB. Figure A-8 shows land uses for the areas adjacent to and within KAFB boundaries.

The SNL/NM facility is comprised of five TAs and several additional test areas spread over 17,845 acres, which are under diverse land ownership. SNL/NM occupies 2,842 acres owned by the DOE and an additional 15,003 acres that have been made available through a series of land-use agreements or permits among DOE-Albuquerque Operations, DOE Transportation Safeguards Division, KAFB, USFS, Bureau of Land Management, State of New Mexico, Phillips Laboratory (a private contractor), DOE Central Training Academy, and Isleta Pueblo.

The HWMF is approximately 2 miles south of Interstate 40 and 6 miles east of Interstate 25 and downtown Albuquerque. At their nearest points, the AHCF and the TTF are approximately 3 miles

south of Interstate 40 and 6.5 miles east of Interstate 25 and downtown Albuquerque. The MSB are approximately 5 miles south of Interstate 40 and 7.5 miles east of Interstate 25 and downtown Albuquerque. The RMWMF is approximately 5.5 miles south of Interstate 40 and 6.5 miles east of Interstate 25 and downtown Albuquerque. Land use in the vicinity of each RCRA-regulated Unit is predominantly or completely industrial. There are no residential areas within 1 mile of any of the SNL/NM Units. The closest residences are in Zia Park, a KAFB residential area located approximately 1 mile west of TA-I and approximately 3.9 miles north-northwest of TA-V.

A.5.4 Drainage Control Features (20 NMAC 4.1.900/40 CFR 270.14(b)(8)(ii)

Drainage control features (e.g., run-on/runoff, drainage barriers, storm water discharge) are shown on figures provided in each Unit-specific module.

A.5.5 Waste Management Areas

Locations of the waste management areas at each SNL/NM Unit are shown on figures provided in each Unit-specific module.

A.6 GROUNDWATER MONITORING (20 NMAC 4.1.900/40 CFR 270.14[c] and 20 NMAC 4.1.500/40 CFR 264.90[a])

The nine SNL/NM Units included in Part 2 of this Sandia/DOE comprehensive Part B permit request are storage and/or treatment Units that are subject to 20 NMAC 4.1.500/40 CFR 264.101 [6-14-00] which requires that operators of treatment, storage, or disposal facilities develop and implement corrective actions as necessary to protect human health and the environment from past, present, or future releases of RCRA-regulated wastes. None of the nine storage and/or treatment Units addressed in Part 2 have released RCRA-regulated wastes in the past.

The nine Units are not subject to the groundwater protection and monitoring requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart F [6-14-00] because they are not regulated units or solid waste management units.

SNL/NM currently has one regulated unit (the Chemical Waste Landfill) that is subject to the groundwater protection and monitoring requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart F [6-14-00]. Chemical Waste Landfill groundwater monitoring is addressed in Part 3 of this Sandia/DOE comprehensive Part B permit request.

A.7 OTHER PERMIT ACTIVITIES

Sandia/DOE hold numerous environmental permits issued by various agencies. Current permits, including RCRA permits, are listed in Appendix A of the General Part A included in Part 1 of this comprehensive Part B renewal request.

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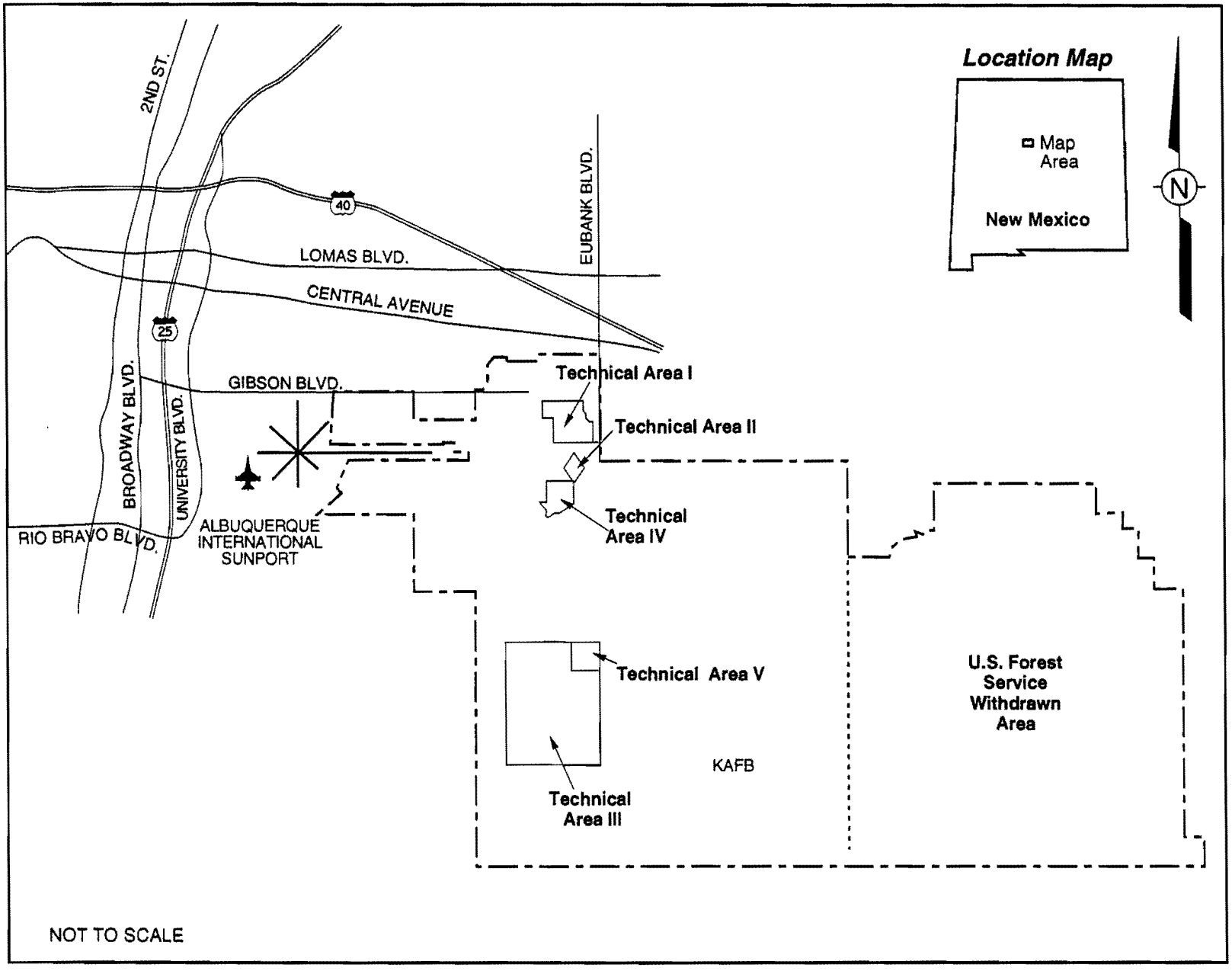

Figure A-1
Site Location Map, Albuquerque and Kirtland Air Force Base (KAFB)

TO VIEW THE MAP/MAPS ASSOCIATED WITH THIS DOCUMENT PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

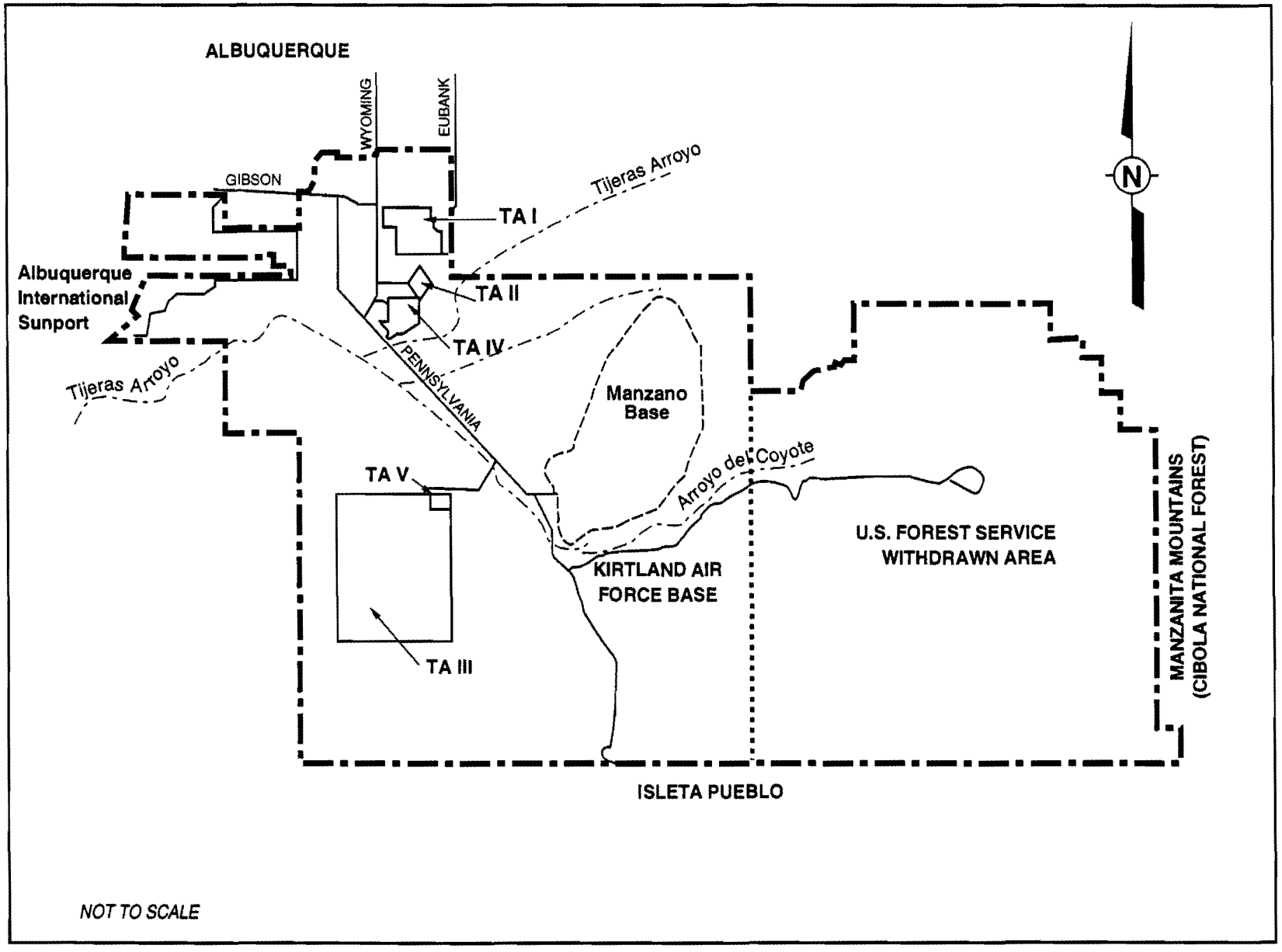

Figure A-3
Sandia National Laboratories/New Mexico
Technical Areas (TAs) in Relation to Kirtland Air Force Base

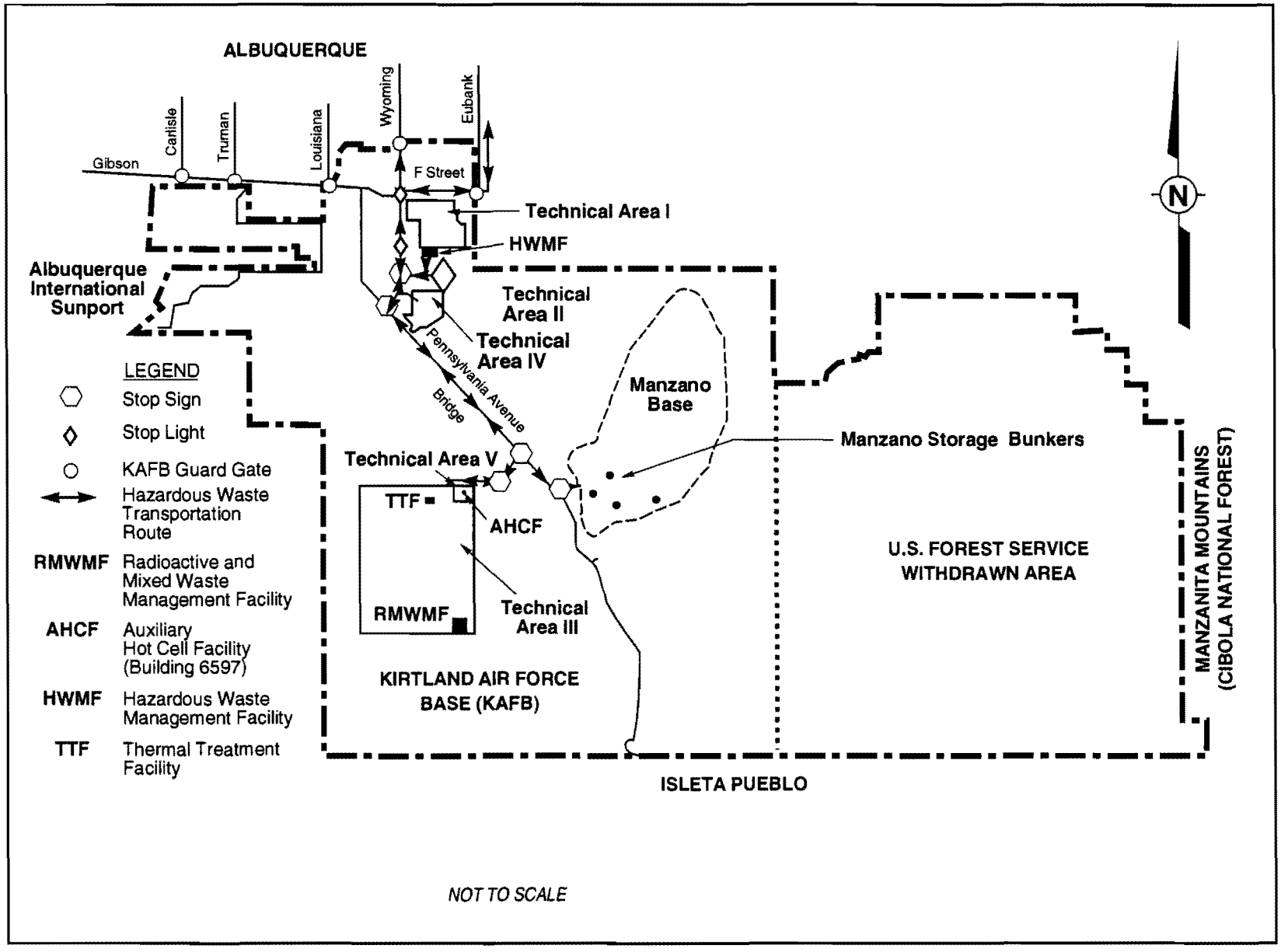

Figure A-4
Resource Conservation and Recovery Act-Regulated Waste Transportation Routes, Sandia National Laboratories/New Mexico

774470.14000000 A97

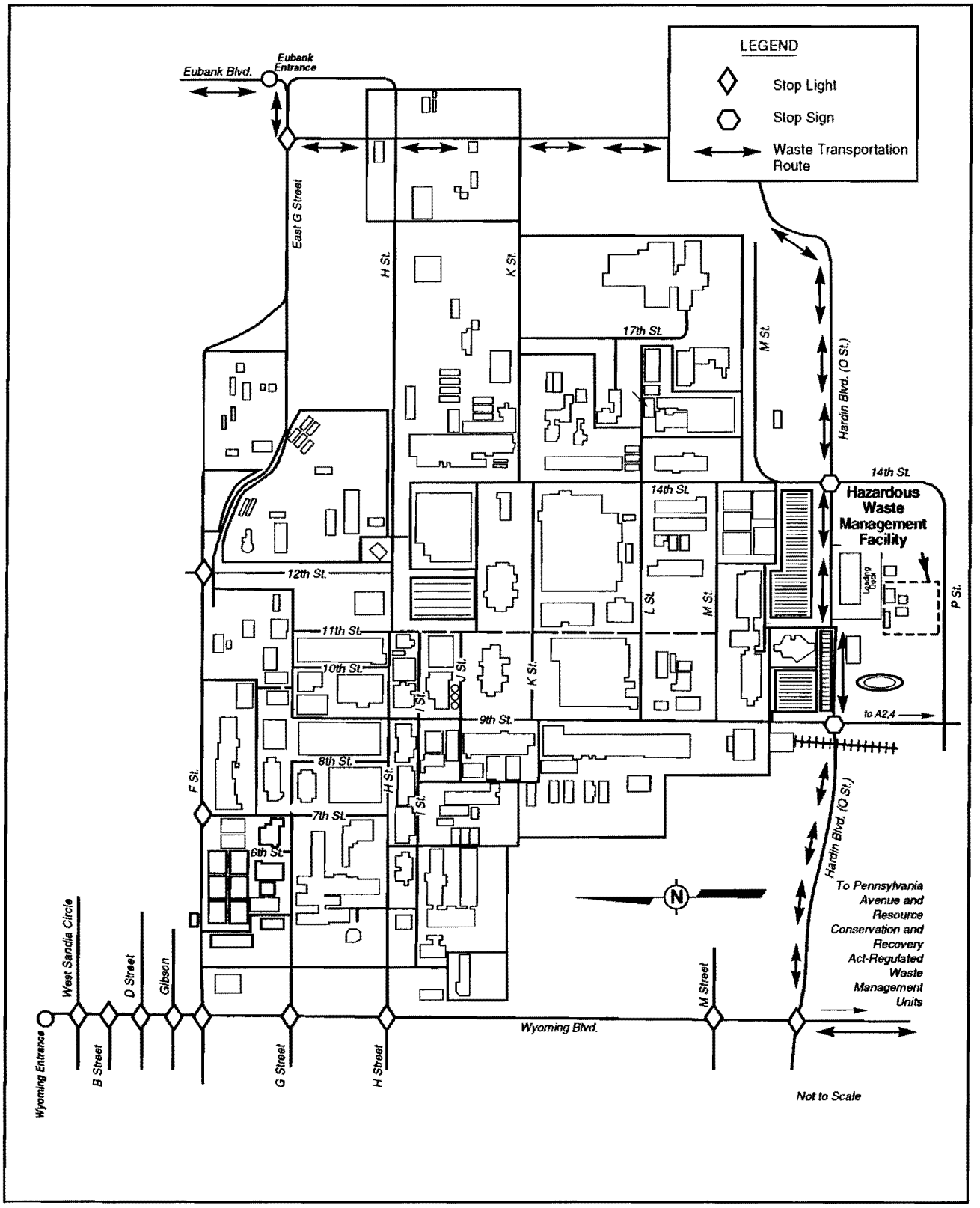

Figure A-5
Resource Conservation and Recovery Act-Regulated Waste Transportation Routes Around Technical Area I

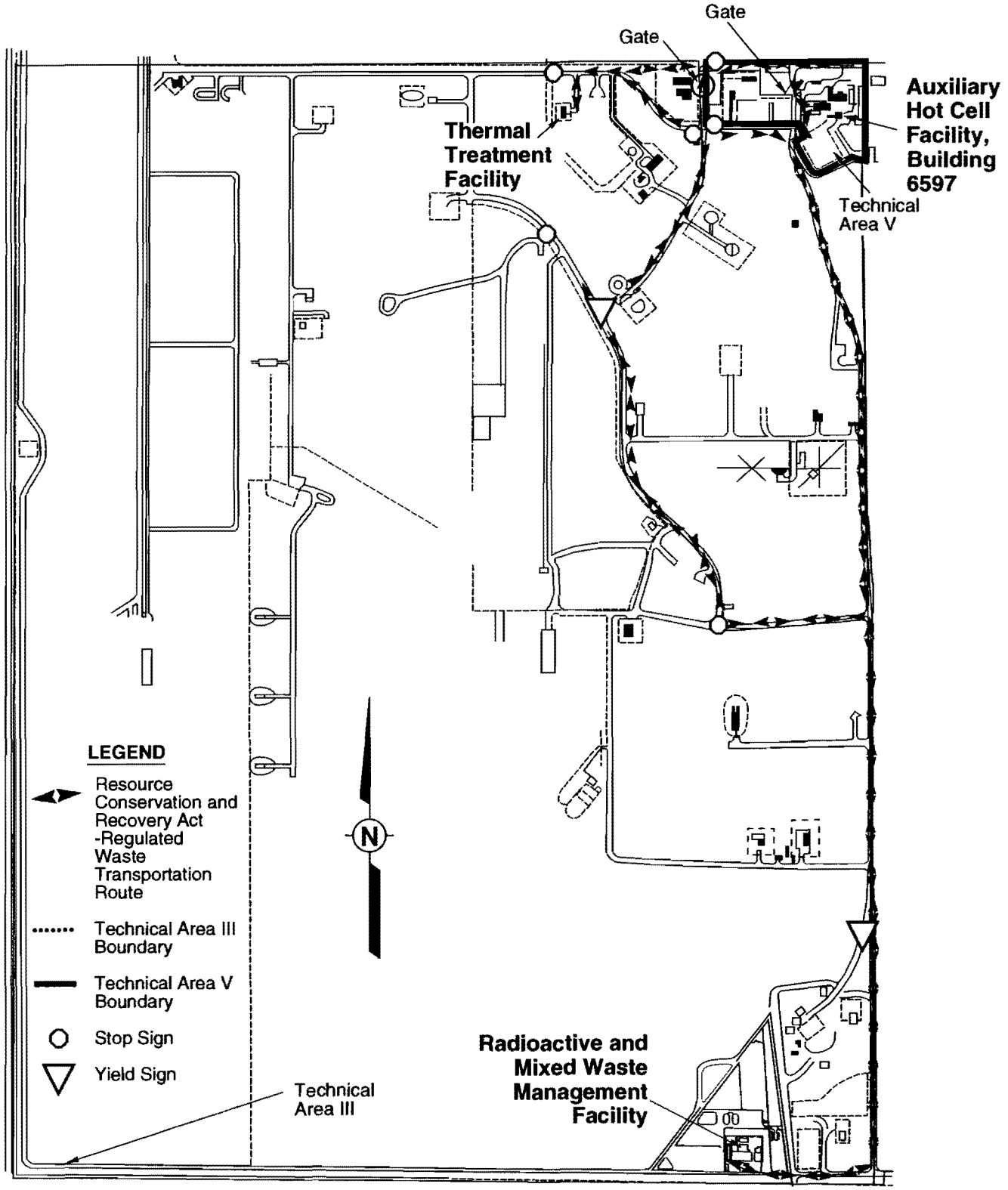

Figure A-6
Resource Conservation and Recovery Act-Regulated Waste Transportation Routes in Technical Areas III and V

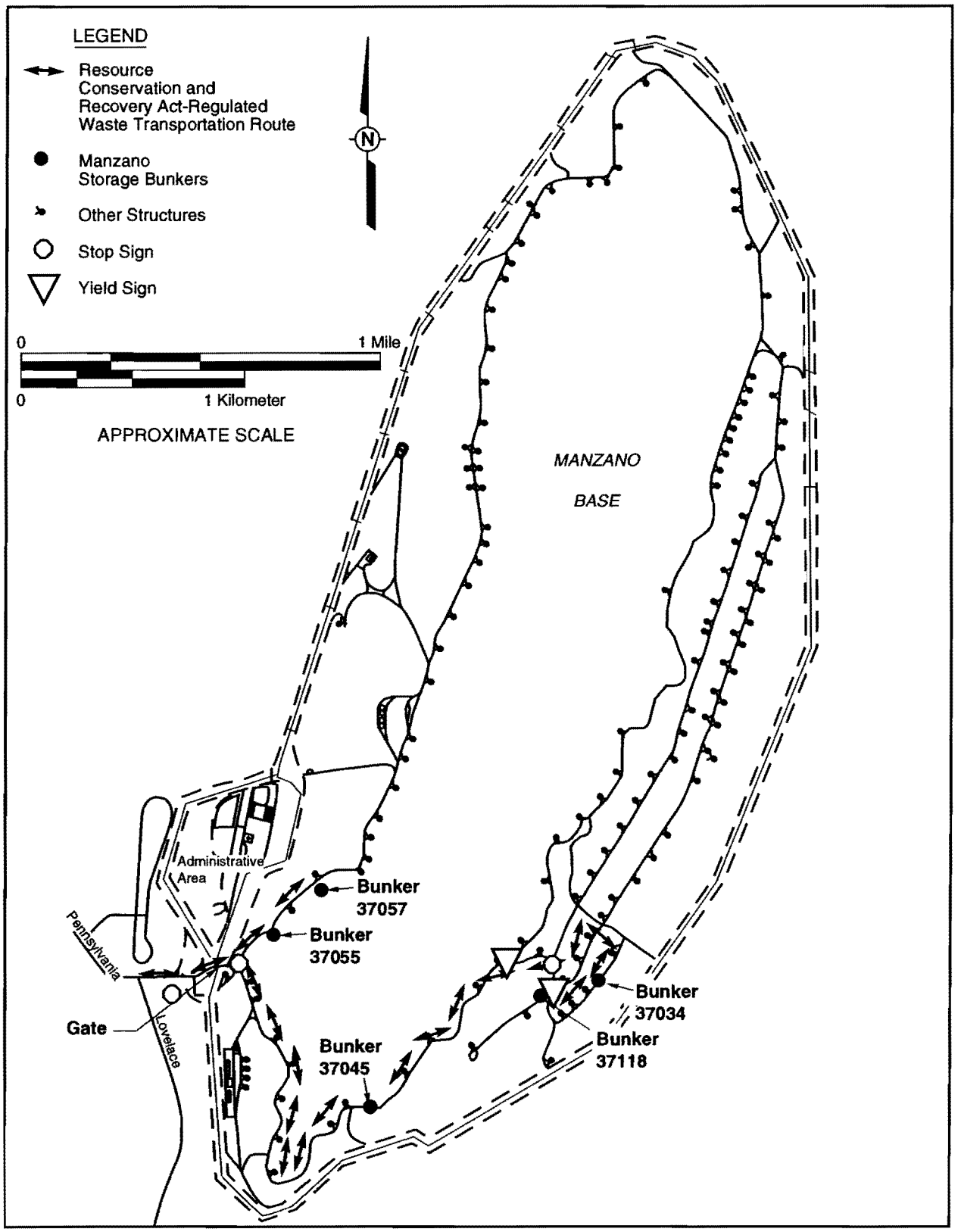

Figure A-7

Resource Conservation and Recovery Act-Regulated Waste Transportation Routes at Manzano Base

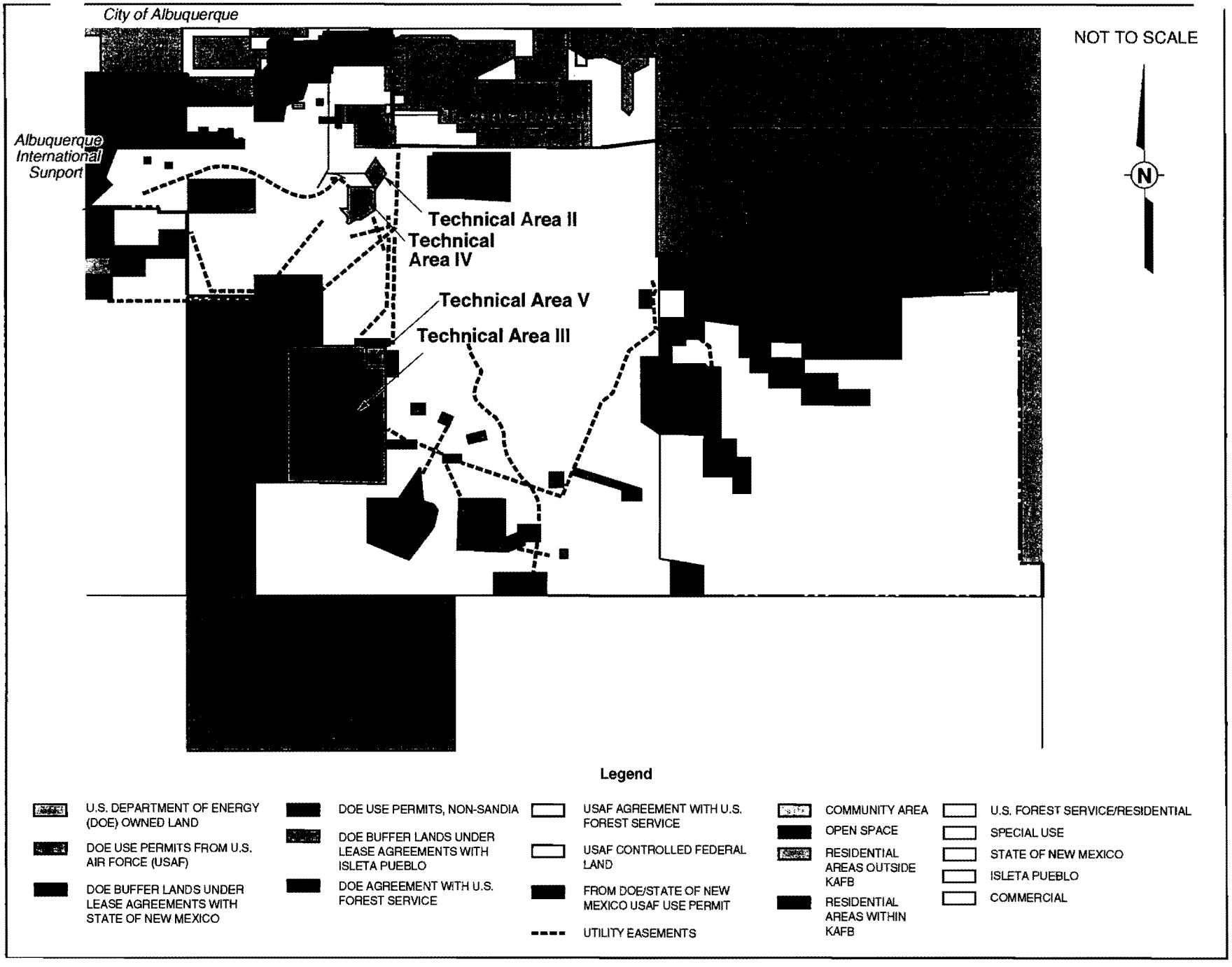

Figure A-8

Land Uses Adjacent to and Within Sandia National Laboratories/New Mexico and Kirtland Air Force Base

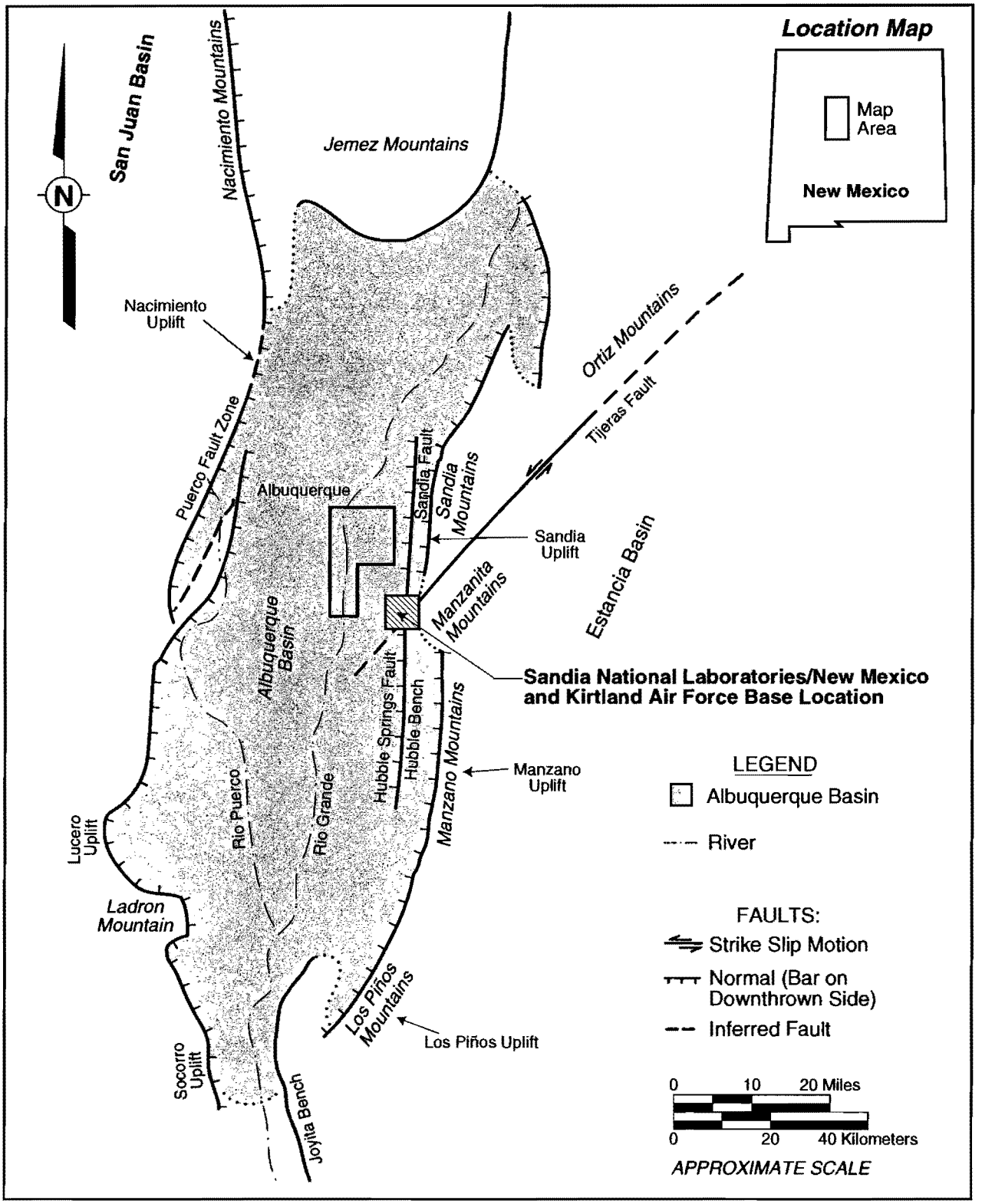

Figure A-9
Geologic Features in Relation to Sandia National Laboratories/New Mexico

APPENDIX B

SITE-WIDE WASTE ANALYSIS PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ABBREVIATIONS AND ACRONYMS

20 NMAC 4.1.*XX*	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *XX*
40 CFR *XXX.XX*	Code of Federal Regulations, Title 40, Part *XXX*, Section *XXX.XX*
AHCF	Auxiliary Hot Cell Facility
ASTM	American Society for Testing and Materials
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DR	disposal request
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
KAFB	Kirtland Air Force Base
LDR	land disposal restriction
MSDS	Material Safety Data Sheet
PETN	pentaerythritol tetranitrate
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
R&D	research and development
RMWMF	Radioactive and Mixed Waste Management Facility
RTL	regulatory threshold limit
Sandia	Sandia Corporation
SASN	silver acetylide/silver nitrate

LIST OF ABBREVIATIONS/ACRONYMS (Concluded)

SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semivolatile organic compound
TC	toxicity characteristic
TCLP	toxicity characteristic leaching procedure
TSDF	treatment, storage, or disposal facility
TTF	Thermal Treatment Facility
UHC	underlying hazardous constituent
Unit	RCRA-regulated waste management unit
VOC	volatile organic compound
WAP	waste analysis plan

SITE-WIDE WASTE ANALYSIS PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

This waste analysis plan (WAP) presents information on the chemical and physical nature of Resource Conservation and Recovery Act (RCRA)-regulated waste stored and/or treated at the Sandia National Laboratories/New Mexico (SNL/NM) RCRA-regulated waste management units (Units) described in Section 1.0 of this Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application, hereinafter referred to as the SNL/NM General Part B, and listed in Section B.1.1 of this WAP. The Units are co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE).

Sandia/DOE perform storage and treatment of the RCRA-regulated wastes listed in the General Part A Permit Renewal Request/Application," Revision 5.0, (SNL/NM, 2003) at the Units listed in Section B.1.1. This WAP applies to those wastes only. It addresses the waste characterization necessary to perform waste storage and treatment as described in the General Part B and Unit-specific modules. Sandia/DOE do not perform disposal of RCRA-regulated wastes under the terms of the existing or requested permit. Therefore, this WAP does not address waste characterization necessary for disposal.

This WAP has been prepared to meet the requirements set forth in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), incorporating by reference the Code of Federal Regulations, Title 40, Part 264, including Section 264.13 (40 CFR 264.13), revised June 14, 2000 [6-14-00]. It has also been prepared to meet additional waste analysis requirements specified in 20 NMAC 4.1.900/40 CFR 270.14(b) [6-14-00] and 20 NMAC 4.1.800/40 CFR 268.7(b) and 268.9(d) [6-14-00] applicable to wastes treated at SNL/NM Units. Together, the information in this appendix, in the General Part B, and in each Unit-specific module meets the applicable regulatory requirements. The waste analysis information contained in this WAP applies to the SNL/NM Units where RCRA-regulated wastes are stored in containers and/or treated in containers or miscellaneous units.

The content of this WAP follows the guidance provided in "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual" (U.S. Environmental Protection Agency [EPA], 1994). The general information provided in this WAP is applicable to all SNL/NM Units; Unit-specific information is also provided herein as necessary to address Unit-specific waste characterization and analysis requirements. This WAP is organized as follows:

Section B.1 Site Description: Includes a general description of SNL/NM; a list of SNL/NM Units; and general descriptions of the RCRA-regulated waste types stored and/or treated and the activities that generate RCRA-regulated wastes managed at the Units.

Section B.2 Waste Analysis Parameters: Includes a discussion of the proposed analytical parameters and methods used at SNL/NM and the criteria/rationale for the parameter selection.

Section B.3 Characterization Procedures: Includes the characterization approach (e.g., acceptable knowledge supplemented by sampling and analysis) for RCRA-regulated waste stored and/or treated at SNL/NM Units, and a discussion of the data quality objective (DQO) process used to ensure that the characterization data are suitable for their intended purposes.

Section B.4 Off-Site Waste Acceptance Procedures: Includes a discussion of procedures in place for acceptance of RCRA-regulated waste from off-site facilities.

Section B.5 Special Procedural Requirements: Includes a discussion of the procedures in place for ignitable, reactive, and incompatible wastes; procedures to ensure compliance with land disposal restrictions (LDRs); and procedures to ensure compliance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC [6-14-00].

In this WAP and in the rest of the General Part B, the personnel associated with a RCRA-regulated waste at a given point during management at SNL/NM are sometimes referred to as the "generator" (e.g., the "generator" completes a disposal request). The term "generator," as it appears in this context, is used only to denote an individual person and does not imply the regulatory meaning of "generator" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], particularly with respect to RCRA-regulated waste determination as required in 20 NMAC 4.1.300/40 CFR 262.11 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], Sandia Corporation is a "generator" and a "person" responsible for determining whether a waste is subject to regulation in accordance with 20 NMAC 4.1.300/40 CFR 262.11 [6-14-00]. SNL/NM is a large research facility, and many individuals (including those employed through contract to Sandia Corporation) are involved with generation and subsequent management of RCRA-regulated wastes. These include personnel performing research and other waste-generating activities, and personnel performing environment, safety, and health activities (including waste management) to support Sandia operations and comply with regulatory requirements. RCRA-regulated waste determination at SNL/NM is a collaborative effort between the individuals involved with the generation of RCRA-regulated waste and the Unit personnel. This approach is consistent with the process described in EPA's clarifying memo (Cotsworth, 2002).

B.1 FACILITY DESCRIPTION [20 NMAC 4.1.900/40 CFR 270.14(b)(1)]

SNL/NM is a multidisciplinary laboratory engaged in the research and development (R&D) of weapons and alternative energy sources. SNL/NM is managed by Sandia, a wholly-owned subsidiary of Lockheed Martin, for the DOE, with work also performed for others.

SNL/NM is located in Bernalillo County, New Mexico, adjacent to the southeastern boundary of Albuquerque. SNL/NM occupies an area of about 2,842 acres located in the eastern portion of the 52,233-acre Kirtland Air Force Base (KAFB). SNL/NM consists of five technical areas, designated Technical Areas I through V, as well as remote test areas. A detailed description of the SNL/NM facility is included in Appendix A of this permit renewal request/application.

B.1.1 Description of Waste Management Units

SNL/NM RCRA-regulated waste management Units are described in detail in the General Part B and Unit-specific modules. The Units and associated waste management activities are:

- The Hazardous Waste Management Facility: Container storage and repackaging of RCRA-regulated wastes;
- The Thermal Treatment Facility (TTF): Thermal treatment of a specific RCRA-regulated waste stream by open burning in a miscellaneous unit;
- The Radioactive and Mixed Waste Management Facility (RMWMF): Container storage and repackaging of RCRA-regulated wastes and treatment of RCRA-regulated wastes in containers;
- Auxiliary Hot Cell Facility (AHCF): Container storage and repackaging of RCRA-regulated wastes and treatment of RCRA-regulated wastes in containers; and
- Manzano Storage Bunkers: Container storage of RCRA-regulated wastes.

The General Part A lists the EPA Hazardous Waste Numbers that may* be assigned to the wastes stored in containers at SNL/NM Units. The General Part A also lists the EPA Hazardous Waste Numbers that may* be assigned to the wastes that will be treated in containers or the miscellaneous unit at SNL/NM.

In this WAP, the term “may” when marked with an asterisk, denotes a statement where the uncertainty implied by “may” instead of “will” is technically accurate and appropriate.

B.1.2 SNL/NM Waste-Generating Processes and Activities

RCRA-regulated waste is generated at SNL/NM from design, development, and testing of weapon systems and components; material research; pulsed power research; reactor safety research; support activities; RCRA corrective action activities (through the Sandia/DOE Environmental Restoration [ER] project); and decontamination and decommissioning (D&D) activities. Sandia/DOE also accept small volumes of RCRA-regulated waste for storage and/or treatment from off-site facilities. Some of the RCRA-regulated waste generated at SNL/NM also meets the definition of low-level or transuranic waste as these terms are defined in DOE Order 435.1-1 (DOE, 1999).

It is not feasible to provide detailed descriptions of all possible wastes that could be managed at one or more of the SNL/NM Units. The following sections contain general descriptions of the typical waste types generated at SNL/NM that are and/or will be stored and/or treated at the Units, the processes and/or activities that generate the waste type, and the waste forms associated with each type. For the purposes of this WAP, a waste type is a general category used to describe one or more wastes or waste streams that share key features (e.g., type of waste-generating process, waste form). For the purposes of this WAP, a waste stream is defined as waste that is routinely generated as part of a well-defined waste-generating process and is distinguishable from other waste by some unique combination of one or more of the following: specific waste source or generating process; EPA Hazardous Waste Numbers; SNL/NM Unit-specific handling requirements; off-site treatment, storage, and disposal facility (TSDF) handling requirements; LDR status; waste compatibility issues; or waste characterization requirements. Individual containers of waste packed into a single lab pack container do not constitute a waste stream.

RCRA-regulated waste types may* be of uniform composition (i.e., homogeneous) or of dissimilar/diverse composition (i.e., heterogeneous). Table B-1 summarizes information on

Table B-1
Descriptions of Types of Resource Conservation and Recovery Act-Regulated Waste Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste TypeDescription	Principal Waste Generating Activity	Basis for RCRA-regulated Waste Designation	Potential[a] EPA Hazardous Waste Numbers	Potential[a] RCRA-regulated Constituents and/or Characteristics in the Waste
Laboratory Chemical Waste	Weapon systems and components design, development, and testing and material research	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-D043 All P- and U-EPA Hazardous Waste Numbers	Ignitability Corrosivity Reactivity Toxicity [c] Discarded commercial chemical products and off-specification species
Contaminated Used Oil	Weapon systems and components design, development, and testing, material research, pulsed-power research, reactor safety research, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis (off-site waste)	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents
Process Wastes	Weapon systems and components design, development, and testing, material research, ER Project activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis (off-site waste)	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents
Explosive Waste	Weapon systems and components design, development, and testing	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D003 D011 F003	Ignitability Reactivity Silver Acetone
Used Batteries	Weapon systems and components design, development, and testing	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D002 D003 D006 D007 D008 D009 D011	Corrosivity Reactivity Cadmium Chromium Lead Mercury Silver
Elemental Lead	Pulsed-power research, reactor safety research, ER Project and D&D Activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis (Off-site waste)	D008	Lead
Unknown Liquids and Solids	Legacy wastes from historical weapons system design, development and testing, materials research, ER Project, and D&D activities	Acceptable Knowledge[b] supplemented by Sampling and Analysis	D001 D002 D003 D004-D043	Ignitability Corrosivity Reactivity Toxicity[c]

Table B-1 (Concluded)
Descriptions of Resource Conservation and Recovery Act-Regulated Waste Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Description	Waste Generating Activity	Basis for RCRA-regulated Waste Designation	Potential[a] EPA Hazardous Waste Numbers	Potential[a] RCRA-regulated Constituents and/or Characteristics in the Waste
Contaminated Soil	ER Project and D&D activities	Acceptable Knowledge[b] supplemented by Sampling and Analysis	D001 D002 D003 D004-D043 F001-F005 F039	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents Leachate
Debris	Weapon systems and components design, development, and testing, material research, pulsed-power research, reactor safety research, support activities, ER Project and D&D activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis (Off-site waste)	D001 D002 D003 D004-D043 F001-F005 F039	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents Leachate
Decontamination, Purge, and Treatment Waters	ER Project and D&D activities	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D002 D004-D043 F001-F005 F039	Corrosivity Toxicity[c] Spent solvents Leachate
Treated Waste and Treatment Residuals	Support activities (radiation protection and waste management)	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-D043 F001-F005 F039	Ignitability Corrosivity Reactivity Toxicity[c] Spent -solvents Leachate
Containment System Liquids	Support activities (waste management)	Acceptable Knowledge[b] Supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents

[a] "Potential" is defined as possibly present

[b] "Acceptable knowledge" is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994)

[c] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986 and all approved updates), the sample or the extract from a representative sample of the waste contains any of the constituents listed (D004-D043) at a concentration equal to or greater than the respective value given in 20 NMAC 4.1.200/40 CFR 261 Subpart C (6-14-00)

RCRA-regulated waste types typically generated at SNL/NM. This table includes brief waste type descriptions, the associated waste-generating process or activity, and the characterization basis for RCRA-regulated waste designation. Table B-1 also addresses the variability of each waste type by listing the potential EPA Hazardous Waste Numbers and potential RCRA-regulated constituents and/or characteristics associated with each waste type.

B.1.3 Types of Stored Waste

RCRA-regulated wastes are stored in containers at various SNL/NM Units. Typical RCRA-regulated waste streams are described in the following subsections. Section 1.2 in the SNL/NM General Part B provides more specific information on waste types that are considered to be acceptable at each Unit, and describes waste-handling practices, including Unit-specific container requirements.

B.1.3.1 Laboratory Chemical Waste

Laboratory chemical waste includes commercial chemical products or manufacturing chemical intermediates (in solid, liquid, or contained gas forms) such as reagents, metal powders, oxidizers, reactive metals, elemental mercury, elemental sodium, and other materials that have Material Safety Data Sheets (MSDSs) or other product documentation. It also includes excess commercial chemical products; solid laboratory material (such as laboratory wipes contaminated with solvent or lead solder); or manufacturing chemical intermediates that have exceeded their shelf life, are excess to SNL/NM needs, are off-specification, or are no longer usable for their intended purpose. SNL/NM initial generators generally produce this type of waste during various R&D and testing operations. Some of these also exhibit the RCRA-regulated characteristics of ignitability, corrosivity, reactivity, and/or toxicity.

B.1.3.2 Contaminated Used Oil

Used oils, a liquid waste form, from vacuum pumps and other machinery may* be contaminated with listed RCRA-regulated wastes or exhibit RCRA-regulated characteristics of ignitability or toxicity. Specific constituents depend on the processes that generated the contaminated used oil.

B.1.3.3 Process Wastes

Process wastes, which can be liquid or solid chemicals, solutions, or mixtures, are generated as a result of various activities, including experiments and routine operational processes. Typical RCRA-regulated process wastes include, but are not limited to, acidic solutions, alkaline solutions, oxidizers, and wastewaters. These wastes may* exhibit RCRA-regulated characteristics (e.g., corrosivity, reactivity, toxicity) or be RCRA-regulated listed waste from nonspecific sources (e.g., spent solvents).

B.1.3.4 Explosive Waste

An explosive material is defined as a chemical compound or mixture containing any oxidizing and combustible units, or other ingredients in such proportions, quantities, or packing that ignition by fire, friction, concussion, percussion or detonation of any part thereof may* (and is intended to) decompose with the production of a considerable quantity of heat and gas. Therefore, explosive waste and explosive-contaminated waste exhibit the characteristic of reactivity described in 20 NMAC 4.1.200/40 CFR 261.23 [6-14-00], if they are capable of detonation or explosive reaction when subjected to a strong initiating source or if heated under confinement. Examples of explosive waste include components and test units that contain an explosive, or explosive fragments, powders, and residues. Some of these wastes also exhibit RCRA-regulated characteristics of ignitability and/or toxicity.

Explosive waste and explosive-contaminated waste are generated at SNL/NM primarily from R&D activities. Explosive waste generally consists of discrete pieces of solid explosive material, whereas explosive-contaminated waste typically consists of solid or liquid wastes that have been contaminated with explosive material. A specific type of explosive waste is managed at the TTF and is described in greater detail in Section B.1.4.1.

B.1.3.5 Used Batteries

Batteries, a solid form, are used in numerous SNL/NM activities, and may* contain heavy metals (e.g., cadmium, mercury, and lead), lithium, or acidic compounds. Information about the battery content, hazards, and EPA Hazardous Waste Numbers is determined using manufacturer's data. For example, unfired thermal batteries contain metals and exhibit the RCRA-regulated characteristics of reactivity and toxicity; lithium batteries exhibit the characteristic of reactivity; and mercury batteries, silver batteries, and rechargeable or nickel-cadmium batteries exhibit the characteristic of toxicity.

B.1.3.6 Elemental Lead

Solid elemental lead items that cannot be reused (e.g., for radiation shielding or containment) or is in a form that is unsuitable for recycling directly may* be declared waste. These wastes exhibit the RCRA-regulated characteristic of toxicity.

B.1.3.7 Unknown Liquids and Solids

Unknown liquids and solids consist largely of legacy wastes from historical weapons systems design, development and testing, material research, ER Project, and D&D activities. Typical RCRA-regulated unknown wastes include, but are not limited to, unlabeled laboratory chemicals, residues in equipment and containers, and solid items that are smaller than debris (as defined in 20 NMAC 4.1.800/40 CFR 268.2). These wastes may* exhibit RCRA-regulated characteristics (e.g., ignitability, corrosivity, reactivity, and/or toxicity.

B.1.3.8 Contaminated Soil

This waste type includes soil, a solid form, from the ER Project or other cleanup and excavation operations. Characterization of contaminated soil depends upon the documented historical activities that occurred at the site and the results of site investigation and sampling and analysis activities.

B.1.3.9 Debris

This waste type includes material generated during cleaning operations, D&D operations, emergency response, waste management, and personal protective procedures. These wastes are solid, usually heterogeneous, compactable and non-compactable materials that meet the definition of RCRA-regulated debris in 20 NMAC 4.1.800/40 CFR 268.2). Compactable materials include items such as personal protective equipment, rags, wipes, swipes, paper, and filters. Non-compactable materials include equipment, components, electronic hardware, experimental remnants, cables, tools, machining parts or debris, building materials, and glassware. Debris may* be contaminated with or contain RCRA-regulated listed waste(s) and/or exhibit one or more RCRA-regulated waste characteristics (i.e., reactivity, corrosivity, ignitability, and/or toxicity).

B.1.3.10 Decontamination, Purge, and Treatment Waters

This waste type includes decontamination, purge, and treatment water (i.e., wastewater) from ER Project and D&D activities. The RCRA-regulated characteristics depend upon the documented historical activities that occurred at the site, the results of site investigation(s), and sampling and analysis if needed. Decontamination, purge, or treatment waters may* be contaminated with or contain RCRA-regulated listed waste(s) and/or exhibit a RCRA-regulated waste characteristic (i.e., corrosivity and/or toxicity).

B.1.3.11 Treated Waste and Treatment Residuals

Secondary waste types (i.e., solids, liquids, or contained gases) generated by treatment operations at SNL/NM Units will be stored on site pending determination of success in meeting treatment goals, subsequent treatment, and/or transportation to appropriate off-site TSDFs, as described in Section B.1.4.

B.1.3.12 Containment System Liquids

This waste type includes liquids that accumulate in containment system structures (e.g., spill pallets, trenches). Containment system liquids may* be contaminated with or contain RCRA-regulated listed waste(s) or exhibit a RCRA-regulated waste characteristic (i.e., reactivity, corrosivity, ignitability, and/or toxicity), depending on the source of the accumulated liquid.

B.1.4 Treated Waste

RCRA-regulated waste is treated at the TTF, which is a miscellaneous unit. RCRA-regulated wastes are treated in containers at the RMWMF and AHCF. Typical RCRA-regulated wastes and waste streams that are treated at SNL/NM Units are described in the following sections. Sandia/DOE personnel use the waste characterization procedures described in this WAP (Section B.3) to determine whether treated wastes and treatment residues are RCRA-regulated

wastes, to determine whether they meet the treatment standards in 20 NMAC 4.1 800/40 CFR 268, and to assign appropriate EPA Hazardous Waste Numbers.

B.1.4.1 Explosive Waste Treated at the TTF

The explosive (D003) waste treated at the TTF is a silver acetylide/silver nitrate (SASN) mixture that is generated as a result of a specific process that is well defined and well controlled, enabling Sandia/DOE to characterize the waste stream on the basis of knowledge of the process and the raw materials used. SASN is present in the solid and liquid wastes treated at the TTF. The waste also meets the definition of ignitable waste (D001), and may* bear EPA Hazardous Waste Numbers D011 and F003, depending on the presence of silver and spent solvents. The treatment is performed to eliminate the characteristics of reactivity and ignitability. The waste is composed of:

- A liquid or slurry containing varying amounts of acetone, acetonitrile, nitric acid, water, and typically some SASN crystals. The liquid or slurry may* also contain pentaerythritol tetranitrate (PETN), another explosive.

- Solid items that may* contain small quantities of SASN, including paper wipes, cotton rags and swabs, filter elements, incidental silver nitrate that did not react to form SASN, and traces of Viton™ fluoroelastomer. Small quantities of PETN may* also be present on the solids.

Specific information about the treatment process is included in Section 8.0 of Module II.

B.1.4.2 Wastes Treated in Containers at the RMWMF and AHCF

RCRA-regulated wastes that are treated at the RMWMF may* be generated from specific R&D processes and activities. Other wastes may* be manufactured items that are not amenable to sampling and analysis. Consequently, Sandia/DOE characterize RCRA-regulated wastes and waste streams treated at the RMWMF using process knowledge, supplemented by sampling and analysis as needed. The process knowledge often includes knowledge of the item or a full accounting of the raw materials used in generating the waste. To ensure that detailed and accurate waste characterization exists, the process outlined in Section B.3.1 is used.

Wastes that are treated in containers at the RMWMF and AHCF are any of the following:

- Solid items exhibiting the RCRA-regulated characteristics of ignitability and/or reactivity,

- Solid items (including debris) exhibiting the characteristic of toxicity (excluding the high mercury subcategory) or containing spent solvents or commercial chemical products,

- Liquid waste exhibiting the characteristics of ignitability, corrosivity, or reactivity, and

- Liquid waste containing toxicity characteristic (TC) metals (excluding the elemental mercury and high mercury subcategories).

Treatment processes and the associated treatment goals at the RMWMF and AHCF include:

- Chemical deactivation to eliminate the RCRA-regulated waste characteristics of ignitability, corrosivity, and/or reactivity,
- Macroencapsulation to immobilize chemical constituents,
- Physical treatment to change the physical character of the waste to make it more amenable to subsequent treatment and/or storage, or to reduce waste volume,
- Stabilization to immobilize RCRA-regulated metals and/or eliminate free liquids, and
- Amalgamation to immobilize elemental mercury into a solid, leach-resistant form.
- Thermal deactivation to eliminate the RCRA-regulated characteristic of reactivity in explosive wastes (excluding primary explosives).

Specific information on the treatment processes used at the RMWMF and AHCF is presented in Section 8.0 of Modules III and V, respectively.

The RCRA-regulated wastes to be treated at the RMWMF and AHCF typically have the following EPA Hazardous Waste Numbers: D001-D011, D018-D043, and F001-F005. Other RCRA-regulated wastes listed in the Part A may* also be treated if the treatment methods are appropriate. The EPA Hazardous Waste Numbers for RCRA-regulated waste to be treated at the RMWMF and AHCF are known as a result of acceptable knowledge records produced by the initial generator and verified by Unit personnel in accordance with the procedures described in Section B.3.1. Acceptable knowledge is supplemented by sampling and analysis, as described in Section B.3.1.

B.1.4.2.1 Waste Treated by Chemical Deactivation

RCRA-regulated wastes are treated by chemical deactivation at the RMWMF and AHCF to remove the RCRA-regulated characteristics of ignitability, corrosivity, and/or reactivity. RCRA-regulated wastes that are chemically deactivated at the RMWMF and AHCF generally consist of solids or liquids generated during R&D activities.

Laboratory Chemical Waste

This waste type consists of commercial chemical products, manufacturing chemical intermediates, solid laboratory materials (such as laboratory wipes), or excess, off-specification, or no longer usable chemical products that may* contain water-reactive metals (such as elemental sodium or lithium), pyrophoric metal powders and particulates, or acidic or alkaline liquids.

Process Waste

This waste type consists of liquid or solid chemicals, solutions, or mixtures that are acidic, alkaline, or oxidizers.

Explosive Waste

This waste type consists of explosive residues and powders.

B.1.4.2.2 Waste Treated by Macroencapsulation

RCRA-regulated solid items are treated by macroencapsulation at the RMWMF and AHCF to immobilize RCRA-regulated constituents.

Debris

This waste type consists of solid, heterogeneous, compactable and non-compactable solids that contain or are contaminated with RCRA-regulated constituents. This waste is generated primarily by R&D, D&D, and ER Project activities.

B.1.4.2.3 Waste Treated by Physical Treatment

RCRA-regulated wastes are treated physically at the RMWMF and AHCF to reduce waste volume and change the physical character of the waste to make it more amenable to subsequent treatment and/or storage. RCRA-regulated wastes that are physically treated at the RMWMF and AHCF generally consist of solid items that exhibit the characteristics of ignitability, reactivity, and/or toxicity.

Process Waste

This waste type consists of solid items such as laboratory equipment that can be dismantled and other laboratory items that were used in experiments or other processes. This waste is generated primarily from R&D activities.

Unknown Solids

This waste type consists of legacy wastes from historical laboratory activities that can be dismantled. Waste items with RCRA-regulated constituents vary in size. The wastes typically exhibit the characteristics of ignitability, reactivity, and/or toxicity.

Debris

This waste type consists of solid, heterogeneous, compactable and non-compactable materials that contain or are contaminated with RCRA-regulated constituents. This waste is generated primarily by R&D, D&D, and ER Project activities.

Commercial Products

This waste type consists of aerosol cans of commercial products that often exhibit the RCRA-regulated characteristics of ignitability and/or toxicity. They may also be discarded commercial chemical products. This waste is generated by R&D and other activities.

B.1.4.2.4 Waste Treated by Stabilization

RCRA-regulated wastes are treated by stabilization at the RMWMF and AHCF to immobilize toxicity characteristic constituents (metals) and/or eliminate free liquids. RCRA-regulated wastes that are stabilized at the RMWMF and AHCF generally consist of liquids, soils, and particulate-type wastes.

Laboratory Chemical Waste

This waste type consists of commercial chemical products, manufacturing chemical intermediates, small pieces of solid laboratory materials such as laboratory wipes, or excess, off-specification, or no longer usable chemical products in particulate or liquid forms that contain or are contaminated with RCRA-regulated constituents. This waste is generated primarily by R&D activities.

Process Waste

This waste type consists of liquid or solid chemicals, solutions, or mixtures that contain or are contaminated with RCRA-regulated constituents. This waste is generated primarily from R&D activities. The liquids are typically aqueous or oils.

Contaminated Soil

This waste type consists of soils that are contaminated with RCRA-regulated constituents. This waste is generated primarily from ER Project and other cleanup and excavation operations.

B.1.4.2.5 Waste Treated by Thermal Deactivation

RCRA-regulated wastes are treated by thermal deactivation at the RMWMF to remove the characteristic of reactivity. These wastes generally consist of solid items and are generated primarily from R&D activities and the ER project.

Explosive Waste

This waste type consists of static-sensitive explosives and explosive components, and solid items (e.g., paper towels, rags, and wipes) contaminated with static-sensitive explosives. The quantity of explosive waste that is thermally treated at the RMWMF at any one time will be equivalent to 25 grams of trinitrotoluene or less. Furthermore, the explosive waste thermally treated at the RMWMF will not be:

- Primary explosives,
- Potentially fragment-producing when treated,
- Explosives that are confined,
- Explosives packaged with items that could become projectiles (e.g., wood, metal, or plastic) when treated, or
- Unknown or uncharacterized explosives.

B.1.4.2.6 Waste Treated by Amalgamation

RCRA-regulated wastes are treated by amalgamation at the RMWMF to immobilize elemental mercury into a solid, leach-resistant form that has minimal potential for emission of mercury vapor. The RCRA-regulated waste that is treated by amalgamation is liquid elemental mercury.

B.2 WASTE ANALYSIS PARAMETERS [20 NMAC 4.1.500/40 CFR 264.13(a)(1)]

Chemical and physical characterization and/or acceptable knowledge is applicable to all RCRA-regulated waste for management purposes, as required by 20 NMAC 4.1.500/40 CFR 264.13 [6-14-00]. Initial waste generators and Unit personnel select analytical parameters to ensure that the characterization documentation will contain the information necessary to properly treat and/or store waste in accordance with RCRA general facility standards and LDR requirements. Sandia/DOE will also obtain characterization information to meet the requirements of the off-site TSDFs that accept RCRA-regulated wastes that have been treated at SNL/NM Units.

B.2.1 Proposed Analytical Parameters and Methods [20 NMAC 4.1.500/40 CFR 264.13(b)(1); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

Analytical parameters and characterization methods that are used for RCRA-regulated waste stored and/or treated at SNL/NM Units are summarized in Table B-2. The following parameters/methods will be used to determine the RCRA regulatory status of these wastes.

- Acceptable knowledge,
- Sampling and analysis to determine the presence (and concentrations) of:
  - RCRA-regulated metals (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.100/40 CFR 261.24)
  - RCRA-regulated volatile organic compounds (VOCs) (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.100/40 CFR 261.24)
  - RCRA-regulated semivolatile organic compounds (SVOCs) (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.100/40 CFR 261.24)
  - Other RCRA-regulated characteristics (i.e., ignitability, reactivity, corrosivity)
- Fingerprint analysis, or

- HazCat™ or other field tests.

B.2.2. Criteria and Rationale for Parameter Selection [20 NMAC 4.1.500/40 CFR 264.13(b)(1)]

As described in Section B.2, waste analysis parameters are selected to characterize RCRA-regulated waste in conformance with 20 NMAC 4.1.500/40 CFR 264.13(b)(1) [6-14-00], to obtain information necessary to properly store and/or treat waste in accordance with 20 NMAC 4.1.500/ 40 CFR 264 and 20 NMAC 4.1.500/40 CFR 268. The analytical parameters selected to supplement and confirm knowledge-based waste characterization for RCRA-regulated waste and the rationale for the selected parameters are identified in Table B-2.

B.3 CHARACTERIZATION PROCEDURES [20 NMAC 4.1.500/40 CFR 264.13(a)(1) and 264.13(b)(2); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

The approach to the characterization of wastes is based on the existing information and the chemical and physical nature of the waste or waste stream. Characterization procedures require that each initial waste generator provide documented information on the waste or waste stream. This is accomplished by using acceptable knowledge and/or sampling and analysis, which are described in the following sections. The completion of characterization documentation allows for the assignment of EPA Hazardous Waste Numbers, the proper management of the waste, and the identification of underlying hazardous constituents (UHCs) and LDR compliance status for wastes that are to be treated at SNL/NM Units. All initial waste generators must certify, based on their knowledge of the waste, that the information included in the characterization documentation is complete and accurate.

The following sections describe in detail the characterization procedures that apply to RCRA-regulated waste managed at SNL/NM Units.

B.3.1 Waste Characterization

Sandia/DOE have established a DQO process to ensure that waste is adequately characterized and to assist Sandia in making required waste determinations and managing RCRA-regulated waste in compliance with applicable regulatory requirements at SNL/NM Units. The process is described below and includes the following key elements:

- Initial waste generators supply waste characterization information based on the activity generating the waste.

- The information provided by the initial generator is an important element of the total characterization process and is used by Unit personnel to determine what, if any, additional characterization is required.

- The initial generator and Unit personnel collaborate as needed to gather required information and make waste determinations.

- Unit personnel assume responsibility for proper waste management (including additional waste characterization if necessary) when the waste is accepted at one of the SNL/NM Units.

Table B-2
Parameters, Characterization Methods, and Rationale for Parameter Selection for Types of Wastes to be Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Type Description	Parameter[a]	Characterization Method	Rationale
Laboratory Chemical Waste	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b] • Flash point (for liquid waste) • pH (for liquid waste)	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine presence of U-listed and P-listed chemicals • Determine presence of spent solvents • Determine ignitability and reactivity characteristics • Determine toxicity characteristic • Determine corrosivity characteristic • Determine waste compatibility information
Contaminated Used Oil	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b] • Flashpoint	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine toxicity characteristic • Determine ignitability characteristic • Determine presence of spent solvents • Determine waste compatibility information
Process Wastes	• Flash point (for liquid waste) • pH (for liquid waste) • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability, corrosivity, and reactivity characteristics • Determine presence of spent solvents • Determine waste compatibility information
Explosive Waste	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b] • Ignitability • Reactivity	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine toxicity characteristic • Determine ignitability and reactivity characteristics • Determine presence of spent solvents • Determine waste compatibility information

Table B-2 (Continued)
Parameters, Characterization Methods, and Rationale for Parameter Selection for Types of Wastes to be Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Type Description	Parameter[a]	Characterization Method	Rationale
Elemental Lead	• RCRA-regulated metals[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine toxicity characteristic
Unknown Liquids and Solids	• Flash point (for liquid waste) • pH (for liquid waste) • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Physical Examination • Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability and reactivity characteristics • Determine corrosivity characteristic • Determine toxicity characteristic • Determine presence of spent solvents • Determine waste compatibility information
Contaminated Soil	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability, reactivity, and corrosivity characteristics • Determine toxicity characteristic • Determine presence of spent solvents • Determine waste compatibility information
Debris	• RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability, reactivity, and corrosivity characteristics • Determine toxicity characteristic • Determine presence of spent solvents • Determine waste compatibility information
Decontamination, Purge, and Treatment Waters	• pH • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine ignitability, reactivity, and corrosivity characteristics • Determine toxicity characteristic • Determine presence of spent solvents • Determine waste compatibility information

Table B-2 (Concluded)
Parameters, Characterization Methods, and Rationale for Parameter Selection for Types of Wastes to be Stored and/or Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Type Description	Parameter[a]	Characterization Method	Rationale
Treated Waste and Treatment Residuals (e.g., ash generated from the treatment of explosive or explosive contaminated waste)	• pH • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] • Sampling and analysis	• Determine ignitability and reactivity characteristics • Determine corrosivity characteristic • Determine toxicity characteristics • Determine presence of spent solvents • Determine waste compatibility information
Containment System Liquids	• pH • RCRA-regulated metals[b] • RCRA-regulated VOCs[b] • RCRA-regulated SVOCs[b]	• Acceptable Knowledge[c] supplemented by Sampling and Analysis, as needed	• Determine corrosivity characteristic • Determine toxicity characteristics • Determine presence of spent solvents • Determine waste compatibility information

[a] Parameter selection is based on acceptable knowledge for each waste type. Additional parameters will be selected for each waste type as necessary.
[b] Use of the terms "RCRA-regulated metals," RCRA-regulated VOCs," and "RCRA-regulated SVOCs" refer to RCRA-regulated waste as defined in 20 NMAC 4.1.100/40 CFR 261.24 (6-14-00)
[c] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994).

The initial generator submits waste characterization information to Unit personnel using a disposal request (DR) or equivalent form that is completed and certified by the initial waste generator. The completed DR form includes information necessary for waste determinations, accurate assignment of EPA Hazardous Waste Numbers, and safe handling, storage, and transport of the waste by Unit personnel. Initial generator-supplied waste description information used to characterize waste includes the physical form of the waste (e.g., solid, liquid, gas, wastewater), origin and source (e.g., R&D, ER Project, unused commercial product, activity that generated the waste), and waste characteristics and components (e.g., ignitability, corrosivity, chemicals or RCRA-regulated constituents contained in the waste as well as their concentrations and proportions, materials in contact with the waste such as paper or plastic).

Initial-generator-supplied information also includes information regarding the presence of free liquids in containers of RCRA-regulated waste. Such information is typically obtained through initial- generator waste-characterization knowledge, visual examinations, and/or the Paint Filter Liquids Test, as appropriate.

Unit personnel review the initial-generator-supplied DR forms and any associated documentation (e.g., waste process documentation, analytical results) for adequacy and acceptability, and determine if additional waste characterization (e.g., initial generator information, sampling and analysis) is required. Unit personnel use a DQO process to determine the adequacy of acceptable knowledge for waste characterization and determine sampling and analysis activities that are sufficient to characterize waste if acceptable knowledge is not adequate.

The application of a DQO process ensures that the type, quantity, and quality of acceptable knowledge or sampling and analysis documentation and data submitted to Unit personnel are suitable for accurate waste characterization. DQOs are qualitative and quantitative statements derived from a series of seven planning steps based on the scientific method. DQO statements applicable to waste characterization activities at SNL/NM are summarized below.

Define the Problem. A RCRA-regulated waste will be accepted at an SNL/NM Unit for storage and/or treatment. RCRA regulations require that such wastes be adequately characterized for management at the Unit in accordance with 20 NMAC 4.1.500/40 CFR 264.13 [6-14-00].

Identify the Decision(s). Is acceptable knowledge adequate for waste characterization without additional information (e.g., data from sampling and analysis)? Are sampling and analysis data adequate for waste characterization without additional information?

Identify Inputs to the Decision. Unit personnel review applicable initial-generator-supplied waste characterization documentation (e.g., DRs, waste-generating process description, and analytical results) for completeness and data reliability. Initial-generator-supplied waste characterization documentation includes, at a minimum:

- Initial waste generator information (e.g., name, organization),
- Waste location information,
- Waste generation frequency,
- Waste information (e.g., waste constituents; waste weight, volume, and description; container type; physical form; time the waste was generated)

- A certification signed by the initial generator regarding the accuracy of the information

- Technical information used to justify the application of acceptable knowledge as a substitute for sampling and analysis (e.g., MSDSs).

If Unit personnel determine that documentation provided by the initial generator is incomplete or inadequate for waste characterization, or determine or suspect changes in the waste-generating process, Unit personnel return the documentation. If additional characterization information is required, Unit personnel work with the initial generator to obtain the necessary information. Once the waste is adequately characterized, waste information is typically entered into a waste tracking database.

Define the Study Boundaries. The document review is limited to those records relevant to the specific waste or waste stream. If sampling and analysis is required, the applicable methods listed in Table B-3 will be used.

Develop the Decision Rule. If, based on the review of initial-generator-supplied documentation, Unit personnel determine that acceptable knowledge is adequate for waste characterization, Unit personnel will schedule a waste pickup from the initial generator. Unit personnel use the criteria listed in Section B.3.1.1 to determine the adequacy of acceptable knowledge information for waste characterization.

Alternatively, if there is not sufficient information for adequate characterization of the waste based on a review of the documentation, Unit personnel will work with the initial generator to obtain the additional documentation or identify the additional characterization information that is necessary to adequately characterize the waste.

Specify Limits on Decision Errors. There is always a possibility that decisions will be in error. Precautions taken to minimize decision errors include a second review of initial-generator-supplied information and a visual inspection of the waste prior to pickup and transport to an SNL/NM Unit. After waste characterization information is entered into a waste tracking database, the information is again reviewed by Unit personnel to ensure consistency and confirm that the waste can be transported, stored, and/or treated at one of the SNL/NM Units. Before transporting the waste to the appropriate SNL/NM Unit, Unit personnel visually check to verify that the waste matches the information on the DR form. If Unit personnel detect discrepancies between the shipping documentation and the waste at pickup, Unit personnel can choose to amend the documentation or have the initial generator correct and resubmit characterization documentation to Unit personnel for approval. If the waste matches the information on the DR form, the waste is transported to the appropriate Unit. Upon receipt of the waste at a Unit, the characterization documentation becomes part of the Unit operating record. These records will be made available at reasonable times to the NMED, upon request.

Analytical Data Assessment. Chemical analysis data (if any are generated) used to document waste characterization are assessed using SNL/NM data verification and validation procedures or equivalent methods.

Quality assurance/quality control (QA/QC) for sampling and analysis will be implemented to ensure that measurement data collected meets the information objectives for waste characterization. QA/QC will be implemented by adhering to the sampling protocol specified in Table B-4 and analytical procedures specified in Table B-3; documenting sampling activities and sample custody;

Table B-3
Summary of Analytical Characterization Methods Used for Resource Conservation and Recovery Act-Regulated Waste

Parameter	Method Numbers	Rationale
VOC in waste matrix		
Spent halogenated solvents	ASTM Method D4547-91[a] or equivalent method EPA/540/4-91/001[b] or equivalent methods[c]	
Spent nonhalogenated solvents	EPA Methods SW-846 (1311, 8260B, 8275A)[d] or equivalent methods[c] Methods included in 20 NMAC 4.1.600/40 CFR 265.1084(a)(2), (a)(3), and (a)(4)	Determine total and/or TCLP and SVOC/VOC concentration in samples of solids or liquids
SVOCs in waste	EPA Methods SW-846 (1311 and 8270C)[c] or equivalent methods[c]	Determine total and/or TCLP and SVOC concentration in samples of solids or liquids
Metals in waste	EPA Methods SW-846:	Determine total and/or TCLP concentration in samples of solids or liquids
Arsenic	(1311, 6010B, 7060A, 7061A)[c]	
Barium	(1311, 6010B, 7080A, 7081)[c]	
Cadmium	(1311, 6010B, 7130, 7131A)[c]	
Chromium	(1311, 6010B, 7190, 7191)[c]	
Lead	(1311, 6010B, 7420, 7421)[c]	
Mercury	(1311, 7470B, 7471A)[c]	
Selenium	(1311, 6010B, 7740, 7741A, 7742)[c]	
Silver	(1311, 6010B, 7760A, 7761)[c] or equivalent methods[c]	
Reactive Sulfide	EPA Methods SW-846, Test Method to Determine Hydrogen Sulfide Released from Wastes[e] or equivalent methods[c] EPA Methods SW-846 (9030B, 9031, 9034)[c] or equivalent methods[c]	Determine concentration of reactive sulfides
Flash Point	EPA Methods SW-846 (1010, 1020, 1030)[c] or equivalent methods[c]	Determine ignitability
pH	EPA Methods SW-846 (9040B, 9041A, 9045C)[c] or equivalent methods[c]	Determine corrosivity
Explosives in waste	EPA Methods SW-846 (Appropriate analytical method from the Method 8300 series 8330)[a]	Determine reactivity

[a] American Society for Testing and Materials, 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," ASTM D4547-91, *Annual Book of ASTM Standards*, Philadelphia, Pennsylvania, American Society for Testing and Materials. (ASTM, 1991)

[b] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 1/540/4-91/001, Office of Research and Development. (EPA, 1991)

[c] Equivalent methods subject to EPA approval may* be substituted.

[d] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[e] SW-846, Section 7.3.4.2 contains specialized methods to determine if a sulfide-containing waste exhibits the reactivity characteristic.

Table B-4
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples:	Method 5035[b]: 40-milliliter (mL) vials with stirring bar. Method 5021: See method. Methods 5031 & 5032: 125-mL WM[c]-G[d]. Use Teflon-lined lids for all procedures.	Cool to 4º degrees Celsius (ºC)[e]	14 days
Aqueous Samples:			
No Residual Chlorine Present	Methods 5030, 5031, & 5032: 2 x 40-mL vials with Teflon-lined septum caps.	Cool to 4ºC and adjust pH[f] to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Residual Chlorine Present	Methods 5030, 5031, & 5032: 2 x 40-mL vials with Teflon-lined septum caps.	Collect sample in a 125-mL container which has been pre-preserved with 4 drops of 10% sodium thiosulfate solution. Gently swirl to mix sample and transfer to a 40-mL volatile organic analysis (VOA) vial. Cool to 4ºC and adjust pH to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Acrolein and Acrylonitrile	Methods 5030, 5031, & 5032: 2 x 40-mL vials with Teflon-lined septum caps.	Adjust to pH of 4-5. Cool to 4ºC	14 days
Soil/Sediments and Sludges:	Method 5035: 40-mL vials with stirring bar. Method 5021: See method. Methods 5031 & 5032: 125-mL WM[c]-G[d]. Use Teflon-lined lids for all procedures.	See the individual method	14 days
Semivolatile Organics/Organochlorine Pesticides and Herbicides			
Concentrated Waste Samples:	125 mL WM[c]-G[d] with Teflon®-lined lid	None	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Soil/Sediments and Sludges:	250 mL WM[c]-G[d] with Teflon®-lined lid	Cool to 4ºC	Samples must be extracted within 14 days and analyzed within 40 days following extraction.

Table B-4 (Concluded)
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Liquid Samples:			
No Residual Chlorine Present	1-gallon (gal.), 2 x 0.5 gal., or 4 x 1 liter (L) AG[g] container with Teflon[j]-lined lid	Cool to 4ºC	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction
Residual Chlorine Present	1-gal., 2 x 0.5 gal., or 4 x 1-L AG[g] with Teflon -lined lid	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Addition of sodium thiosulfate solution to sample container may be performed in the laboratory prior to field use. Cool to 4ºC.	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction
Metals			
Aqueous Samples:			
Metals (except hexavalent chromium and mercury)	1-L P[h] or G[d]	Add nitric acid to adjust pH to less than 2.	180 days
Hexavalent chromium	500-mL P[h] or G[d]	Cool to 4ºC	24 hours
Mercury	500-mL P[h] or G[d]	Add nitric acid to adjust pH to less than 2.	28 days
Soil/Sediments and Sludges:			
Metals (except hexavalent chromium and mercury)	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC	180 days
Hexavalent chromium	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC	Not established - analyze as soon as possible.
Mercury	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC	28 days

All information on test methods from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846,* U.S. Environmental Protection Agency, 1986 and all approved updates.

[a] Smaller sample containers may* be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information primarily from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846,* U.S. Environmental Protection Agency, 1986 and all approved updates.

[c] WM = Wide-mouth

[d] G = Glass

[e] Adjust to pH of less than 2 with sulfuric acid, hydrochloric acid, or solid sodium bisulfate.

[f] A term used to describe the hydrogen-ion activity of a system.

[g] AG = Amber glass

[h] P = Polyethylene

using controlled and standard equipment and materials; and collecting, analyzing, and evaluating field and laboratory QA/QC samples.

Occasionally, wastes of an unknown nature require storage or treatment. For example, unknown wastes may* be generated as a result of a container label becoming detached or illegible. Most unknowns are contained in small containers (less than 1 gallon or 1 pound) and are related to R&D projects. These wastes are handled on a case-by-case basis. The individual waste will be tentatively characterized by knowledge of the operations and activities that were performed in the specific area in which the waste was generated. An on-site visual investigation of an unknown waste is one method utilized to characterize the waste. The visual investigation includes the assessment of the unknown for various properties, such as:

- Physical state,
- Color,
- Age,
- Storage and container conditions,
- Changes in substance,
- Phase separations,
- Quantity of waste,
- Any labeling, and
- Type of operations in the nearby area.

The material and its proper handling are sometimes positively identified through this investigation. If a positive identification is made, a DR form is submitted and the waste is processed according to Unit waste acceptance procedures. If the unknown cannot be identified after this investigation, a HazCat™ or comparable test is performed to determine the hazard class. Once the hazard class is determined and the material is safe to transport to the appropriate SNL/NM Unit, the information is recorded on a DR form, submitted to Unit personnel, and processed according to the procedures described above. Additional RCRA waste characterization will typically occur after the decision has been made to accept the waste at a SNL/NM Unit.

Unit personnel combine RCRA-regulated liquid wastes and non-RCRA-regulated wastes together in a single container on a limited basis. These mixing/blending activities are generally limited to process wastes, such as photographic fixers (RCRA-regulated) and photographic developers (non-RCRA-regulated). The resulting mixture is characteristic for silver (D011) and may be corrosive (D002). Unit personnel may also combine compatible liquids drained from aerosol cans (commercial chemical products) into a single container. The resulting mixture is typically ignitable. In each case, the combined liquids are characterized as needed for on-site management by acceptable knowledge using information about the component liquids supplemented as needed by data from sampling and analysis.

B.3.1.1 Acceptable Knowledge [20 NMAC 4.1.500/40 CFR 264.13(a)(2) and 264.13(b)(5); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

The physical and chemical nature of some waste forms at SNL/NM makes the collection of representative samples for characterization difficult. This difficulty arises from several factors, some of which include: waste types containing disparate elements; disparate elements that may* need to be segregated into similar forms; large objects that cannot fit within standard size sample containers; and laboratories that do not have the capability to sample large objects (EPA, 1992).

Other difficulties arise from health and safety risks to personnel due to potential exposure to explosive material, radiation, or other hazards. Acceptable knowledge is a method used to characterize the waste forms utilizing process knowledge and additional waste analysis data. Acceptable knowledge will be used to meet all or part of the waste analysis requirements and to direct subsequent sampling and analysis if needed.

According to EPA guidance, acceptable knowledge is broadly defined to include process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994). Process knowledge is described in 20 NMAC 4.1.500/40 CFR 264.13(a)(2) [6-14-00], as data developed under 20 NMAC 4.1.200/40 CFR 261 [6-14-00] and existing published or documented data on a specific RCRA-regulated waste or a waste generated from similar processes. Supplemental waste analysis data include concentration(s) of RCRA-regulated constituents and/or results of tests for RCRA-regulated characteristics to determine whether wastes are RCRA regulated. Records for some unknown liquids and solids may include waste analysis and/or physical characterization performed prior to the effective date of RCRA regulations. In order to be acceptable, such analytical results must be accurate and applicable to the specified waste and are typically supplemented with other existing information (e.g., published data).

Examples presented in the EPA guidance (EPA, 1994) as to when the application of acceptable knowledge is appropriate include:

- Wastes containing RCRA-regulated constituents from specific processes that are well documented;
- Wastes consisting of discarded unused commercial chemical products, reagents, or chemicals containing known physical and chemical constituents;
- Waste containing levels of radioactivity such that health and safety risks to personnel do not justify sampling and analysis due to quantified and documented radiological concerns; and
- Wastes containing heterogeneous materials, where the physical nature of the waste does not lend itself to taking a representative sample (e.g., laboratory trash and construction debris with surface contamination).

Waste characterization documentation based solely on acceptable knowledge is approved by Unit personnel if one or more of the above criteria have been met. The criteria are provided or available for review by Unit personnel to ensure that a valid and accurate RCRA-regulated waste characterization can be made. Acceptable knowledge documentation will be maintained at the Unit (unless otherwise designated in the Unit operating record) for at least three years.

B.3.1.1.1 Process Knowledge

Process knowledge, a subset of acceptable knowledge, consists of one or more of the following:

- Detailed information on a waste or waste stream obtained from existing published or documented waste analysis data;
- Studies conducted on RCRA-regulated wastes generated by processes similar to that which generated the waste; and

- Knowledge of the materials and operations that generated the waste and that demonstrates the potential for RCRA-regulated constituents in the waste. For example, metals present in debris waste are often associated with specific materials (e.g., lead in leaded rubber or lead shielding).

Process knowledge documentation for each RCRA-regulated waste or waste stream is kept in a file or a waste/waste stream reference file that includes the documents or identifies them and their locations. The documentation is explicitly relevant and traceable to a given waste or waste stream, and is not merely a list of information sources for a particular operation and waste. There are many sources of applicable documentation at SNL/NM that are used to substantiate process knowledge for a specific waste or waste stream. Examples of documentation that are used for waste characterization include the following:

- Process design documents;
- Preliminary and final reports and analyses of the operations generating the waste
- Information from operating procedures, which can include a list of the raw materials or reagents, a description of the process/experiment that uses the materials, and a description of the wastes generated and how the wastes are handled;
- Waste packaging logs;
- Test plans or research project reports that describe the reagents and other raw materials used in an experiment;
- Laboratory notebooks that detail the research processes and raw materials used in an experiment;
- Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements);
- Information from personnel (e.g., documented interviews);
- Standard industry practice documents (e.g., vendor information);
- Industry reports on a similar process when there is a clear connection between the SNL/NM process/experiment and the industry's similar process/experiment;
- Previous analytical data relevant to the waste or waste stream, including results from fingerprint analyses, spot checks, or routine waste verification sampling;
- Analytical data from studies of common industry processes that are similar to SNL/NM processes. These data can be used to identify the constituents in a specific “similar” process waste and to determine the regulatory status of the waste;
- MSDSs, product labels, and other product package information;
- Sampling and analysis data from comparable wastes or waste streams;

- Documented visual inspections to confirm or identify the physical characteristics and packaging of a waste; and

- ER site and waste characterization data..

B.3.1.1.2 Additional Characterization Data

Additional waste characterization data used to support acceptable knowledge includes information provided by the initial generator of the waste or waste stream on the source, the concentrations of RCRA-regulated constituents in the waste, and/or the results of tests for RCRA-regulated characteristics. This information can be the result of a recent analysis of the waste, a well-documented historical analysis of the waste, and/or the analysis of a surrogate waste or waste stream.

B.3.1.2 Sampling and Analysis [20 NMAC 4.1.500/40 CFR 264.13(a)(3), 264.13(b)(2), (3), and (4); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

This section discusses proposed sampling and analytical procedures and sampling frequencies that are applicable to RCRA-regulated waste***.*** Sampling and analysis is generally performed to provide supplemental information when a waste lacks sufficient process information to adequately characterize the waste based on acceptable knowledge. The approach described for characterizing these waste types is based on the physical, chemical, and hazardous properties of the waste; and on the amount and type of knowledge/information available. Personnel involved in sampling and analysis comply with relevant and applicable protocol that is consistent with “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846” (EPA, 1986 and all approved updates), hereinafter referred to as SW-846, or other equivalent methods. Detailed sampling recommendations and guidance are provided in Chapter 9 of SW-846. Table B-4 lists the applicable requirements specified in SW-846 regarding sample containers, preservation techniques, and holding times associated with sample collection. Table B-3 identifies the applicable analytical testing requirements including specific test methods for parameters of interest used to characterize waste for management at SNL/NM Units.

B.3.1.2.1 Waste Sampling

The objective of waste sampling is to obtain a sample or samples representative of the waste or waste stream. An understanding of the waste-generating and -handling processes is considered to ensure that samples are representative. Some wastes separate into distinct layers with time, and representative samples must include aliquots from each layer. In some cases, it may* be important to use a statistical or random sampling scheme that provides for the collection of representative samples.

A number of criteria are considered in determining how many samples are required, how sampling locations are selected, and how frequently sampling should be repeated. If the waste is a highly uniform waste stream from a single process location, one grab sample collected periodically is sufficient. However, if a single waste type is a mixture of materials generated in several locations under varying conditions through time, more samples will be required, and composite sampling

may* be appropriate. At a minimum, the sampling is repeated if the waste-generating process changes in a material way, or if inspection of the waste reveals it has changed.

Appendix I of 20 NMAC 4.1.200/40 CFR 261 lists specific guidance documents that detail sampling protocols for different waste types. Waste samples collected in accordance with these protocols are considered representative by EPA. The protocols include standards developed by the American Society for Testing and Materials (ASTM) and portions of SW-846.

A representative sample of the waste is collected and handled by means that preserve its original physical form and composition and prevent contamination or changes in the concentration(s) of the constituent(s) to be analyzed.

The following sampling strategies are used for waste sampling at SNL/NM unless an alternative sampling strategy is more appropriate for a specific waste item based on specific historical, process, or waste information:

- Sampling activities are conducted in a manner that minimizes the generation of waste;
- If the sampling or analysis of the waste would pose a serious threat to human health, Sandia/DOE will forego sampling and analysis;
- For heterogeneous solid items, such as contaminated debris, samples will be obtained from areas that are most likely to be contaminated, based on visual inspection of the waste or knowledge of the activity that generated the waste;
- For solid items whose surface is suspected to be contaminated with RCRA-regulated waste, such as contaminated equipment, surface wipe samples will be taken;
- For solid items with compositions that may* exhibit RCRA-regulated characteristics, such as equipment, a sample will be taken and analyzed from the waste or from a nonwaste item similar to the waste item;
- Samples will be collected from each phase of wastes that exist in multiple solid, liquid, and/or gas phases;
- For liquid waste items in multiple containers, one sample will be taken for each container or each 55 gallons of waste, whichever is larger;
- For solid items in multiple containers, one sample will be taken for each container or each 3 cubic yards of waste, whichever is larger; and
- Handling and collection techniques are consistent with SW-846 and conducted to preserve the nature of the waste sample.

The sampling protocol for solid RCRA-regulated waste at SNL/NM is based on sampling methods approved by EPA for solids and soils in SW-846, as well as methods approved by the ASTM. These methods are designed to ensure that representative waste samples are consistently collected and transferred to the responsible laboratory in a manner that maintains sample integrity.

B.3.1.2.2 Waste Analysis

Analytical methods for the determination of RCRA-regulated metals, VOCs, SVOCs, and the RCRA-regulated characteristics of ignitability, reactivity, and corrosivity are implemented to meet certain technical performance criteria and to be consistent with regulatory guidelines.

Solid items may* be heterogeneous or homogeneous. If necessary for waste characterization purposes, these solids will be analyzed for total concentrations of RCRA-regulated metals, VOCs, and SVOCs (see Table B-3 for specific analytical methods). If necessary for waste characterization purposes, homogeneous wastes will be sampled and analyzed for the toxicity characteristic (TC) constituents listed in 20 NMAC 4.1.200/40 CFR 261.24 [6-14-00]. If analysis for total concentration of TC constituents will be performed on samples, it will be done as a screening step, as described in Section 1.2 of Method 1311, Toxicity Characteristic Leaching Procedure (TCLP). If total concentrations are used in the waste characterization process, analytical data will be compared to the TC regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL) values for the determination of whether a particular waste exhibits a TC. RTL values are obtained by calculating the weight/weight concentration (in the solid) of a TC constituent that would give the regulatory weight/volume concentration in the TCLP extract. If the total concentrations are less than the RTL value, the waste cannot exhibit the toxicity characteristic and the TCLP does not need to be completed for the screened TC constituents.

Liquid wastes typically consist of aqueous solutions, slurries, and organic liquids. If necessary for waste characterization purposes, these wastes will be sampled and analyzed for total concentrations of RCRA-regulated metals, VOCs, SVOCs, and for the RCRA-regulated characteristics of ignitability, reactivity, corrosivity, and toxicity (see Table B-3 for specific analytical methods). In accordance with Method 1311 (TCLP), liquid wastes (i.e., those wastes that contain less than 0.5 percent dry solids) do not require extraction. The liquid waste, after filtration, is defined as the TCLP extract. Liquid waste, therefore, will be characterized by filtering the waste, measuring total constituent concentrations in the resulting filtrate, and comparing these concentrations to the TC regulatory levels in 20 NMAC 4.1.200/40 CFR 261.24 [6-14-00].

B.3.1.2.3 Sample Handling, Preservation, and Storage

Table B-4 lists QA/QC requirements specified in SW-846 regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements will ensure that sampling and analysis meet quality objectives for data. In the event that the specified criteria are not met, Sandia/DOE will evaluate the data for usability.

Many analytical laboratories provide sample containers and specify required minimum volumes for individual waste types or physical states. The most important determinants of sampling method and volume are the physical state of the waste (liquid, solid, sludge), the waste container, accessibility, waste variability, and safety concerns. Detailed sampling recommendations and guidance are provided in Chapter 9 of SW-846. For solids, 500 grams in a glass container is usually adequate. Liquid sample volumes vary from one liter to approximately eight liters, depending on the number of analysis parameters and solids content. Sample jars for samples to be analyzed for VOCs must be completely filled to minimize volatilization of constituents from the liquid into the “head space.”

Sampling is performed with a device appropriate for the waste being sampled. Weighted bottles, bailers, or composite liquid waste samplers are appropriate for sampling liquids in drums. Augers, triers, scoops, and shovels are useful for sampling solid items in containers or other locations.

B.3.1.2.4 Analytical Laboratory Selection and Analytical Methods [20 NMAC 4.1.500/40 CFR 264.13(b)(2)]

Analytical laboratories will perform the detailed qualitative and quantitative chemical analyses specified in SW-846 or equivalent methods that are listed in Table B-3 and applicable to the constituent(s) of concern associated with a particular waste type. These laboratories must have:

- A documented comprehensive QA/QC program,
- Technical analytical expertise,
- A document control/records management plan, and
- The capability to perform data reduction, validation, and reporting.

The selection and development of analytical testing methods for SNL/NM waste types were based on the following considerations:

- The physical form of the waste,
- Constituents of interest,
- Required detection limits (e.g., regulatory thresholds), and
- Information requirements (e.g., waste characterization, verifying compliance with LDR treatment standards for wastes treated at an SNL/NM Unit).

Collectively, these factors contributed to the selection of the analytical methods specified in Table B-3. Approved laboratories that meet the above criteria will analyze waste samples for RCRA-regulated constituents (e.g., VOCs, SVOCs, and metals) and characteristics (i.e., ignitability, reactivity, corrosivity, toxicity), according to the specifications in Table B-3.

B.3.1.3 Verification and Reevaluation Frequencies [20 NMAC 4.1.500/40 CFR 264.13(a)(3)(i) and 264.13(b)(4); 20 NMAC 4.1.800/40 CFR 268.7(b)]

Sandia/DOE will review air emissions data and status at least once every 12 months for RCRA-regulated wastes subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00].

As described in previous sections, initial generators and Unit personnel obtain and evaluate information to characterize RCRA-regulated wastes managed at the SNL/NM Units. The evaluation needed for a single waste item depends on the item. A waste item that is part of a routinely-generated waste stream for which the generating process has not changed typically requires only a relatively brief review of information (either AK or analytical data). In contrast, a one-time waste item that is unknown will require more extensive evaluation before it is adequately characterized. This may* include review of AK information and/or data obtained by sampling and analysis.

The Sandia/DOE waste verification process is designed to provide additional assurance that wastes are adequately characterized for management at the Units. The process applies to the verification of wastes and waste streams received at a Unit and designated for treatment and/or storage prior to off-site disposal. Unit personnel involved in verification activities are trained and qualified for the activities they perform.

B.3.1.3.1 Verification of Wastes

Wastes are selected for further evaluation as part of the verification program using one or more of the following criteria:

- Random selection;
- Adequacy of information previously provided the initial waste generators;
- Recommendations from Unit personnel;
- Incomplete or inconsistent documentation; and
- Other waste-specific criteria.

During each calendar year, Sandia/DOE will verify the characterization for one percent of the SNL/NM RCRA-regulated waste items that meet all of the following conditions:

- The waste is received at a SNL/NM Unit for storage or treatment,
- The waste is not part of a waste stream,
- The waste was initially characterized through acceptable knowledge,
- The waste is not a commercial chemical product, off-specification species, container residue, or spill residue identified in 20 NMAC 4.1.200/40 CFR 261.33,
- The waste is not material in a factory-sealed container or original container, and
- The information that would be obtained during the verification is needed for further management of the waste at the SNL/NM Unit (i.e., the verification will be limited to necessary information).

Once the waste is selected for verification, Unit personnel will be notified of its pending arrival at a Unit. Some wastes may* only require a visual verification of the container's contents. If the visual verification of a container's contents is found to be inconsistent with the initial generator's waste characterization documentation, further verification is required, and Unit personnel will decide whether to accept the waste for management pending resolution of the discrepancy. Depending on the severity of the discrepancy, the initial waste generator may* be subject to increased review.

For wastes that were initially characterized using acceptable knowledge, Unit personnel will review applicable waste characterization documentation to verify that it adequately describes the wastes. Verification analyses, if needed, will be conducted at SNL/NM or an approved laboratory, in conformance with appropriate methods (see Table B-3).

B.3.1.3.2 Reevaluation of Waste Streams

Characterization information for routinely generated waste streams is evaluated periodically to verify that they have not changed. Any information that indicates a change in the process that generates the waste and may* affect the waste will cause the waste to be recharacterized no later than the next time the waste is generated.

In addition to the verification activities described above for individual wastes, Sandia/DOE will reevaluate initial characterization information for routinely generated waste streams as needed for any of the following reasons:

- To verify the accuracy of the initial waste characterization when Unit personnel suspect the characterization is not accurate;
- To verify that applicable treatment standards have been met for those wastes treated at one of the SNL/NM Units;
- When there is a change in a waste-generating process;
- When the initial generator requests a review;
- When analytical results indicate a change in a waste stream; or
- When regulatory requirements change and additional information is required for further management of the waste at SNL/NM Units.

In addition to the reevaluations performed for one or more of the reasons listed above, Sandia/DOE will reevaluate additional streams as needed for a total of ten percent of all SNL/NM RCRA-regulated waste streams that meet all of the following conditions:

- The waste is received at a SNL/NM Unit for storage or treatment during the past 12 months;
- The waste is part of a waste stream as defined in Section B.1.2; and
- The waste stream has not been evaluated during the past 12 months for any reason, including changes in waste composition and changes in the process(es) generating the waste.

In each case, Sandia/DOE will evaluate a single randomly-selected item from the waste stream, and the reevaluation will be limited to information necessary for management of the waste at the SNL/NM Unit. The evaluation will be conducted in the same manner as evaluation of individual wastes. For wastes that were characterized using acceptable knowledge, Unit personnel will review applicable waste characterization documentation to verify that it adequately describes the wastes. Verification analyses, if needed, will be conducted at SNL/NM or an approved laboratory, in conformance with appropriate methods (see Table B-3).

B.3.2 Characterization for Wastes to be Treated at SNL/NM

Wastes to be treated at SNL/NM will be characterized to determine suitability for treatment and subsequent compliance with treatment standards for land disposal. Characterization will be based on acceptable knowledge or on sampling and analysis, as discussed below.

B.3.2.1 Characterization for Waste to be Treated at the TTF

Explosive waste to be treated at the TTF is characterized through the use of process knowledge rather than sampling and analysis for the following reasons:

- Information from sampling analysis would not improve knowledge of the waste because the explosive (e.g., SASN) and ignitable (e.g., acetone) components of the waste are known as a result of complete knowledge of process and a well-defined and documented procedure for formulating SASN.

- There is currently no other available treatment option for this explosive waste stream. Sampling and analysis activities could delay or prevent timely disposition of this waste, affecting the safety of Unit personnel, and causing a threat to human health and the environment.

Explosive waste treated in the TTF is produced according to a documented formulation process. Therefore, the composition of the waste is well known. Variability occurs only in the relative amounts of non-explosive liquid and solid items (i.e., acetone, paper wipes, cotton rags and swabs). Sampling and subsequent laboratory analyses would present unnecessary hazards to personnel; therefore, process knowledge and written signed documentation provided by the initial generator are the methods used to determine the characteristics of the explosive waste before treatment at the TTF. Personnel document the waste constituents in the operating records for formulation and testing, and sign the documentation.

Prior to formulating the explosive slurry, Unit personnel screen the formulation instructions to identify changes. If the formulation has changed, personnel evaluate the constituents to check that the wastes are acceptable for treatment in the TTF:

- The maximum net weight and estimated actual weight of explosives in the waste,

- The non-explosive constituents in the waste,

B.3.2.2 Characterization for Waste to be Treated at the RMWMF and AHCF

Wastes to be treated in containers at the RMWMF and AHCF will be characterized based on acceptable knowledge, supplemented by sampling and analysis if necessary (as described in Section B.3) before treatment takes place. This is necessary to determine the most appropriate treatment method and to determine the proper treatment parameters.

Characterization is also required before treatment in order to subsequently determine whether a waste has been properly treated and meets LDR treatment standards, including standards for UHCs that are reasonably expected to be present. This is especially important when determining the proper analyses needed and analytes to be assessed to ascertain whether concentration-based treatment standards have been met.

B.3.3 Characterization for Treated Wastes

RCRA-regulated wastes may* be generated during treatment operations at SNL/NM Units. Alternatively, treatment operations may* generate wastes that are no longer RCRA-regulated. The following sections describe the treated wastes and other wastes that may* be generated during or as a result of treatment operations at the TTF, RMWMF, and AHCF, and the associated waste characterization procedures.

Wastes that are treated using technologies specified in 20 NMAC 4.1.800/40 CFR 268.40 will not necessarily be subjected to sampling and analysis. Such treatment technologies include but are not limited to deactivation and macroencapsulation. In these cases, treatment effectiveness will be determined by visual examination of the treated waste. Other treated wastes will be subjected to sampling and analysis to determine the effectiveness of the treatment as appropriate. If additional RCRA-regulated constituents have been introduced during the treatment process, they will be included in the analysis of the treated waste. The analysis will also include UHCs that are reasonably expected to be present in the treated waste.

B.3.3.1 Treated Wastes at the TTF

Waste residues from the thermal treatment of explosive waste at the TTF include decomposition by-products. The principal by-products are ash (carbon) produced from burned solid items (e.g., paper, filters) and gases (i.e., nitrogen, water vapor, carbon dioxide, carbon monoxide, diatomic oxygen, and traces of nitrous oxides) produced by the decomposition of SASN, PETN, acetone, and acetonitrile. Elemental silver is also present in the ash when SASN is treated at the TTF.

The success of deactivation/thermal treatment to eliminate the reactive and ignitable characteristics of the wastes treated at the TTF is assessed by visually screening the residue in the burn pan for the presence of unreacted SASN (and PETN, as applicable).

Ash residue generated as a result of the treatment of explosive waste at the TTF will be handled in compliance with all requirements for the EPA Hazardous Waste codes that pertain to the residue (e.g., D011 and F003). The contents of the burn pan are containerized and transferred to one of the other SNL/NM Units for storage and transportation to an off-site TSDF. Sandia/DOE will characterize the residue as needed to meet the requirements of the off-site TSDF.

Because the TTF is located outside, the steel-lined concrete pad periodically collects water from precipitation; the water drains into the catch tank. Unless waste spills, untreated waste “kicks out” (i.e., is ejected from the burn pan) during treatment, or otherwise contaminates the steel-lined concrete pad, the water collected in the catch tank consists of precipitation. If water collected in the catch tank is known to be contaminated with RCRA-regulated waste constituents treated at the TTF, arrangements will be made for disposal into the City of Albuquerque wastewater system with a one-time notice placed in the facility file in accordance with 20 NMAC 4.1.800/40 CFR 268.7(a)(6) [6-14-00]. If the wastewater cannot be discharged into the City of Albuquerque wastewater system, it will be handled through waste management procedures at one of the other SNL/NM Units.

B.3.3.2 Treated Wastes at the RMWMF and AHCF

Treated wastes and waste residues resulting from treatment of RCRA-regulated wastes in

containers at the RMWMF and AHCF include the following:

- Wastes treated by chemical deactivation at the RMWMF and AHCF include reactive metals and metal-containing particulates. These wastes are deactivated using water, an alcohol solution, or other organic liquid. Alcohol and other organic liquids may* exhibit the characteristic of ignitability, and can typically be characterized using knowledge of the treatment process.

- Wastes treated by chemical deactivation at the RMWMF and AHCF include corrosive aqueous liquids. The neutralized liquids are no longer corrosive. The wastes may* undergo further treatment.

- Wastes treated by stabilization at the RMWMF and AHCF include aqueous liquids (including liquids that have previously been neutralized). The treated wastes may* also contain TC metals and UHCs that are included in analysis of the treated waste.

- Wastes treated by stabilization at the RMWMF and AHCF also include oils that may* exhibit the characteristics of toxicity and ignitability. The treated wastes may* contain TC metals and UHCs that are included in analysis of the treated waste.

- Wastes treated by stabilization at the RMWMF and AHCF also include soils and particulates that may* exhibit the characteristics of ignitability, reactivity, and toxicity. The treated wastes no longer exhibit the characteristics of ignitability and reactivity after treatment. They may* contain TC metals and UHCs that are included in analysis of the treated waste.

- Wastes treated by macroencapsulation at the RMWMF and AHCF include RCRA-regulated debris exhibiting the characteristic of toxicity and containing or contaminated with spent solvents. The treated items are visually examined to determine whether treatment was effective.

- Wastes treated by physical treatment include small components exhibiting the characteristics of ignitability, reactivity, corrosivity, and/or toxicity. Treatment is considered effective if these items are successfully detached from larger items. Following treatment, the larger items are no longer RCRA-regulated.

- Wastes treated by physical treatment at the RMWMF also include liquids. The treatment consists of puncturing aerosol cans in a container equipped with a charcoal filter. The collected liquids may* include commercial chemical products and often exhibit the characteristic of ignitability. They are further characterized through knowledge from MSDSs and manufacturer-supplied information, supplemented by sampling and analysis, as needed.

- Wastes treated by thermal deactivation at the RMWMF include reactive batteries and other small reactive/explosive items that may* also exhibit the characteristic of toxicity. These wastes are deactivated by heating. Success of deactivation is evaluated using visual examination. The deactivated items may* contain TC metals and UHCs that are included in analysis of the treated waste.

- The waste treated by amalgamation at the RMWMF is liquid elemental mercury. This waste is immobilized into a solid, leach-resistant form by forming a metal alloy between the waste and a base metal, such as zinc or copper. Treatment is considered successive if the

amalgam meets the treatment standards.

Treatment residue derived from listed wastes will be handled as RCRA-regulated waste contaminated with the listed constituents of the original waste, in accordance with regulatory requirements. Treatment residue from the treatment of characteristic RCRA-regulated waste will be sent to an appropriate off-site waste management facility if it no longer exhibits RCRA-regulated characteristics and meets the appropriate treatment standards. Treatment residue that still exhibits one or more RCRA-regulated characteristics and/or is derived from a waste with listed constituents will be containerized and transported to one of the other SNL/NM Units for storage pending ultimate disposal in accordance with LDRs at an off-site RCRA-regulated waste management facility. UHCs that are reasonably expected to be present will be considered as described above.

B.4 OFF-SITE WASTE ACCEPTANCE PROCEDURES [20 NMAC 4.1.500/ 40 CFR 264.13(a)(3)(ii) and (a)(4), 264.13(b)(5), and 264.13(c)]

RCRA-regulated wastes from off-site sources will be accepted at SNL/NM. These wastes and sources include:

- RCRA-regulated wastes generated by Sandia employees (or contractors in the service of Sandia) outside the KAFB boundary will be accepted for storage and/or treatment if the wastes are properly characterized and transported.

- Wastes or waste residuals associated with off-site treatment of Sandia/DOE wastes or waste streams managed or treated by off-site facilities will be returned to SNL/NM for storage and/or treatment if all such wastes are properly characterized and transported.

- Wastes will be received from other (non-Sandia) off-site DOE facilities for final characterization, storage, treatment, and/or transport to other off-site facilities, only if all such wastes are properly characterized and transported.

The general waste acceptance procedures that will be used when RCRA-regulated wastes are accepted from off-site sources are discussed below. These procedures will be used to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.13(a)(3)(ii), 264.13(a)(4), 264.13(b)(5), and 264.13(c) [6-14-00]. The process used for managing off-site wastes at SNL/NM is diagrammed in Figure B-1 and explained below.

The basis for characterization of RCRA-regulated wastes or waste streams to be accepted by Sandia/DOE is generator documentation of the waste. Prior to waste shipment to SNL/NM, the appropriate Unit personnel receive a waste transfer request and characterization data from an off-site generator. Unit personnel review the request from the off-site generator for completeness and conformance with this WAP. For wastes received from off-site large quantity generators, Sandia/DOE will require an LDR notification that addresses LDR requirements applicable to the specific waste type and will inform the generators in writing that Sandia/DOE has the appropriate permit(s) for and will accept the waste (20 NMAC 4.1.500/40 CFR 264.12[b] [6-14-00]).

After the documentation has been reviewed and determined to be complete, the waste will be shipped to SNL/NM where the shipment records, LDR Notification Forms (if needed), Uniform Hazardous Waste Manifest (if needed), and proper generator signatures are reviewed to ensure the accuracy and completeness of documentation and compliance with container management requirements. If discrepancies are found, acceptable options for resolution include shipment of the

waste back to the off-site generation facility, or temporary storage pending further analysis or characterization.

B.4.1 Waste Manifest Verification

Each Uniform Hazardous Waste Manifest that accompanies a waste shipment is checked for the following information:

- The shipment identification number;
- The name, address, and EPA identification number of the generator;
- The name and EPA identification number of the transporter;
- The destination of the waste shipment (i.e., SNL/NM) including the facility address and EPA identification number;
- Any EPA Hazardous Waste Numbers
- The proper DOT shipping name and number;
- The quantity (e.g., weight) of waste in the shipment;
- The number and type of containers in the shipment; and
- A signed and dated certification of the contents of the shipment.

B.4.2 Waste Shipment Verification

A visual inspection of the shipment will be conducted by Unit personnel to ensure that the number and type of container(s) match the manifest and the labeling on the container(s) is complete and matches the manifest. If discrepancies are found, acceptable options for resolution include shipment of the waste back to the off-site generation facility, or temporary storage pending further analysis or characterization. If any discrepancies between the shipment and associated documentation are found that cannot be resolved within 15 days after receiving the waste, Sandia/DOE will send a notification to the New Mexico Environment Department in accordance with 20 NMAC 4.1.500/40 CFR 264.72 [6-14-00].

B.4.3 Waste Description Verification

Unit personnel review waste data, including acceptable knowledge, sampling and analysis data, and treatment records for completeness. The exact parameters to be verified are determined by Unit personnel at the time of waste receipt, based upon the generator-supplied information and requirements of the off-site TSDF that will ultimately receive the waste.

Fingerprint analyses will typically be conducted by Unit personnel for waste received from off site to verify the waste characterization information provided by the generator. The parameters (e.g.,

specific gravity, color, flash point, and pH) that are tested by fingerprint analysis are based on the information provided by the generator and the expected characterization of the waste.

If the fingerprint analyses results do not match the waste characterization designated on the accompanying Uniform Hazardous Waste Manifest, Unit personnel will perform waste characterization analyses described in Section B.3 of this WAP or send the waste back to the facility where it was initially generated.

B.5 SPECIAL PROCEDURAL REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264.13(b)(6)]

RCRA-regulated waste management requirements specific to ignitable, reactive, and incompatible waste, as well as for compliance with LDR and 20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC [6-14-00] regulations, are described below.

B.5.1 Procedures for Ignitable, Reactive, and Incompatible Wastes

Pursuant to 20 NMAC 4.1.500/40 CFR 264.17 [6-14-00], Unit personnel take the necessary precautions to prevent accidental ignition or reaction of wastes at SNL/NM Units. Unit personnel also take the necessary precautions to ensure that incompatible wastes are identified and managed appropriately. These precautions are described in Section 1.1.2 of the General Part B and in Section 1.2.2 of each Unit-specific module.

As described in those sections, Sandia/DOE rely on waste characterization data and/or published chemical information (e.g., “NIOSH Pocket Guide to Chemical Hazards” [DHHS, 1994] or other chemical or engineering handbooks) for each waste in a planned treatment or repackaging operation involving ignitable, reactive, and incompatible wastes. This includes, but is not limited to, the segregation of these wastes according to compatibility groups (e.g., flammables/ignitables, oxidizers, corrosive acids, reactive with water, corrosive bases, and other reactives) and by the physical nature of the waste (i.e., liquids and solids).

B.5.2 Procedures to Ensure Compliance with LDR Requirements [20 NMAC 4.1.800/40 CFR 268.7(b) and 268.9(d)]

Pursuant to 20 NMAC 4.1.800/40 CFR 268 [6-14-00], Sandia/DOE will comply with LDR requirements for wastes stored or treated at the SNL/NM Units: through compliant management of wastes subject to LDR storage prohibitions, and through characterization of treated waste (i.e., RCRA-regulated wastes treated at SNL/NM Units) for LDR compliance, and processing of the applicable LDR certifications and notifications for such treated wastes.

B.5.2.1 Storage Prohibitions (20 NMAC 4.1.800/40 CFR 268.50)

RCRA-regulated wastes are restricted from land disposal under 20 NMAC 4.1.800/40 CFR 268, Subpart C [6-14-00] unless they meet the treatment standards in 20 NMAC 4.1.800/40 CFR 268 Subpart D. Restricted wastes (i.e., wastes that do not meet the applicable treatment standards) can be stored for up to one year at SNL/NM Units in compliance with 20 NMAC 4.1.800/40 CFR

268.50. Sandia/DOE assume that all of the RCRA-regulated wastes at SNL/NM are restricted from land disposal (i.e., they do not meet the applicable treatment standards) and apply the one-year storage limit to all RCRA-regulated wastes stored at any Unit except as noted below:

- RCRA-regulated wastes that are subject to the Federal Facilities Compliance Order (FFCO) (NMED 1995, as amended) between DOE, Sandia, and NMED can be stored at SNL/NM Units for more than one year even if they do not meet the treatment standards. Information about FFCO applicability is maintained in the operating record described in Section 9.0 of the General Part B.

- RCRA-regulated wastes that are not subject to the FFCO and do not meet the treatment standard(s) could be stored at SNL/NM Units for more than one year, solely for the purpose of accumulating sufficient quantities of RCRA-regulated waste to facilitate proper recovery, treatment, or disposal, in accordance with 20 NMAC 4.1.800/40 CFR 268.50(c). Information regarding proper recovery, treatment, or disposal is maintained in the operating record described in Section 9.0 of the General Part B.

- RCRA-regulated wastes that meet the treatment standards are not subject to the one-year storage limit. Analytical data or other information demonstrating compliance with the applicable treatment standard(s) is maintained in the operating record described in Section 9.0 of the General Part B.

B.5.2.2 Characterization for LDR Compliance: Wastes Generated Through Treatment of RCRA-Regulated Wastes at SNL/NM Units

RCRA-regulated waste generated through treatment at SNL/NM Units (e.g., treated waste, treatment residue) is characterized as required by the off-site TSDF receiving the waste to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1.800/40 CFR 268, Subpart D [6-14-00]. The information required of Sandia/DOE as the generator of the treated waste is dependent on the ultimate disposal method; therefore, Sandia/DOE characterize the treated waste specifically to meet the requirements of the off-site TSDF receiving it.

Waste that must meet concentration-based treatment standards prior to shipment off site for disposal will be evaluated to determine if applicable constituent concentration levels have been attained. If a waste is known to meet applicable LDR treatment standards for certain constituents before treatment, testing the newly-generated waste (treatment residue) to certify LDR compliance for those constituents is not necessary. Section B.3.1.1 of this WAP includes a discussion of the criteria used to determine if acceptable knowledge is appropriate for characterizing a waste or waste stream, including the determination of LDR compliance for treatment residues. Likewise, if a waste must be treated by one or more specified treatment methods (e.g., macroencapsulation) prior to land disposal, analytical testing to certify LDR compliance for the newly-generated waste is generally not necessary, as described in Section B.3.3.

If acceptable knowledge or use of a specified treatment technology are not appropriate for determining LDR compliance status, the treated waste will be sampled and analyzed to certify that it meets LDR treatment standards. The analysis will determine the total concentration of RCRA-regulated constituents in the treatment residue, or the concentrations of RCRA-regulated constituents in an extract of the residue obtained using Test Method 1311 in SW-846, as appropriate for the individual waste. Analytical results obtained in support of LDR requirements will

be retained within the Unit operating record. Characterization of treatment residues for LDR compliance will include RCRA-regulated constituents that were introduced as part of the treatment process, as discussed in Section B.3.3.

For wastes generated through treatment at one of the SNL/NM Units, SNL/NM will comply with the applicable requirements of 20 NMAC 4.1.800/40 CFR 268.7(b), 268.40(c), and 268.49 [6-14-00]. RCRA-regulated treatment residues that are determined through analysis or acceptable knowledge to meet treatment standards as specified in 20 NMAC 4.1.800/40 CFR 268, Subpart D [6-14-00], will be sent to a permitted TSDF for disposal without further treatment. Wastes that have been generated through treatment using technologies specified in 20 NMAC 4.1.800/40 CFR 268.42 and 268.44 [6-14-00] will also be sent to a permitted TSDF for disposal without further treatment. Residues that do not meet all of the applicable treatment standards will be sent to a permitted TSDF for further treatment.

Whenever Sandia/DOE send waste to an off-site TSDF for treatment and/or disposal as described above, it is in accordance with that facility's waste acceptance criteria. For treated wastes and residues generated at Units through treatment operations described in the General Part B and Unit-specific modules, Unit personnel review the LDRs as they relate to the further treatment and/or disposal of the treated waste at the TSDF that will accept the waste. Sandia/DOE obtain approval from the TSDF and meet TSDF-specific waste analysis requirements (including LDR requirements) prior to shipment.

Part of this review includes evaluating the waste for UHCs and Universal Treatment Standards for the treated wastes, and documenting the results of the evaluation as part of the certification process. UHCs must be declared if reasonably expected to be present in D001 through D0043 wastes. Unit personnel complete an appropriate LDR notification form (including signed certification) that accompanies the Uniform Hazardous Waste Manifest as part of the shipping documentation to the TSDF. Records are maintained at Sandia/DOE as discussed in Section 9.0 of the General Part B.

B.5.2.3 Characterization for LDR Compliance: Wastes From Off-Site Sources

For wastes received from off-site large quantity generators, Sandia/DOE will require an LDR notification that addresses LDR requirements applicable to the specific waste type. If off-site wastes are treated at SNL/NM, Sandia/DOE will comply with the requirements of 20 NMAC 4.1.800/40 CFR 268.7(b) [6-14-00] as discussed above.

When shipping the waste to an off-site TSDF, Sandia/DOE will use the process described in Section B.5.2.2 for characterizing the waste in accordance with that facility's waste acceptance criteria.

B.5.3 Procedures to Ensure Compliance with Air Emission Requirements [20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC]

Sandia/DOE manage wastes that are subject to some of the requirements in 20 NMAC 4.1.500/ 40 CFR 264, Subparts AA, BB, and CC [6-14-00] as discussed in Section 1.1.4.6 of the General Part B. Sandia/DOE wastes and waste streams described in this document may* be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00], "Air Emission Standards for Tanks, Surface

Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/ 40 CFR 264.1080 [6-14-00]. For wastes that are not eligible for exemption under 20 NMAC 4.1.500/40 CFR 264.1080(b) [6-14-00], Sandia/DOE will address the applicable 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] requirements for control of air pollutant emissions from each Unit subject to the regulations, as follows:

- In lieu of determining the concentration of VOCs in a waste or waste stream at the point of origination, Sandia/DOE may* declare that a container holding waste that contains VOCs is subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC.

- To establish 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] applicability for a specific waste or waste stream, the initial generator will follow the waste determination procedures specified in 20 NMAC 4.1.500/40 CFR 264.1083(a) [6-14-00] to determine the concentration of VOCs in the waste or waste stream at the point of origination and document this determination or assume/declare that the waste is subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00] as listed above. Acceptable knowledge or process knowledge will be used to make this determination; however; if sampling and analysis is necessary, it will be performed in accordance with the approved methods listed in Table B-3.

- Whenever changes to the source generating the waste stream are reasonably likely to cause the average VOC concentration of the RCRA-regulated waste to increase to a level that is equal to or greater than the applicable VOC concentration limits specified in 20 NMAC 4.1.500/40 CFR 264.1082, a new waste determination will be performed, as specified in 20 NMAC 4.1.500/40 CFR 264.1083(a)(1)(ii).

- The characterization documentation for VOCs will be reviewed by the Unit personnel prior to acceptance of the waste, as discussed in Section B.3. If process knowledge in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(a)(4) is insufficient, sampling and analysis of the waste will be required, in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(a)(3) [6-14-00].

- RCRA-regulated wastes containing VOCs that are newly generated through treatment will be characterized for VOC content in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(b) [6-14-00] if the waste being treated contains VOCs, and/or the treatment process involves VOCs.

- Routinely-generated RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00], will be reviewed and updated at least once every 12 months (20 NMAC 4.1.500/40 CFR 264.1082(c)(1) [6-14-00]) to determine whether the Subpart CC requirements continue to apply.

B.6 RECORDS

Once Unit personnel have adequate characterization for a RCRA-regulated waste, the information is typically entered into a waste tracking database. Each package (the smallest discrete waste item) is assigned a unique identification and tracking number before it is picked up and transported to a Unit. Characterization information and analytical data associated with the package is either in paper or electronic format. Unit personnel perform activities that affect a waste package (e.g., movement, repackaging, additional characterization, treatment, or shipment to an off-site TSDF). Information about these activities is added to the paper and/or electronic record for each package. The records are maintained as discussed in Section 9.0 of the General Part B.

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APPENDIX C

SITE-WIDE INSPECTION PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
DOE	U.S. Department of Energy
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SITE-WIDE INSPECTION PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart IX (20 NMAC 4.1.900), adopting by reference the Code of Federal Regulations, Title 40, Part 270 including Section 270.14(b)(5) (40 CFR 270.14[b][5]), and 20 NMAC 4.1.500/40 CFR 264.15, "General Inspection Requirements," revised June 14, 2000 [6-14-00], this appendix presents site-wide inspection requirements applicable to the Resource Conservation and Recovery Act (RCRA)-regulated waste management units (Units) at Sandia National Laboratories/New Mexico (SNL/NM), co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE).

Pursuant to 20 NMAC 4.1.500/40 CFR 264.15(a) [6-14-00], inspection schedules for the Units have been developed to identify equipment malfunctions and deterioration, operator errors, and discharges that might cause or lead to a release of RCRA-regulated waste and pose a threat to human health and the environment. This inspection plan, which presents general inspection schedules, is being submitted as required by 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00]. Unit-specific inspection requirements are provided in Section 4.0 of each Unit-specific module. Together, information in this appendix, in the General Part B, and in each Unit-specific module meets the applicable regulatory requirements.

C.1 INSPECTION REQUIREMENTS FOR UNITS [20 NMAC 4.1.900/40 CFR 270.14(b)(5), and 20 NMAC 4.1.500/40 CFR 264.15, 264.174, and 264.602]

In accordance with the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.15(b)(1), 264.174, and 264.602 [6-14-00], SNL/NM Units are inspected for malfunctions and deterioration, operator errors, and discharges which may be causing, or may lead to, a release of RCRA-regulated waste constituents to the environment or a threat to human health. Inspections include monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, and responding to environmental or human health hazards caused by RCRA-regulated waste. Containers of RCRA-regulated waste stored at a Unit are also routinely inspected to assess container integrity, closure, labeling, secondary containment, location with respect to incompatible wastes, and waste and container compatibility. Additional detail about specific items and areas is included in each Unit-specific module.

A copy of this appendix, which includes relevant inspection schedules, is maintained at each Unit, together with the Unit-specific inspection plan, unless specified otherwise in Section 4.0 of each Unit-specific module, as required in 20 NMAC 4.1.500/40 CFR 264.15(b)(2) [6-14-00].

C.1.1 Inspection Records [20 NMAC 4.1.500/40 CFR 264.15(d)]

Unit personnel are assigned to conduct inspections and record the information on inspection forms. Figures C-1 and C-2 are representative of the inspection forms completed by personnel inspecting SNL/NM Units. Figures C-1 and C-2 are provided for informational purposes only; the forms are subject to change. Any forms used will be functionally equivalent to the ones

shown as Figures C-1 and C-2. The inspection forms identify the items to be inspected and the potential problems that may occur (20 NMAC 4.1.500/40 CFR 264.15(b)(3) [6-14-00]). Additional detail is included in each Unit-specific inspection plan. The following information is recorded on the inspection forms.

- Name of inspector
- Date and time of inspection
- Notation of observations and results of the inspection
- Date and nature of any repairs or remedial action.

For each Unit, inspection records are maintained for a minimum of three years from the date of inspection. Current calendar year records are maintained at the Unit. Previous calendar year records may be maintained at the Unit, SNL/NM Records Center, or as noted in Section 4.0 of each Unit-specific module.

C.1.2 Remedial Action [20 NMAC 4.1.500/40 CFR 264.15(c)]

For every item requiring inspection, a response indicating the condition of each item must be entered in the appropriate column on the form. If any defects, deterioration, damage, or potential hazards are discovered during an inspection, Unit personnel begin taking corrective action upon discovery to ensure that the problem does not lead to an environmental or human health hazard. Appropriate action may include evaluation and removal of accumulated liquids from secondary containment, transfer of waste from a defective container to an appropriate container in good condition, or repair or replacement of nonfunctioning equipment and/or systems. If an inspection reveals that a nonemergency problem has developed, corrective action including repairs, maintenance, and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs.

Corrective action(s) taken in response to conditions discovered during an inspection are noted on the inspection forms. The corrective action(s) taken (along with time, date, and other pertinent information) are recorded in the appropriate section of the inspection form on which the corrective action was first noted or the first weekly inspection form completed following implementation of the corrective action.

C.2 TYPICAL INSPECTION SCHEDULE AND REQUIREMENTS FOR UNITS [20 NMAC 4.1.500/40 CFR 264.15(b)(4), 264.174, and 264.602]

The schedules described in this section are followed for the inspection of the items and areas noted in Section C.1. Inspections may be conducted at any time during the applicable time period (e.g., day, week, month) specified in the inspection schedule.

The U.S. Air Force, which operates Kirtland Air Force Base, may, for security or other reasons, deny access to Sandia/DOE personnel performing periodic Unit inspections. In such cases, Unit personnel will resume inspections as soon as possible after access is granted, and will document the missed inspections and reasons on the next inspection report.

SNL/NM Units are typically inspected according to the schedule provided below. Inspection frequencies have been developed based on the deterioration rates of equipment/systems and likelihood of failure, and the probability of harm to human health or the environment if: 1) the equipment/system fails between inspections; or 2) operator error goes undetected between inspections. Equipment and systems most likely to fail and those whose failure could lead to severe consequences are inspected most frequently.

The inspection frequencies for specific equipment and areas of operation at each Unit are listed in Section 4.0 of each Unit-specific module. Those detailed schedules are consistent with the general schedule described here.

C.2.1 Daily

A daily Unit inspection is conducted during each day that RCRA-regulated waste handling occurs at that Unit. Waste handling includes when RCRA-regulated waste is received at, moved or opened within, treated at, or removed from a WMA. An example of a daily inspection form (Figure C-1) lists the items typically addressed. A detailed list of items is included in Section 4.0 of each Unit-specific module.

C.2.2 Weekly

A weekly Unit inspection is conducted at least once during each week that RCRA-regulated waste is stored at that Unit. The example of a weekly inspection form (Figure C-2) lists the items typically addressed (included in Item 10 on the form). A detailed list of items is included in Section 4.0 of each Unit-specific module. For the purposes of inspections, weekly is defined as Sunday through the following Saturday.

C.2.3 Monthly

Safety and emergency equipment, security devices, and Unit operating and structural equipment are inspected on a monthly schedule at each active and inactive Unit. Monthly inspections are conducted at WMAs not currently in use for RCRA-regulated waste management. Items 7, 8, and 9 on the monthly inspection form (Figure C-2) identify the items to be inspected at active and inactive WMAs. A detailed list of items is included in Section 4.0 of each Unit-specific module.

C.3 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART AA REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, SUBPART AA]

Sandia/DOE do not manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight using process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations. Therefore, Sandia/DOE are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [6-14-00].

C.4 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART BB REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, SUBPART BB]

Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 264.1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 1050(f) [6-14-00].

C.5 INSPECTION and MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, SUBPART CC]

Containers are visually inspected either at the time of pickup from a generator site or within 24 hours of acceptance at a Unit. The visual inspection assures that there are no cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position, in accordance with Container Level 1 air emission standards in 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00]. The inspection requirements for these containers are specified in 20 NMAC 4.1.500/40 CFR 264.1088(b) [6-14-00]. At each Unit where such containers are stored, personnel take the following steps:

- Check containers and the condition and placement of their covers during inspections of stored containers.
- Take remedial actions if needed.
- Record container conditions and remedial actions taken in the inspection reports.

Figure C-1
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Daily Inspection Form – Example

1. Area(s) Inspected (i.e., Loading/Unloading Area, Treatment Area) _____
2. Structure(s) Inspected (i.e., HWMF, TTF, RMWMF, AHCF, MSB Bunker #)
3. Inspection Date _____
4. Inspection Time _____ am/pm
5. Inspector Name (print) _____

5. Loading/ Unloading Area(s)[a]	Inspection Criteria	Yes	No	NA ( ) load	Corrective Action Issue	Corrective Action Taken and Closure Date
Loading/Unloading Area[c]	Good condition, safe working surface, no spills					
Waste Handling Equipment[c]	Good condition, operational					
Container(s) Loaded/ Unloaded	Good condition					

6. Treatment Area(s)[b,c]	Inspection Criteria	Yes	No	NA ( ) treat	Corrective Action Issue	Corrective Action Taken and Closure Date
Treatment Area	Good condition					
Treatment Unit	Good condition (i.e., no releases or corrosion), maintains established parameters					
Monitoring Equipment	Good condition, operational					

7. Comments and Notes Comment on deficiencies by referencing section and question.

Inspector Signature: _____

Immediately file the completed inspection form in the Unit operating record.

[a] Required on days RCRA-regulated waste loading/unloading operations are conducted.
[b] Required on days RCRA-regulated waste treatment operations are conducted.
[c] Required monthly with facility operating and structural equipment if RCRA-regulated wastes are not managed at Unit during the month.

Figure C-2
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Weekly/Monthly Inspection Form – Example

1. Structure(s) Inspected (i.e., HWMF, TTF, RMWMF, AHCF, MSB Bunker #) _____
2. Inspection Date _____
3. Inspection Time _____ am/pm
4. Inspector Name (print) _____
5. Monthly / Weekly

6. Storage Status[a]	Inspection Criteria	Yes	No
RCRA-Regulated Waste Currently Stored at Structure	Storage status (Yes–waste present, No–waste not present)		

7. Safety & Emergency Equipment[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Spill Control Equipment	Present, good condition					
Fire Extinguisher(s)	Present, good condition, charged					
Decontamination Equipment	Present, good condition					
External Communication System	Present, operational					
Internal Communication and Alarm System	Present, operational					
Fire Suppression System (e.g., Water, Dry Chemical)	Present					

8. Security Devices[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Facility Fence	Good condition					
Gate(s) and Door(s)	Operational					
Warning Sign(s)	Present, legible					
Lock(s) and Tamper Indication Device(s)	Present, good condition					

9. Facility Operating & Structural Equipment[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Floor, Walls, Ceiling	Good condition					
Lighting	Operational					

Refer to footnotes at end of form.

Figure C-2 (Concluded)
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Weekly/Monthly Inspection Form – Example

10. Container Storage[c]	Inspection Criteria	Yes	No	NA ( ) monthly	Corrective Action Issue	Corrective Action Taken and Closure Date
Container Placement	Correct aisle space, correct stacking					
Container Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)					
Container Sealing	Correct lid/cover placement (i.e., closed)					
Container Labeling	Correct information, correct location, legible					
Storage Area (i.e., floor, walls) Condition	Good condition					
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition					
Storage Conditions	Waste compatibility, container compatibility					

11. Comments and Notes Comment on deficiencies by referencing section and question.

Inspector Signature: _____

Immediately file the completed inspection form in the facility operating record.

[a] Weekly inspection criteria are not applicable if RCRA-regulated waste is not stored at structure. Monthly inspection criteria are still applicable.
[b] Required during a monthly inspection. Criteria are not applicable during weekly (only) inspection.
[c] Required during a weekly inspection. Criteria are not applicable during monthly (only) inspection.

Inspector Name (signature) _____

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APPENDIX D

SITE-WIDE PERSONNEL TRAINING PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
RCRA	Resource Conservation and Recovery Act
SNL/NM	Sandia National Laboratories/New Mexico
Unit	RCRA-regulated waste management Unit

SITE-WIDE PERSONNEL TRAINING PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

This appendix describes site-wide personnel training requirements for Sandia National Laboratories/New Mexico (SNL/NM) Resource Conservation and Recovery Act (RCRA)-regulated waste management unit (Unit) workers. Unit-specific training requirements, if any, for SNL/NM Unit workers are provided in Section 5.0 of each Unit-specific module. Together, information in the General Part B, in this appendix and in each Unit-specific module meets the applicable regulatory requirements.

Training requirements for Unit personnel are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V, (20 NMAC 4.1.500), adopting by reference the Code of Federal Regulations, Title 40, Part 264 including Section 264.16 (40 CFR 264.16), revised June 14, 2000 [6-14-00], "Personnel Training." The primary objective of the training program is to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste, in accordance with 20 NMAC 4.1.500/40 CFR 264 [6-14-00]. This training program applies to all employees of the U.S. Department of Energy, Sandia Corporation, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at SNL/NM Units included in this SNL/NM General Part B. The degree of training varies with the job duties.

D.1 RCRA-REGULATED WASTE MANAGEMENT RESPONSIBILITIES

This program provides employees with training relevant to their positions. Unit personnel are given, at a minimum, a basic understanding of the RCRA regulatory requirements for waste management, emergency procedures, and operating procedures. Some employees receive additional classroom and on-the-job training designed for specific duties. Employees who have not received training or are unable to provide relevant and appropriate training documentation receive the required training within six months of assignment to RCRA-regulated waste management activities and prior to managing RCRA-regulated waste without supervision.

D.2 JOB TITLE/JOB DESCRIPTION [20 NMAC 4.1.900/40 CFR 270.14(b)(12) and 20 NMAC 4.1.500/40 CFR 264.16(d)(1), (2) and (3)

Job titles and descriptions are provided in Figures D-1 through D-9. The job descriptions include requisite skills, education, and/or other qualifications as well as RCRA-regulated waste management job duties. The required training for each job title is found in Table D-2.

A file of all Unit personnel, including their job titles and job descriptions, is maintained at each Unit unless specified differently in Section 5.0 of each Unit-specific module. For each job title, the file contains information on the minimum activities performed by employees, requisite qualifications, and training records.

D.3 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES [20 NMAC 4.1.900/40 CFR 270.14(b)(12), and 20 NMAC 4.1.500/40 CFR 264.16]

This program provides employees with training relevant to their positions and specific to the safe performance of assigned tasks. For example, personnel who are directly involved in RCRA-regulated waste handling are informed of the potential hazards associated with waste management activities, procedures for safe handling of wastes, and emergency procedures. Individuals in supervisory or decision-making positions receive a comprehensive overview of all aspects of RCRA-regulated waste management. Personnel with specific or short-term assignments, such as visitors or temporary contractors, may only receive training on the contingency plan and emergency response procedures. Hands-on RCRA-regulated waste management personnel receive training commensurate with their assigned duties.

The training program includes a combination of classroom instruction, reviews of written documents, and on-the-job training exercises. Training information is provided according to training topics (e.g., Contingency Plan), frequency (e.g., initial or refresher), and methods (e.g., classroom instruction, procedure review, on-the-job exercises). Training course content includes, at a minimum, the topics shown in Table D-1. As regulatory compliance requirements change, training courses are evaluated and modified, as necessary. The content is reviewed annually. Some training is standardized and given to all employees. Job-specific training appropriate to job function is given to Unit employees. Training is provided at the frequencies shown on Table D-1. Training that may be applicable to each job title is provided in Table D-2.

D.4 TRAINING DIRECTOR [20 NMAC 4.1.500/40 CFR 264.16(a)(2)]

The Unit-specific Department Manager or designee will function as the Training Director. The Manager maintains responsibility for ensuring that all Unit-specific required training is obtained. The Manager/Training Director is knowledgeable about the applicable RCRA-regulated waste management regulations and specific RCRA-regulated waste management operations employed at a Unit. The Manager/Training Director determines the exact content and duration of training required for individual employees.

The Manager/Training Director may perform or delegate training to qualified trainers. Trainers are qualified on the basis of attainment of one or more of the following, as applicable:

- Certification in the subject matter addressed by the training;
- Demonstration of knowledge and competence in the training subject; and/or
- Previous on-the-job and/or classroom training in the topics covered.

Table D-1
Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit
Training Content

RCRA Regulation Training

Duration: Variable (Typically 4 hours or more)
Frequency: Initial/Periodic Refresher (Typically annual)
Method: Classroom instruction, on-the-job training, and/or document review

Minimum content may include (as applicable to the specific Unit to which an employee is assigned):

- Identification of RCRA-regulated waste
- Treatment, storage, and disposal facility requirements
- Generator and transporter requirements

RCRA Contingency Plan and Emergency Procedures

Duration: Variable (Typically 1-4 hours)
Frequency: Initial/Annual Refresher
Method: Classroom instruction, document review, and/or on-the-job exercises

Minimum content must include (as applicable to the specific RCRA-regulated waste management unit to which an employee is assigned):

- Emergency notification procedures
- Response to emergencies
- Evacuation route and procedure
- Emergency equipment and personal protective equipment
- Emergency Coordinator responsibilities
- Post-emergency actions
- Contingency Plan
- Shutdown procedures (if any)

Table D-1 (Continued)
Sandia National Laboratories/New Mexico
RCRA-Regulated Waste Management Unit
Training Content

Technical Work Documents and Refresher

Duration: Variable (Typically 1 hour or more)
Frequency: Initial/Periodic Refresher
Method: Document review, on-the-job training

Minimum Content: This training is function-specific and may be divided into sections or modules. Each employee must participate in the sections that apply to his or her specific job function. Sections may include, but are not limited to:

- Waste Analysis Plan
- Unit-specific safety practices
- Unit-specific operational procedures (e.g., loading and unloading)
- Unit security, entry, and control
- Operation, maintenance, and inspection of equipment
- Prevention of the ignition/reaction of ignitable/reactive wastes
- Permit conditions
- Emergency response
- Unit tour

Table D-1 (Concluded)
Sandia National Laboratories/New Mexico
RCRA-Regulated Waste Management Unit
Training Content

Hazardous Waste Operations and Emergency Response

Duration: Variable (Typically 24 hours or more with an 8-hour refresher)
Frequency: Initial/Refresher (Typically annual)
Method: Classroom instruction, hands-on exercises

Minimum Content:

- RCRA-regulated waste management and regulations
- Sources of information
- Compatibility of RCRA-regulated wastes
- Personnel protection
- Principles of safety
- Emergency procedures

Table D-2
Training for Each Job Title

Required Training	Job Titles								
	Training Director	RCRA Project Leader	Emergency Coordinator	Chemist	Field Technician (Waste Handler)	Special Projects Staff	Inspector	Transportation Manager	Unit Operations Support Staff
Resource Conservation and Recovery Act (RCRA) Regulations (Applicable Modules)	X	X	X	X	X	X	X	X	
RCRA Contingency Plan and Emergency Procedures	X	X	X	X	X	X	X	X	X
Technical Work Documents (Applicable Modules)	X	X		X	X	X	X		
Hazardous Waste Operations and Emergency Response (24- or 40-hour course)	X	X	X	X	X	X	X	X	
Hazardous Waste Operations and Emergency Response (8-hour course)	X	X	X	X	X	X	X	X	

D.5 EMERGENCY TRAINING [20 NMAC 4.1.500/40 CFR 264.16(A)(3) AND (C)]

Appendix E of this permit renewal request/application provides a more detailed discussion of emergency procedures, personnel, and equipment.

Unit employees participate in Unit-specific emergency response training to assure effective emergency response. Emergency response training consists of classroom instruction, document reviews, and/or on-the-job exercises. The content is reviewed annually and revised as needed to incorporate changes in regulatory compliance requirements. Topics covered include at a minimum:

- Emergency notification procedures
- Response to emergencies, including fires, explosions, and releases of RCRA-regulated wastes
- Procedures for using, inspecting, maintaining, and replacing emergency equipment and personal protective equipment
- Procedures for the shutdown of operations (if any)
- Procedures for evacuation (i.e., communications/alarms)
- Responsibilities of the Emergency Coordinator
- Post-emergency reports and actions
- Contingency Plan.

D.6 IMPLEMENTATION OF TRAINING PROGRAMS [20 NMAC 4.1.500/40 CFR 264.16(b) and (c)]

The training program is implemented to assure that Unit personnel receive appropriate training in a timely manner. Employees who require training receive the specified training within six months of their date of hire or their transfer to a new position. Personnel do not work unsupervised in RCRA-regulated waste management areas until they successfully complete the indicated training requirements.

Training records are kept to document the type and amount of training received for each Unit employee who manages RCRA-regulated waste. Contents of these records include the following, at a minimum:

- Job title for each position related to RCRA-regulated waste management
- The name of the employee assigned to each job title
- Written job description

- Written training requirements for each job title

- Records that document training received, such as attendance or signature lists, certificates, memoranda of training, or reports from computerized databases of training completion status.

Training records for current and former Unit employees are kept at the Unit to which an employee is/was assigned, unless specified differently in Section 5.0 of each Unit-specific module. Training records for current Unit employees are kept until closure of the Unit. Training records for any former Unit employee are kept for a minimum of three years from the date the employee last worked at the Unit.

Job Title: RCRA Training Director

Job Description:
The RCRA Training Director ensures that all appropriate personnel meet the site-wide personnel training requirements for SNL/NM RCRA-regulated waste management Unit workers, including the Unit-specific RCRA training requirements. RCRA Training Director duties may include, but are not limited to:

- Identifying and/or coordinating training required by RCRA regulations and SNL/NM RCRA-regulated waste management worker training requirements.
- Ensuring maintenance of training records required by RCRA regulations and demonstrating compliance with SNL/NM RCRA-regulated waste management worker training requirements for all personnel.
- Informing personnel when specific training is required.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for the RCRA Training Director is:

- High school diploma or equivalent, or bachelor's degree from an accredited post-secondary institution; or
- Three years experience with RCRA waste management regulations

Training:
Initial and refresher training will be as required in Table D-2

FIGURE D-1
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
RCRA TRAINING DIRECTOR

Job Title: RCRA Project Leader

Job Description:
A RCRA Project Leader oversees, supervises, and coordinates collection, storage, and shipment of RCRA-regulated waste at the Sandia National Laboratories/New Mexico. Duties may include, but are not limited to:

- Ensuring operation of the Unit in compliance with applicable RCRA regulations;
- Identifying and coordinating training required by RCRA regulations;
- Determining training and reading requirements specific to positions, tasks or Unit activities;
- Coordinating activities related to management of RCRA-regulated waste at the Unit;
- Ensuring maintenance of records required by RCRA regulations, such as training records, inspection records, waste analysis records, and a RCRA Contingency Plan;
- Ensuring maintenance of additional records required for the Unit operating record;
- Preparing, reviewing, submitting documents on waste management activities;
- Ensuring compliance with RCRA regulations for RCRA-regulated waste shipments; and
- Coordinating activities pertaining to RCRA-regulated waste audits.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a RCRA Project Leader is:

- High school diploma or equivalent, or bachelor's degree from an accredited post-secondary institution; or
- Three years experience in managing RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-2
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
RCRA PROJECT LEADER

Job Title: Emergency Coordinator

Job Description:
An Emergency Coordinator evaluates, coordinates, and implements emergency actions in accordance with the RCRA Contingency Plan during an emergency (as defined in the Contingency Plan). As defined in the RCRA Contingency Plan, Emergency Coordinator duties during and after an emergency may include, but are not limited to:

- Identifying the character, exact source, amount, and extent of released RCRA-regulated waste by observation, records reviews, or chemical analysis;
- Assessing possible resulting hazards to human health or the environment considering both direct and indirect effects;
- Taking all reasonable measures necessary to ensure fires, explosions, and releases do not occur, recur, or spread to other RCRA-regulated waste at the Unit including stopping processes and operations, collecting and containing released waste, and removing or isolating containers;
- Monitoring for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment if the facility stops operations;
- Providing for properly treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material;
- Ensuring that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
- Ensuring that all equipment listed in the Contingency Plan is cleaned and fit for its intended use before resuming operations.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for an Emergency Coordinator is:

- High school diploma or equivalent; or
- Three years experience working with RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-3
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
EMERGENCY COORDINATOR

Job Title: Chemist

Job Description:
A Chemist conducts supporting characterization of RCRA-regulated waste managed at Sandia National Laboratories/New Mexico. Duties may include, but are not limited to:

- Evaluating generator provided characterization data;
- Identifying treatment options for RCRA-regulated waste; and
- Segregating RCRA-regulated waste.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a Chemist is:

- High school diploma or equivalent; or
- Two years experience working with RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-4
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
CHEMIST

Job Title: Field Technician (Waste Handler)

Job Description:
A Waste Handler conducts RCRA-regulated waste handling, segregating, and storing operations at the Sandia National Laboratories/New Mexico. Waste Handler duties may include, but are not limited to:

- Transporting and handling RCRA-regulated waste;
- Conducting daily inspections of waste management Units where RCRA-regulated waste loading, unloading, or treatment operations occur;
- Performing basic maintenance and housekeeping activities;
- Segregating RCRA-regulated waste
- Sorting, packaging, marking, labeling, storing, treating, and segregating RCRA-regulated waste; and
- Compiling and entering into a database specific operating record information.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a Waste Handler is:

- High school diploma or equivalent; or
-
- Two years experience in handling RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-5
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
FIELD TECHNICIAN

Job Title: Special Projects Staff

Job Description:
A Special Projects Staff member performs special project duties at Sandia National Laboratories/New Mexico. Special Projects Staff member duties may include, but are not limited to:

- Handling RCRA-regulated waste during a special project;
- Performing special project related maintenance and housekeeping activities;
- Operating RCRA-regulated waste treatment equipment associated with a special project;
- Storing, labeling, and segregating RCRA-regulated waste associated with a special project; and
- Identifying and scheduling RCRA-regulated waste special project activities;
- Monitoring RCRA-regulated waste special project activities for safety and procedural compliance; and
- Compiling special project information for the facility operating record.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualification for a Special Projects Staff member is:

- High school diploma or equivalent; or
- Two years experience in handling RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-6
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
SPECIAL PROJECT STAFF

Job Title: Inspector

Job Description:
An Inspector conducts inspections of RCRA-regulated waste and RCRA-regulated waste management Units at the Sandia National Laboratories/New Mexico. Inspector duties may include, but are not limited to:

- Inspecting at least daily areas subject to RCRA-regulated waste spills when these areas are in use;
- Inspecting at least weekly containers holding RCRA-regulated waste, container equipment, and secondary containment;
- Inspecting at least monthly emergency equipment, security devices, and structural equipment at RCRA-regulated waste management Units; and
- Recording inspection date, time, name, observations, and repairs in an inspection log (in the form of an inspection checklist).

Skill, Education, and Other Qualifications:
At a minimum, the qualification for an Inspector is:

- High school diploma or equivalent; or
- Two years experience working with RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-7
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
INSPECTOR

Job Title: Transportation Manager

Job Description:
A Transportation Manager coordinates the shipment of RCRA-regulated waste from the Sandia National Laboratories/New Mexico. Transportation Manager duties may include, but are not limited to:

- Preparing documentation and paperwork for off-site shipments of RCRA-regulated waste;
- Ensuring proper packaging, labeling, marking, and placarding are in place for off-site shipments of RCRA-regulated waste; and
- Coordinating the loading of RCRA-regulated waste for off-site shipment.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualification for a Transportation Manager is:

- High school diploma or equivalent; or
- Two years experience coordinating shipments of RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-8
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
TRANSPORTATION MANAGER

Job Title: Unit Operations Support Staff

Job Description:
A Unit Operations Support Staff member has unescorted access to the facility but performs no activities that require contact with RCRA-regulated waste or waste containers. Unit Operations Support Staff may include, but are not limited to:

- Administrative personnel;
- Information systems (database) personnel;
- Radiation support personnel; and
- Generator interface personnel.

Skill, Education, and Other Qualifications:
The Training Supervisor determines the requisite level of experience for each position.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-9
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
UNIT OPERATIONS SUPPORT STAFF

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APPENDIX E

SITE-WIDE CONTINGENCY PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
DOE	U.S. Department of Energy
EC	Emergency Coordinator
EOC	Emergency Operations Center
ERO	Emergency Response Organization
IC	Incident Commander
ICS	Incident Command System
KAFB	Kirtland Air Force Base
NMED	New Mexico Environment Department
OKSO	Office of Kirtland Site Operations
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
Unit	RCRA-regulated waste management unit

DEFINITIONS

Emergency: Any imminent or existing fire or explosion, or unplanned sudden or nonsudden release of Resource Conservation and Recovery Act (RCRA)-regulated waste or constituents to air, soil, or surface water that threatens human health or the environment. Examples of emergencies include but are not limited to:

- A RCRA-regulated waste release within the Unit that cannot be contained with secondary containment or application of absorbents.
- An imminent or existing fire or explosion involving RCRA-regulated waste.
- A structure fire, grass fire, or forest fire that threatens to ignite RCRA-regulated waste.

Facility: A facility is defined by 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], as all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of RCRA-regulated waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them). The U.S. Environmental Protection Agency Identification Number assigned to Sandia National Laboratories/New Mexico is NM5890110518.

Hazardous Waste: A waste that meets the definition of RCRA solid waste, is not exempt from regulation, and exhibits one or more of the characteristics described in 20 NMAC 4.1.200/40 CFR 261, Subpart C [6-14-00], or is listed in 20 NMAC 4.1.200/40 CFR Part 261, Subpart D [6-14-00].

Mixed Waste: Waste that contains both hazardous waste and radioactive materials (including source, special nuclear, or by-product material) subject to the Atomic Energy Act of 1954 *(42 United States Code 2011 et seq.)*.

Radioactive Waste: Solid, liquid, or gaseous waste that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended.

RCRA-Regulated Waste: For the purposes of this site-wide Contingency Plan and the Unit-specific Contingency Plans, a waste that meets the definition of either hazardous waste or mixed waste.

RCRA-Regulated Waste Management Unit (Unit): A specific operational area used for the treatment and/or storage of RCRA-regulated waste.

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SITE-WIDE CONTINGENCY PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

This appendix presents site-wide contingency measures applicable to all Resource Conservation and Recovery Act (RCRA)–regulated waste management units (Unit) at Sandia National Laboratories/New Mexico (SNL/NM), co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE). Unit-specific Contingency Plan information is provided in Section 6.0 of each Unit-specific module. Together, information in the General Part B, in this appendix, and in each Unit-specific module meets the applicable regulatory requirements.

This Contingency Plan is intended to meet the requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), adopting by reference the Code of Federal Regulations, Title 40, Part 264 (40 CFR 264), Subpart D, revised June 14, 2000 [6-14-00], "Contingency Plan and Emergency Procedures," and 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00], for RCRA-regulated waste treatment, storage, or disposal facilities.

The provisions of this Contingency Plan will be carried out immediately to minimize hazards whenever there is an emergency, as required by 20 NMAC 4.1.500/40 CFR 264.51(b) [6-14-00].

E.1 SNL/NM SITE DESCRIPTION

SNL/NM is a multidisciplinary laboratory engaged in research and development of weapons and alternative energy sources. SNL/NM is managed by Sandia, a wholly owned subsidiary of Lockheed Martin, for the DOE, with work also performed for others. SNL/NM falls under North American Industry Classification System Numbers 92811 (National Security) and 54171 (Research and Development in the Physical, Engineering, and Life Sciences).

SNL/NM is located on Kirtland Air Force Base (KAFB) immediately southeast of the Albuquerque city limits in Bernalillo County, New Mexico. SNL/NM occupies an area of approximately 2,842 acres (1,150 hectares) within the 80-square-mile KAFB. SNL/NM consists of five Technical Areas, I through V, and remote test areas situated in the eastern half of KAFB (Figure E-1).

E.1.1 Unit Descriptions

The Units subject to 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00] and this Contingency Plan are listed in Table E-1. Additional detail about each Unit is provided in Section 6.0 of each Unit-specific module.

E.1.2 Waste Description

RCRA-regulated wastes at SNL/NM are generated primarily from laboratory research activities, process operations, and environmental restoration activities. Typical laboratory research waste includes bottles of excess or residual chemical mixtures and solutions, and solid laboratory items

Table E-1
RCRA – Regulated Waste Management Units Included in Contingency Plan

Name	Acronym	Location, size	Types of operations	Operating hours	Staff
Hazardous Waste Management Facility	HWMF	South of TA-I, north of entrance to TA-II. Includes Buildings 958, 959. 1.35 acres	Storage, Repackaging	M-F 8:00 am 4:30 pm	Staffed during operating hours
Thermal Treatment Facility	TTF	Northern part of TA-III, south of Building 6715. 196 square feet	Treatment	M-F 7:00 am 5:00 pm	Staffed only during operations at Unit
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. Includes Buildings 6920, 6921, 6925, and 6926. 3.11 acres	Storage, Treatment, Repackaging	M-Th 7:00 am – 5:30 pm	Staffed during operating hours
Auxiliary Hot Cell Facility	AHCF	TA-V, Building 6597. 5578 square feet	Storage, Treatment, Repackaging	M-F 8:00 am – 4:30 pm	Staffed during operating hours
Manzano Storage Bunkers	MSB	In Manzano Area on KAFB. 0.4 acres occupied by 5 bunkers (approximately 1600 to 2100 square feet in each bunker)	Storage	M-Th 7:00 am – 5:30 pm	Staffed only during operations at Unit

such as rags, batteries, and equipment. Typical process waste includes larger volumes (5- to 55-gallon containers) of solvents, oils, and corrosive solutions. Typical environmental restoration activity waste includes contaminated soil cuttings, debris, personal protective equipment, and decontamination fluids.

Because Sandia/DOE research and other activities are subject to change, waste streams and volumes stored at SNL/NM Units vary. The general types of wastes and capacities of each Unit are summarized in Section 6.0 of each module. The detailed description, location, and quantity of the RCRA-regulated wastes managed are identified in the Operating Record maintained for each Unit.

E.1.3 Operating Schedule

The operating schedules of the RCRA-regulated Units are summarized in Table E-1. Sandia/DOE security personnel check each Unit periodically during non-operating hours. If an emergency is discovered during these inspections, the SNL/NM Emergency Operations Center (EOC) and the Unit Emergency Coordinator (EC) (Section E.3.1) will be notified immediately.

E.2 CONTINGENCY PLAN DISTRIBUTION AND AMENDMENTS [20 NMAC 4.1.500/40 CFR 264.53-54]

Copies of the current site-wide Contingency Plan and the applicable Unit-specific information (Section 6.0 of each Unit-specific module) are maintained at the following locations: each Unit, the SNL/NM EOC, and SNL/NM Records Center. Sandia/DOE also provide copies of the Plan and any amendments and updates to the KAFB Fire Department and the New Mexico Environment Department (NMED) for their use.

This site-wide Contingency Plan and the Unit-specific information will be reviewed periodically by the EC(s) and Sandia ERO personnel. The plan(s) will be amended, if necessary, whenever one or more of the following occur:

- Applicable regulations or RCRA permit conditions are revised;
- There is a significant change in facility or Unit design, construction, maintenance, operation, or other circumstance that increases the potential for emergencies or changes the response necessary in an emergency;
- The list of designated emergency coordinators changes;
- The list of required emergency equipment changes significantly; or
- Actual implementation of the plan during an emergency demonstrates inadequacies.

E.3 EMERGENCY RESPONSE RESOURCES [20 NMAC 4.1.500/40 CFR 264.52(c) and 264.53]

Resources are available at each Unit, at SNL/NM, within KAFB, and in Albuquerque as described in this section.

E.3.1 Emergency Coordinator and Responsibilities [20 NMAC 4.1.500/40 CFR 264.52(d), 264.55, and 264.56(a)–(h)]

The Unit-specific EC has thorough familiarity with this Contingency Plan and the applicable Unit-specific information, Unit layout, operations, the location of records, the locations and characteristics of the RCRA-regulated waste managed at the Unit(s), and the emergency equipment and supplies. The EC has the authority through the Sandia department manager to commit the necessary Unit resources (including personnel, materials, and funds) to respond to an emergency at SNL/NM.

During emergencies at each Unit, or until the SNL/NM emergency response Incident Commander (IC) arrives (E.3.3), the EC has three primary responsibilities:

1. **Assess the Situation.** By observing the scene, interviewing personnel, and/or reviewing records, the EC must gather information relevant to the response, such as the type of event, quantity and type of released material, and actual or potential hazards to human health or the environment.

2. **Protect Personnel.** The EC should take any reasonable measures to ensure the safety of personnel, such as activating the fire alarm, accounting for Unit personnel, attending to injuries, or coordinating the evacuation of Unit personnel, if necessary. If evacuation is indicated for other personnel, the IC must be informed.

3. **Contain or Mitigate the Hazards.** The EC should take reasonable measures to ensure that fires, explosions, or releases do not occur, recur, or spread.

After emergencies, the EC must ensure that the facility and equipment are cleaned, waste is properly handled and disposed, the Unit is safe to resume operation, and all information necessary for notifications and reports is provided to Sandia/DOE personnel, as outlined in Sections E.6 and E.7.

In the event the EC is not on site or immediately available during an emergency, an alternate EC is contacted. The names, addresses, and phone numbers of the primary and alternate ECs for each SNL/NM Unit are included in each Unit-specific module. A Unit-specific EC or alternate EC is on site or immediately available during the operating hours of each Unit. ECs are also available during non-routine RCRA-regulated waste management operations that may be conducted outside normal operating hours.

E.3.2 Emergency Response Groups

The SNL/NM Emergency Response Organization (ERO) consists of two response groups that respond to an emergency situation: (1) a field response group led by an IC under the Incident Command System (ICS) and (2) an EOC cadre. The ICS also includes Sandia/DOE Security, the KAFB Fire Department, and Sandia/DOE personnel with relevant technical skills. An IC is on site at SNL/NM at all times (24 hours per day, 7 days per week). Sandia/DOE security and the KAFB Fire Department personnel are also available at all times. Sandia/DOE technical personnel are available on site at SNL/NM from 8:00 am – 4:30 pm Monday through Friday and are on call the rest of the time. The SNL/NM EOC staff includes an Emergency Director and a staff of Sandia and DOE personnel who are responsible for the management decisions and notifications to outside parties that are required during an emergency response (Section E.5.3). EOC staff personnel are available on site at SNL/NM from 8:00 am–4:30 pm, Monday through Friday, and are on call the rest of the time.

In the field, the IC maintains overall management and control of response operations at the emergency site. The IC works in a unified command with the KAFB Fire Department and in concert with safety personnel, Unit-specific personnel (e.g., EC), and other emergency responders to develop and execute response plans, including on-site protective actions and recommendations for off-site protective actions. The ICS system is implemented at the time an emergency occurs, is expanded to control the emergency as needs arise, and remains in effect until the need for emergency management no longer exists.

E.3.3 Emergency Chain of Command

When the EC is notified of an incident, he must first determine if procedures for emergencies (Section E.5) should be implemented. The EC manages the emergency response (Section E.3.1) until the IC arrives at the Unit and relinquishes control to the arriving IC. If possible, the EC maintains communication with the IC by telephone or radio before the IC arrives at the Unit. The EC remains at the Unit and assists in emergency response as directed by the IC. The EC advises the IC, as needed, on Unit operations, Unit layout, characteristics of RCRA-regulated waste on site, location of records, radio and cellular communication systems, and other information as necessary to respond to the emergency.

The SNL/NM IC is the liaison for communications with other emergency response organizations and functions, including medical and fire protection support. The EC can request both medical and fire protection services, if necessary, at the same time that he/she notifies the IC of the emergency.

E.3.4 Support Agreements and Coordination with Outside Agencies [20 NMAC 4.1.500/40 CFR 264.37]

Sandia/DOE maintain sufficient response resources to handle most emergencies arising from RCRA-regulated waste management activities as described in this contingency plan. These response resources include personnel, emergency equipment, medical facilities, and communications systems. DOE also has established mutual aid agreements and memoranda of understanding with several off-site agencies and facilities for additional response capabilities for SNL/NM. These agencies and facilities include:

Table E-2
Agreements and Memoranda of Understanding for Emergency Response

Agency or Facility	Type of Service
New Mexico Department of Public Safety	Mutual aid involving an actual or potential emergency, assistance in training and emergency response for local and tribal governments.
377th Air Base Wing, Kirtland Air Force Base	Various types of support, including fire protection, police services, communications, and utilities.
U.S. Forest Service	Cooperative fire fighting arrangement between the USFS and KAFB for wildland fires.
City of Albuquerque	Mutual support and responsibilities during a potential or actual emergency requiring the combined resources of DOE and the City of Albuquerque.
University of New Mexico Medical Center	Mutual cooperation and assistance in providing timely and effective emergency medical services.
St. Joseph Medical Center	Mutual cooperation and assistance in providing timely and effective emergency medical services.
Lovelace Medical Center	Mutual cooperation and assistance in providing timely and effective emergency medical services.
Presbyterian Health Care Services	Mutual cooperation and assistance in providing timely and effective emergency medical services.

E.4 EMERGENCY EQUIPMENT [20 NMAC 4.1.500/40 CFR 264.32, 264.33, 264.34, and 264.52(e)]

A list of equipment available through the SNL/NM emergency response system is provided in Table E-3. Lists of emergency equipment available for use at each Unit are presented in each Unit-specific module.

E.5 CONTINGENCY PLAN IMPLEMENTATION [20 NMAC 4.1.500/40 CFR 264.56]

Unit personnel who become aware of an incident contact the EC immediately. If the incident is an emergency, personnel implement evacuation procedures identified in Section E.5.2 Personnel also immediately notify the Unit-specific EC or alternate EC of the emergency condition. The EC will then assess the situation and determine the scale of the incident.

If the EC determines that an emergency situation exists at the Unit, he will immediately notify the SNL/NM EOC and activate this Contingency Plan. The methods for contacting emergency response representatives are listed in Table E-4.

E.5.1 Emergencies

In the event of an emergency, the EC, an assignee, or Unit personnel (see note above) will immediately telephone the SNL/NM EOC (911 or 844-0911) or notify them in some other way (see Section E.5). Emergencies require the activation of this Contingency Plan and SNL/NM emergency response resources.

The EC will relinquish authority to the IC upon arrival as described in Section E.3.3. The EC and the IC will:

- Determine the extent of the emergency;
- Identify the character, source, amount, and areal extent of released materials by observation, records reviews, or chemical analysis;
- Assess possible resulting hazards to human health or the environment, considering both direct and indirect effects;
- Take all reasonable measures necessary to ensure fires, explosions, and releases do not occur, recur, or spread to other RCRA-regulated waste at the Unit, including collecting and containing released waste, and removing or isolating containers; and
- Monitor for leaks, pressure buildup, gas generation, and ruptures in equipment.

Table E-3
Sandia National Laboratories/New Mexico (SNL/NM) Facility[a] Emergency Equipment
2-18-2003

Item or Equipment	Description/Telephone
Emergency Vehicles (owned by Sandia/DOE unless noted)	
Emergency Response Vehicle	Mobile Command Post equipped with communications equipment, typically located at SNL/NM EOC[b]. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Ambulance	Typically located at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Security Vehicles	Vans and trucks equipped with communications equipment and utilized for transportation of personnel and equipment, typically located throughout SNL/NM. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Fire Trucks (owned by KAFB Fire Department)	Fire-fighting vehicles outfitted with equipment for fighting fires, typically located at KAFB fire stations. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Medical Supplies (owned by Sandia/DOE)	
Stretchers/Stokes Litter	Equipment for movement of injured personnel. Stokes litter will immobilize personnel so they may be moved vertically. Typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Blankets	Normal blankets, typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Medical Kits	Emergency first-aid supplies, typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Safety Supplies (owned by Sandia/DOE)	
Air Packs	Self-contained breathing apparatus for use by personnel entering hazardous atmospheres, typically located in ambulance or response vehicle. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Monitoring Instruments	Typically located in ambulance or emergency response vehicle. SNL/NM Emergency Response System — Call 911 or (505) 844-0911

[a] Lists of equipment available at each Unit are included in a table in each Unit-specific module.
[b] The SNL/NM EOC is located in TA-I.

Table E-4
Emergency Response System Notification, Sandia National Laboratories/New Mexico

Method	Number
Telephone (at Unit)	911
Mobile Telephone	(505) 844-0911
Portable Radio	NA
Automatic notification of emergency response when smoke detector or pull station is activated and/or water flows in sprinkler system	NA

Note: Any person in any Unit is authorized to implement the evacuation procedures, notify the EC or alternate EC, and/or contact the emergency response representatives in the unlikely event that the EC or alternate EC cannot be contacted or respond in a timely manner.

E.5.1.1 Fire

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing fire.

1. All non-essential Unit personnel should evacuate (Section E.5.2) to an upwind point at least 100 yards away from the fire as directed by the EC. All Unit personnel may evacuate at this time.

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. ONLY if safe to do so, Unit personnel may consider taking action to put out the fire or minimize its spread. These actions may be taken only after the SNL/NM IC and KAFB Fire Department have been notified. Personnel must not jeopardize their own safety or the safety of other personnel.

   - If the fire is small and the fuel source is small, portable fire extinguishers may be used to put out the fire.

   - Fire extinguishers may only be used by personnel trained in their use and in this Contingency Plan, and only for very small fires.

   - Flammable materials should be removed from the area of fire if safe to do so.

   - Only Lith-X fire extinguishers are to be used for water-reactive waste.

4. If the fire spreads or increases in intensity, all remaining personnel must evacuate (see Step 1).

5. The EC should remain near the site, but at a safe distance, so he can advise the personnel responding to the fire of the known hazards.

6. Upon arrival at a fire, the KAFB Fire Department officer-in-charge will be in command of fire fighting. He will accept and evaluate the advice of Sandia/DOE Unit and emergency response personnel, but he retains the responsibility to select the fire-fighting methods and tactics.

7. The IC will be in overall control of Sandia/DOE emergency response efforts until the emergency is terminated.

8. RCRA-regulated wastes involved in a fire can be identified in the following ways: The location of the container may indicate the contents. If the location does not indicate its contents, the label number can be used to identify the material. Records on the contents of each container can be accessed from outside the Unit or in the Unit office. If the label has been burned and the container cannot be identified, the material will be treated as an unknown and analyzed according to methods in the Waste Analysis Plan (Appendix B to the General Part B.)

9. Residues of RCRA-regulated wastes may be collected and contained by stabilizing or neutralizing the spilled material, as appropriate; pouring an absorbent over the spilled material; and sweeping or shoveling the absorbed material into drums or other appropriate containers.

10. If needed, affected surfaces will be cleaned using cleaners appropriate to the chemicals.

11. If possible and safe to do so, responding personnel will take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers. If possible, personnel will build dikes around storm drains.

12. Any fire-fighting waters collected in the stormwater catchment and retention ponds at the HWMF and RMWMF or the floor trenches at the AHCF will be analyzed to determine an appropriate disposal method.

E.5.1.2 Explosion

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing explosion.

1. Unit personnel will immediately evacuate the area (Section E.5.2).

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire

Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. The EC will remain near the site, but at a safe distance, so he can advise the response personnel of the known hazards involved and the degree and location of the explosion and associated fires.

4. Upon arrival at the site, the KAFB fire department officer-in-charge will be in command of fire fighting. He will accept and evaluate the advice of Sandia/DOE personnel and emergency response organization members, but he retains the responsibility to select the fire-fighting methods and tactics.

5. The IC will be in overall control of Sandia/DOE emergency response efforts until the emergency is terminated.

6. Residues of RCRA-regulated wastes may be collected and contained by stabilizing or neutralizing the spilled material, as appropriate; pouring an absorbent over the spilled material; and sweeping or shoveling the absorbed material into drums or other appropriate containers.

7. If needed, affected surfaces will be cleaned using cleaners appropriate to the chemicals.

8. If possible, responding personnel will take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers. If possible, personnel will build dikes around storm drains.

9. Any fire-fighting waters collected in the stormwater catchment and retention ponds at the HWMF and RMWMF or the floor trenches at the AHCF will be analyzed to determine an appropriate disposal method.

10. The EC will secure all operational units (e.g., process equipment, ventilation equipment) that may be affected directly or indirectly by the explosion once the areas needed to be entered have been determined safe by the IC or a safety officer.

E.5.1.3 Uncontrolled Release

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing release of RCRA-regulated waste or constituents.

1. Evacuate the immediate area (Section E.5.2).

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. Take actions to minimize, contain, and clean up the release only if safe to do so.

4. Review facility records (e.g., waste inventory database) to determine the identity and chemical nature of released material.

5. Don appropriate personal protective equipment for exposure to the material.

6. If possible, secure the source of the release.

7. If necessary and possible, build a dike to contain runoff.

8. Take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers. If possible, build dikes around storm drains.

9. Released wastes may be collected and contained by stabilizing or neutralizing the spilled material, as appropriate; pouring an absorbent over the spilled material; and sweeping or shoveling the absorbed material into drums or other appropriate containers.

10. No waste that may be incompatible with the released material will be treated, stored, or disposed of until cleanup procedures are complete.

11. After collection of a released material, the release site will be sampled and evaluated. If contamination is found to exist, contaminated materials may be collected, drummed (if appropriate), and removed from the site for disposal at a permitted disposal facility. Depending on the specific conditions, however, Sandia/DOE may choose to implement an alternative decontamination method such as surface cleaning or in situ neutralization or stabilization. Any such alternative will be discussed with the NMED prior to implementation.

E.5.2 Evacuation [20 NMAC 4.1.500/40 CFR 264.52(f)]

During an emergency that threatens the health or safety of personnel within a Unit, the following steps will be taken as needed to facilitate safe, coordinated evacuation:

1. Stop work.

2. If safe to do so, close containers and shut down equipment or otherwise place it in a safe mode.

3. Alert personnel in the affected area by announcing the evacuation by voice command, “Evacuate the Area.”

4. Activate the available Unit-specific evacuation signal consistent with the internal communications and alarm systems that are listed in Section 6.0 of each Unit-specific module.

5. Notify the Sandia/DOE ERO by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The

KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

6. Check to see whether there is evidence that the designated evacuation route is not safe.

7. If there is no evidence of danger or obstacles, exit the Unit according to the evacuation routes provided in Section 6.0 of the Unit-specific module.

8. If there is evidence of danger or obstacles, exit the Unit by any safe route available.

9. If safe to do so, check for other personnel in other areas of the Unit.

10. Proceed to the designated assembly area for roll call to be taken by the EC or designee.

11. If the EC and unit personnel are assembling at an alternate location, proceed to that location.

12. Inform the EC or designee about any other people still believed to be inside the Unit.

13. Do not reenter the Unit until the IC or EC determines that is safe to do so.

E.5.3 Coordination with Off-Site Parties and Emergency Notification [20 NMAC 4.1.500/40 CFR 264.56(a) and (b)]

The Sandia EOC notifies DOE of all emergencies at SNL/NM. Sandia/DOE will notify state and local agencies if state or local response resources are required (see Section E.3.4), if human health or the environment are threatened outside the SNL/NM facility, or if areas outside the SNL/NM facility may require protective action. Sandia/DOE will verbally notify the City of Albuquerque or Isleta Pueblo, respectively, as soon as possible in the unlikely event that residents of Albuquerque or Isleta Pueblo outside KAFB are or could be affected. The notification will include available information about the nature and location of the emergency, the materials involved, and the recommended protective actions. The most likely protective actions are expected to include evacuation or sheltering indoors with doors and windows closed and ventilation systems shut off.

In the event of an emergency involving injuries that require medical services from one of the hospitals listed in Table E-2, Sandia/DOE will provide all available information about the event and the materials involved to the responders as soon as possible.

Sandia/DOE will also notify the National Response Center (1-800-424-8802) if human health or the environment are threatened outside the facility. The notification will include the following:

- Name and telephone number
- Facility name and address
- Time and nature of emergency
- Type and quantities of materials involved to the extent known
- Personnel injuries, and
- Potential hazards to human health, or the environment, outside the facility.

Sandia/DOE will also provide this information to the NMED in accordance with regulatory requirements, including verbal notification (1-505-827-9329 or other emergency notification number designated by NMED).

E.6 POST-EMERGENCY ACTIONS [20 NMAC 4.1.500/40 CFR 264.56(f-i)]

Immediately after an emergency, the EC (and the IC, when present) will:

- Continue to monitor for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment if the Unit stops operations;
- Provide for properly treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material;
- Ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
- Ensure that all equipment used in responding to the emergency that is listed in either this site-wide plan or the Unit-specific Contingency Plan is cleaned and fit for its intended use before resuming operations.

Prior to resuming operations after an emergency involving RCRA-regulated waste in the affected area(s) of the Unit, Sandia/DOE will notify NMED that incompatible waste will not be managed until cleanup procedures are complete and equipment listed in the Unit-specific Contingency Plan is cleaned and fit for use.

E.7 EMERGENCY RESPONSE RECORDS AND REPORTS [20 NMAC 4.1.500/ 40 CFR 264.56(j)]

The time, date, and details of an emergency involving RCRA-regulated waste that require implementation of this Contingency Plan will be noted in the Operating Record maintained for the affected Unit. Within 15 days after the incident, a written report will be submitted to the NMED identifying:

- Name, address, and telephone number of the facility owner or operator
- Name, address, and telephone number of the facility
- Date, time, and type of incident (e.g., fire, explosion, release)
- Name and quantity of material(s) involved
- Extent of injuries (if any)

- Assessment of actual or potential hazards to human health or the environment, where applicable, and
- Estimated quantity and disposition of recovered material that resulted from the incident.

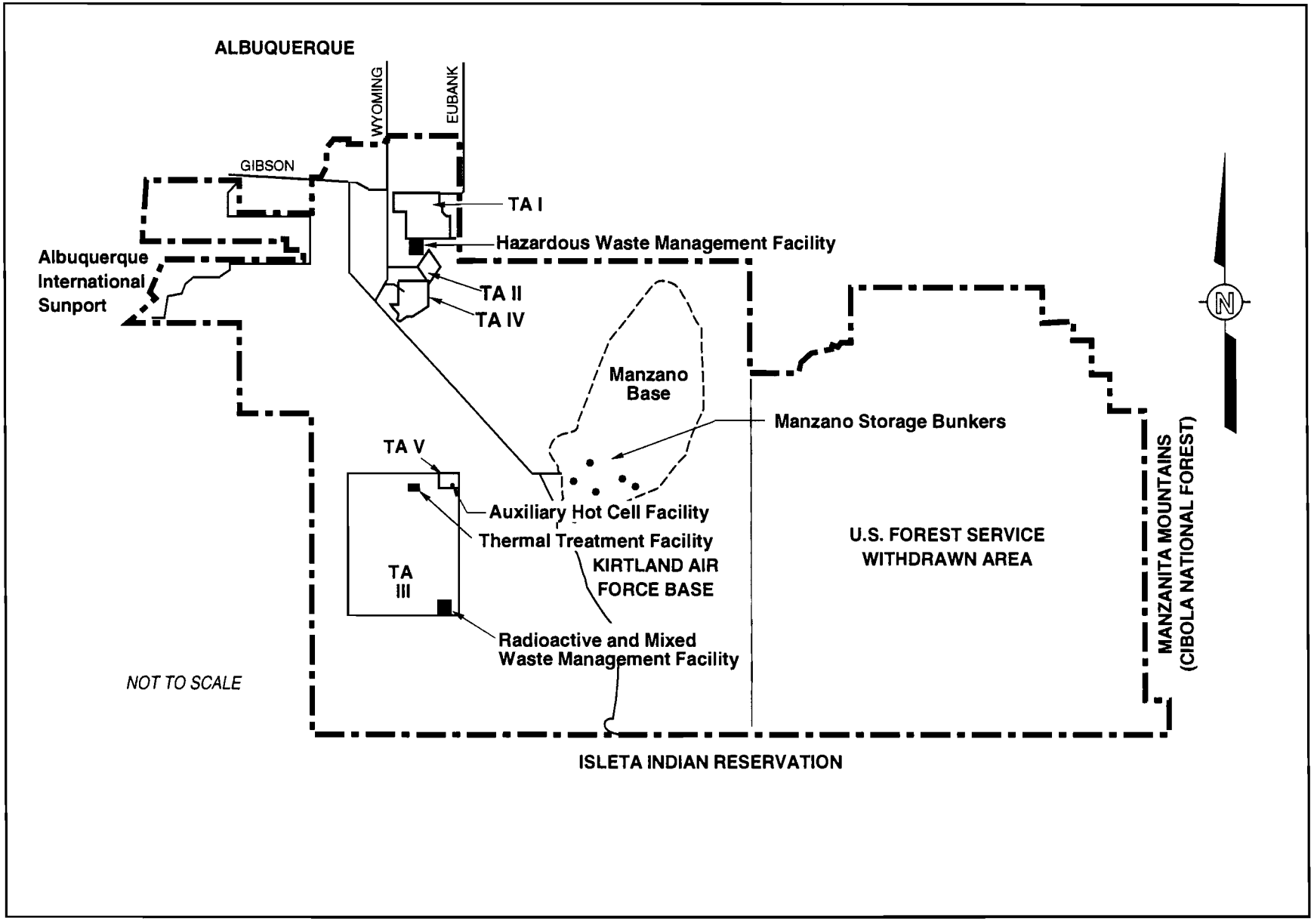

Figure E-1

**Sandia National Laboratories/New Mexico,
Technical Areas (TAs) and Resource Conservation and Recovery Act-Regulated
Waste Management Units**

APPENDIX F

SITE-WIDE CLOSURE PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO RESOURCE CONSERVATION AND RECOVERY ACT-REGULATED WASTE MANAGEMENT UNITS

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
ASTM	American Society for Testing and Materials
DOE	U.S. Department of Energy
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
NMED	New Mexico Environment Department
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TSDF	treatment, storage, or disposal facility
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit

SITE-WIDE CLOSURE PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part I, Subpart IX (20 NMAC 4.1.900), adopting by reference the Code of Federal Regulations, Title 40, Part 270 including Section 270.14(b)(13) (40 CFR 270.14[b][13]), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, revised June 14, 2000 [6-14-00], closure requirements for Resource Conservation and Recovery Act (RCRA)-regulated waste management units (Unit) at Sandia National Laboratories/New Mexico (SNL/NM), co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), are provided in this site-wide Closure Plan and in Section 7.0 of each Unit-specific module. Together, information in the General Part B, in this appendix, and in each Unit-specific module meets the applicable regulatory requirements.

F.1 INTRODUCTION (20 NMAC 4.1.500/40 CFR 264.111 AND 264.112[B][2])

This Closure Plan was prepared in accordance with the applicable requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart G, “Closure and Post-closure” [6-14-00]. This Closure Plan identifies the steps necessary for closure of individual Units. Partial closure of SNL/NM will consist of closing one or more of the SNL/NM Units while leaving the remainder of the other Units in service. Partial closure will be deemed complete when equipment and structures have been decontaminated, if necessary; the Unit meets the performance standards for “clean” closure; and closure certification has been submitted to the New Mexico Environment Department (NMED). Final closure will be complete when all RCRA-regulated waste management Units at the SNL/NM facility have been closed. Neither partial nor final closure are expected to occur during the life of the permit.

Closure information applicable to all Units at SNL/NM (Figure F-1) and sampling and analytical procedures to be used during closure activities are presented in this appendix. This site-wide Closure Plan presents closure information that is applicable to all RCRA-regulated waste management units at the site, while information regarding individual Units is provided in Section 7.0 of the appropriate Unit-specific module. Prior to closure of a Unit, the Unit-specific module will be revised as needed (e.g., to provide Unit-specific sampling and analysis plans, or to incorporate updated decontamination technologies) and submitted to NMED for approval.

F.2 SITE DESCRIPTION

SNL/NM (U.S. Environmental Protection Agency [EPA] Identification Number NM5890110518) is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. SNL/NM is managed by Sandia, a wholly-owned subsidiary of Lockheed Martin, for the DOE. Generation and management of RCRA-regulated wastes occur at SNL/NM as part of these activities. SNL/NM is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base in Bernalillo County. Descriptions of individual RCRA-regulated waste management Units are provided in Section 7.1 of each Unit-specific module.

F.3 WASTE DESCRIPTION, MAXIMUM VOLUME STORED, AND INVENTORY ELIMINATION (20 NMAC 4.1.500/40 CFR 264.112[B][3])

The RCRA-regulated waste types and quantities managed at the SNL/NM Units are highly variable and may include, but are not limited to, laboratory chemical waste, contaminated used oil, process waste, explosive waste, used batteries, unknown liquids and solids, elemental lead, contaminated soil, debris, decontamination/purge/treatment waters, and treatment residuals.

The maximum RCRA-regulated waste storage and/or treatment capacity of each SNL/NM Unit is provided in Section 7.2 of each Unit-specific module.

The first step in the closure of a Unit will be the elimination of any waste inventory stored in the Unit. Prior to initiation of further closure activity, all RCRA-regulated wastes will be removed from the Unit and will be either transferred to another RCRA-regulated waste management Unit at SNL/NM or transported directly to an off-site permitted treatment, storage, or disposal facility (TSDF).

F.4 CLOSURE PERFORMANCE STANDARDS (20 NMAC 4.1.500/40 CFR 264.111)

Sandia/DOE plan to clean close all storage and treatment Units to meet the closure performance standards in 20 NMAC 4.1.500/40 CFR 264.111 [6-14-00]. This Closure Plan applies only to the RCRA-permitted storage and treatment Units at SNL/NM.

This Closure Plan is designed to meet the following performance standards in 20 NMAC 4.1.500/ 40 CFR 264.111 [6-14-00]:

- To protect human health and the environment;
- To minimize the need for further maintenance.
- To control, minimize, or eliminate the post-closure release of RCRA-regulated waste, RCRA-regulated waste constituents, leachate, contaminated runoff, or RCRA-regulated waste decomposition products to the ground, surface waters, or atmosphere; and
- Comply with the applicable closure and post closure requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts G and I through DD [6-14-00].

F.5 CLOSURE METHOD (20 NMAC 4.1.500/40 CFR 264.112[B][1,2,4,5], 264.114, AND 264.115)

Sandia/DOE expect to demonstrate conformance with the closure performance standards in 20 NMAC 4.1.500/40 CFR 264.111 through 264.116 [6-14-00], as applicable, for SNL/NM Units. Closure methods proposed in this plan are based on the following assumptions about conditions during the operational life of SNL/NM Units:

- RCRA-regulated wastes were stored in containers (e.g., drums);

- Containers used to store and/or treat RCRA-regulated wastes retained their integrity;
- Adequate secondary containment was provided for liquid wastes;
- Appropriate spill cleanup and decontamination procedures were performed in response to releases, if any, of RCRA-regulated wastes at Units; and
- Releases of RCRA-regulated waste constituents to the environment did not occur.

These assumptions are derived from historical knowledge of waste management practices and policies as well as applicable written records (e.g., inspection logs, survey results, waste inventory reports, facility/activity descriptions).

In order to demonstrate achievement of the closure performance standards listed in Section F.3 of this appendix, Sandia/DOE propose to perform the following closure activities:

- Phase I: Initial sampling and analysis.
  - The data quality objective (DQO) process will be implemented.
  - Initial sampling and analysis activities will be performed that are sufficient to detect contamination, if any, resulting from RCRA-regulated waste constituents known to have been released at a Unit.
- Phase II: Performance of hazard surveys, if necessary.
  - A waste constituent contamination survey will be conducted to identify the nature and extent of contamination detected during Phase I sampling and analysis activities.
  - The nature and extent of contamination will be evaluated to determine closure options.
- Phase III: Decontamination, if necessary.
  - Decontamination of areas requiring remediation will be performed.
  - Verification of “clean closure” will be conducted.
- Phase IV: Certification of closure.
  - Closure will be certified by an independent, registered professional engineer.

Closure “phases” are fully described in Sections F.5.1–F.5.4. The site-wide sampling and analysis plan is provided in Section F.6, and Unit-specific sampling and analysis plans will be revised as needed and submitted to NMED for approval prior to closure of a given Unit, as described by the closure schedule in Table F-2.

F.5.1 Phase I: Initial Sampling and Analysis

The purpose of Phase I activities is to determine whether or not RCRA-regulated waste constituent contamination requiring remediation (i.e., decontamination) is present at a Unit. The DQO process is designed to ensure that the type, quantity, and quality of environmental data used in decision making are appropriate for the intended application. DQOs are qualitative and quantitative statements derived from a series of seven planning steps based on the scientific method. DQO statements applied to Phase I closure activities at SNL/NM Units are summarized below.

Define the Problem. The Unit to be closed is not needed for RCRA-regulated waste management activities and should be closed under applicable closure requirements. Regulatory closure must meet the performance standards found in 20 NMAC 4.1.500/40 CFR 264.111(a) and (b) [6-14-00] (see Section F.4).

Identify the Decision. Does the Unit meet the applicable closure performance standards without further remediation? If so, closure certification will be submitted to the Secretary of the NMED. If not, the stated performance standards will be met before closure certification.

Identify Inputs to the Decision. Applicable archival records on RCRA-regulated waste management activities will be reviewed. The records (e.g., inspection logs, survey results, waste inventory reports, facility/activity descriptions) will be reviewed for evidence of incidents or activities that may have resulted in RCRA-regulated waste or constituent contamination at the Unit. Visual observations of the Unit will be performed to identify stains or discoloration that may indicate contamination.

Define the Study Boundaries. The records review is limited to RCRA-regulated waste management records generated during the operating life of the Unit as a RCRA-regulated waste management area. Visual observations are limited to surfaces in areas used for RCRA-regulated waste management activities. Initial samples will be collected from within the area used for RCRA-regulated waste management activities at the Unit to be closed. A Unit-specific sampling grid will be used to determine initial sample locations. If visible stains or discoloration are observed during visual inspections, biased sampling of those areas will also be performed during initial sampling activities. Analytical parameters addressed in Phase I sampling will be limited to RCRA-regulated waste or constituents known to have been released during operation of the Unit.

Develop the Decision Rule. If, based on the records review, visual observations at the site, and initial sampling and analysis results, the Unit is not contaminated due to RCRA-regulated waste management activities, the Unit will be considered “clean.” Phase II and III activities will not be conducted. Closure activities will advance to Phase IV. If, based on the records review, visual observations at the site, and/or initial sampling and analysis results, the Unit is contaminated due to RCRA-regulated waste management activities, Phase II activities will commence.

Specify Limits on Decision Errors. Because measurement data from sampling and analysis can only estimate true values, there is always a possibility that decisions made based on measurement data will be in error. Decision errors can be attributed to either sampling error (when incorrect sampling fails to adequately represent the true environment) and measurement errors (when the combination of random and systematic errors in the measurement process inaccurately represent the true values). Precautions taken to minimize either type of decision error when performing

regulatory closure of the Unit to be closed are discussed in the sampling and analysis plan included as Section F.6 of this Closure Plan.

Analytical Data Assessment. Chemical analysis data (if any are generated) used to document attainment of the closure performance criteria for the Unit to be closed will be assessed using SNL/NM data verification and validation procedures or equivalent methods.

Quality controls (QCs) for sampling and analysis will be implemented to ensure that measurement data collected meets the information objectives for this investigation. QC will be implemented by adhering to the sampling procedures described in the approved sampling and analysis plan; documenting sampling activities and sample custody; using controlled and standard equipment and materials; and collecting, analyzing, and evaluating field and laboratory QC samples.

F.5.2 Phase II: Hazard Surveys

Phase II activities will be conducted only if contamination is identified during Phase I activities. Phase I activities are sufficient to detect the presence of contamination, if any, by RCRA-regulated waste or constituents known to have been released at a Unit. During Phase I, samples will be collected from locations established using a sample grid or equivalent, and from visibly stained or discolored spots. If, based on Phase I initial sampling results, an area is contaminated, additional Phase II samples will be collected to identify the nature and extent of contamination at a Unit. Samples will be collected at intervals specified in each Unit-specific sampling and analysis plan until the lateral extent of surface contamination is defined. Phase II sampling will be done in accordance with the procedures outlined in Section F.6.

F.5.3 Phase III: Decontamination Procedures

Decontamination will be performed only if contamination requiring remediation is found during Phase II hazard surveys. Otherwise, Phase III will not be conducted. All sampling conducted during decontamination will be done in accordance with sampling procedures in Section F.6 of this appendix.

Appropriate remedial actions will be determined and undertaken after Phase I and II contamination investigations have been conducted. To the extent possible, all contaminated structures, surfaces, and equipment (if present) at a Unit will be decontaminated. The following general principles apply to decontamination of all RCRA-regulated Units at SNL/NM:

- If Phase III decontamination activities are performed, confirmatory samples will be collected to verify achievement of closure performance standards. The confirmatory samples will be collected at intervals specified in a Unit-specific sampling and analysis plan until the lateral extent of surface contamination is defined. Secondary containment surfaces will be inspected for cracks or gaps prior to decontamination to identify potential biased sampling locations to confirm that closure performance standards have been met.

- Before transport off-site or use elsewhere on-site, all equipment used for closure will be decontaminated via scraping and rinsing with high pressure water, steam, or other

appropriate industrial cleaning solution until no visible evidence of contamination is present. Equipment decontamination may be performed in a specific decontamination staging area with adequate containment.

- Most personal protective equipment, plastic sheeting, and sampling equipment used by personnel performing decontamination activities will be disposable. These materials will be placed in containers and managed in accordance with all applicable requirements of 20 NMAC 4.1.300/40 CFR 262.34 [6-14-00], pending arrangements for transfer to an SNL/NM Unit or an off-site permitted TSDF.

- Any residues, rinsate, or wastes generated during decontamination activities, or equipment that cannot be successfully decontaminated will be handled in accordance with all applicable requirements of 20 NMAC 4.1.300/40 CFR 262.34 [6-14-00], pending arrangements for transfer to an SNL/NM Unit or an off-site permitted TSDF.

- Sandia/DOE may propose improved decontamination technologies or an alternative demonstration of decontamination at the time of closure. This information would be submitted to NMED prior to closure in an updated Unit-specific Closure Plan.

The following sections describe decontamination procedures applicable to specific types of waste management Units.

F.5.3.1 Container Storage Units

The decontamination procedures described below are designed to satisfy closure performance standards by describing the steps taken to remove or decontaminate all RCRA-regulated waste residues and contaminated containment system components, equipment, and structures during closure. Soil and groundwater are not expected to be impacted by operations at container storage Units, as the Units are located inside buildings for protection from the weather, are equipped with impermeable secondary containment systems, and have been regularly inspected and maintained.

The decontamination techniques described below apply to hardened surfaces present in container storage Units such as asphalt, concrete, sheet plastic, and metal. These surfaces include the floors, walls, secondary containment structures, and miscellaneous equipment. Not all the steps will be required for each surface; some steps are contingent on the outcome of prior steps. The procedures described below are intended to allow structures and equipment in container storage Units to be returned to service in the management of non-RCRA regulated materials. These procedures may be revised before closure to incorporate new practices or technology.

- Remove gross residual material using brooms, mechanical sweepers, or similar equipment.

- Vacuum surface using a wet/dry vacuum equipped with a high-efficiency particulate air filter.

- Inspect surface and identify any stained areas for further cleanup.

- Small areas may be cleaned by hand using a solution of water and a surfactant (e.g., Alcojet™ washing detergent or equivalent) until all visible material is removed.

- For larger areas or those with stains that cannot be removed by hand cleaning, wash surface with a high pressure, low volume water spray using a surfactant (e.g., Alcojet™ washing detergent or equivalent) until all visible material is removed.

- Collect used wash water using appropriate means and sample for final disposition analytes (see Section 7.0 of appropriate Unit-specific module for required sample analytes).

- Allow surfaces to air dry.

- Conduct a walk-through visual inspection of all decontaminated surfaces.

- Repeat surface wash and wash-water collection procedures until all visible signs of contamination have been removed. Visible contamination that cannot be removed by washing will be removed by scraping or chipping using appropriate tools and equipment.

- Verify the absence of visible contamination using a site inspection logbook or memo entries and visual documentation (e.g., videotaping, photographing).

Wastes generated during closure of a Unit will be characterized and containerized, and the containers will be appropriately labeled. Containers of RCRA-regulated waste will be managed in accordance with 20 NMAC 4.1.300/40 CFR 262.34 [6-14-00], pending arrangements for transfer to an SNL/NM Unit or an off-site permitted TSDF.

F.5.3.2 Waste Treatment Units

The closure processes described above are appropriate for indoor areas at Units where treatment in containers occurs (i.e., the Radioactive and Mixed Waste Management Facility and the Auxiliary Hot Cell Facility). The closure processes described above are also appropriate for the Thermal Treatment Facility (TTF) treatment equipment. Closure activities (if needed) for areas immediately surrounding the TTF treatment equipment will be addressed in the sampling and analysis plan to be prepared prior to closure.

F.5.4 Phase IV: Closure Certification

An independent, registered professional engineer will verify that closure activities followed the approved plan. Upon completion of closure, a letter certifying that the Unit was closed according to the approved plan will be prepared. The letter will be dated and signed by the engineer and will be stamped by the engineer with his or her professional seal. The original copy will be submitted to the Secretary of the NMED.

Upon completion of the closure activities, Sandia/DOE will submit closure information to the Secretary of the NMED. This information will include:

- Certification of closure
- Location and custodian of all closure documentation.

Additional information will be available, upon request, in the documentation supporting the independent registered professional engineer's certification in accordance with 20 NMAC 4.1.500/40 CFR 264.115 [6-14-00]. The supporting documentation will include:

- Discussion of closure activities
- Laboratory analyses/results summaries
- Original laboratory data package(s)
- Quality assurance (QA)/QC documentation for contract laboratory analyses.

F.6 SAMPLING AND ANALYSIS PLAN (20 NMAC 4.1.500/40 CFR 264.112[B][4,5])

Sampling and analysis activities will be performed to determine the presence or absence of contaminants (Phases I and II) or to verify decontamination (Phase III). Sample collection will be performed in accordance with established sampling procedures (e.g., EPA, American Society for Testing and Materials [ASTM]) or equivalent methods so that samples are representative of the Unit conditions at closure. Sample collection equipment and techniques are specified in this site-wide Closure Plan (Table F-1). Unit-specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) will be provided in an updated sampling and analysis plan as described in Section 7.5 of the appropriate Unit-specific module. These Unit-specific sampling and analysis plans will be submitted to NMED for approval prior to initiation of closure activities.

F.6.1 Sample Locations, Collection, and Handling

Sample locations will be determined during closure. Typical locations are described in Sections F.5.2 and F.5.3. Sample collection methods may include wipe sampling, chipping, coring, or drilling, as appropriate. Representative samples of clean and used decontamination wash water will also be collected using appropriate equipment.

Samples will be collected, stored, and preserved in accordance with established and applicable procedures (e.g., EPA, ASTM). Samples will be analyzed for RCRA-regulated waste and constituents known to have been released during the operational life of the Unit.

F.6.1.1 Sample Collection Documentation

Sample collection will be documented for each sample following QA/QC information established by EPA guidelines or equivalent methods.

Table F-1
Sampling and Analysis Plan for Closure of Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Units

Activity	Sampling Method/Type	Parameters of Interest[a]	Sample Number/ Frequency
Operations and site reviews	1) Visual observation 2) Review of RCRA-regulated waste management unit documentation/ records	1) Staining, discoloration 2) RCRA-regulated constituents known to have been released during the operational life of the unit	1) Not applicable 2) Not applicable
Wall/floor surface sampling	Filter wipe	1) Physical state 2) RCRA-regulated constituents known to have been released during the operational life of the unit	1 per area of discrete staining/discoloration and 1 per sampling grid location
Characterization of decontamination equipment[b] (e.g., personal protective equipment, plastic sheeting, dry wipes, and tools)	Filter wipe Liquid sampling Acceptable knowledge	1) Physical state 2) RCRA-regulated constituents known to have been released during the operational life of the unit	As appropriate
Quality control sampling	Rinsate blanks, trip blanks, duplicate samples	1) Physical state 2) RCRA-regulated constituents known to have been released during the operational life of the unit	1 per day per piece of sampling equipment[c] 1 per sample shipment[d] 1 per every 10 clean and used wash water samples[e]

[a] The parameters of interest are determined by reviewing Unit operating records to determine RCRA-regulated constituents and characteristics of RCRA-regulated wastes known to have been released at the Unit.
[b] Decontamination equipment wastes will be characterized using the results of decontamination sampling and analysis (i.e., used wash water or wipe sampling, as appropriate).
[c] Applicable to rinsate blanks.
[d] Applicable to trip blanks.
[e] Applicable to duplicate samples.

F.6.1.2 Sample Identification

Each sample container will be labeled or marked with appropriate QA/QC information and laboratory analysis established by EPA guidelines or equivalent methods.

F.6.1.3 Sample Preservation, Handling, and Shipment Preparation

Sample preservation and handling will be in accordance with applicable QA requirements. Proper container, preservative, and holding time requirements for each parameter will follow EPA guidelines or equivalent methods. Sample shipment will be in accordance with U.S. Department of Transportation and International Air Transport Association shipping requirements, as applicable.

F.6.1.4 Quality Control Sampling

The quality of data from initial and confirmatory sampling efforts will be controlled by using blank and duplicate samples. Blanks and duplicate samples will be collected so that the extent of any contamination introduced during sample collection and handling and the precision of the total sample collection and laboratory analysis system can be determined. Sampling equipment rinsate blanks will be collected at a frequency of one per day for each piece of sampling equipment to determine if samples have been cross contaminated by sampling equipment. One trip blank will accompany each sample shipment submitted for analysis to determine if volatile contaminants are introduced during shipment. One in every ten clean and used wash water samples collected will be submitted in duplicate for analysis and determination of precision. The blanks and duplicate samples will be treated as separate samples. Objectives for acceptable QC sample analytical results will follow available EPA guidance or equivalent methods.

F.6.1.5 Analysis Request/Chain-of-Custody Form

In order to document the integrity of samples from collection to analysis, sample possession will be recorded on an analysis request/chain-of-custody form, which will be prepared for samples collected for laboratory analyses. This form is to be initiated at the point of sample collection and will be kept with the samples during transfer to the laboratory. The form will be completed upon receipt in the laboratory. Specific analysis request/chain-of-custody procedures will follow available EPA guidance or equivalent methods.

F.6.1.6 Sampling Equipment Decontamination Procedures

To minimize the potential for cross contamination between samples, dry decontamination procedures may be used.

F.6.2 Laboratory Analysis

Chemical constituents to be analyzed for during closure will be determined based on the constituent(s) listed in 20 NMAC 4.1.500/40 CFR 264, Appendix IX [6-14-00], and known to have been released during the operational life of the Unit. Analytical procedures will conform to "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," (EPA, 1986 and all approved updates) or other appropriate established methods.

F.7 CLOSURE SCHEDULE (20 NMAC 4.1.500/40 CFR 264.112[B][6], 264.112[D], AND 264.113)

The schedule for completion of closure activities is shown in Table F-2. Closure is expected to take 180 days. If unforeseen circumstances that impact this schedule arise during closure, a Closure Plan modification will be requested in accordance with 20 NMAC 4.1.500/40 CFR 264.113(b)(1)(i) [6-14-00].

Table F-2
Closure Schedule for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units

Activity[a]	Schedule[b]
Submit updated Unit-specific closure plan (Section 7.0 of appropriate Unit-specific module)	Prior to closure notification
Receive NMED approval of updated Unit-specific closure plan	Prior to closure
Notify the New Mexico Environment Department (NMED) of closure	Day minus45
Begin closure activities	Day 0
Begin records review and site observations	Day 1
Conduct hazard surveys, if necessary	Day 90
Conduct decontamination activities, if necessary	Day 120
Verify decontamination, if necessary	Day 140
Complete final closure	Day 180
Submit closure certification to NMED	60 days later

[a] Some activities may be accomplished concurrently with others.

[b] This schedule represents estimated completion time; some activities may be completed earlier than scheduled. Also, the schedule assumes that updated Unit-specific closure plans will be approved by NMED prior to notification of closure by SNL/NM.

F.8 CLOSURE PLAN AMENDMENT (20 NMAC 4.1.500/40 CFR 264.112[C])

This Closure Plan will be amended if any changes occur in the operating plans or Unit design that affect the plan, such as Unit size or capacity, types of RCRA-regulated waste in the Unit at closure, maximum waste inventory, or the closure schedule. The plan will be amended if, during closure, unexpected events require the plan to be modified. Additionally, the plan will be amended if there are changes in technical considerations such as availability of new technology, changes in requirements, or operating contingencies.

This site-wide Closure Plan is intended to provide general closure policies and procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. It is expected that revisions to the Unit-specific modules made prior to closure will address all necessary information, without requiring amendments to this site-wide Closure Plan.

If this Closure Plan requires amendment(s), Sandia/DOE will request authorization from the NMED in writing, in accordance with 20 NMAC 4.1.500/40 CFR 264.112(c) [6-14-00].

F.9 FINANCIAL REQUIREMENTS (20 NMAC 4.1.500/40 CFR 264.140[C])

Cost estimates, financial assurance mechanisms, and liability coverage for closure and post-closure activities are not included. Federal facilities are exempt from these requirements, in accordance with 20 NMAC 4.1.500/40 CFR 264.140(c) [6-14-00].

F.10 POST-CLOSURE CARE (20 NMAC 4.1.500/40 CFR 264.117 THROUGH 264.120)

Sandia/DOE plan to clean close all Units at the SNL/NM facility. Because all RCRA-regulated waste will be removed from the Units and the Units will be decontaminated, if necessary, at closure, a general post-closure care plan is not required. Potential post-closure care activities at the TTF are addressed in Module II.

F.11 SURVEY PLAT [20 NMAC 4.1.500/40 CFR 264.116]

Sandia/DOE plan to clean close all Units at SNL/NM. Because all RCRA-regulated waste will be removed from the Units and the Units will be decontaminated, if necessary, at closure, a survey plat is not required.

REFERENCE

EPA, see U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” *SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

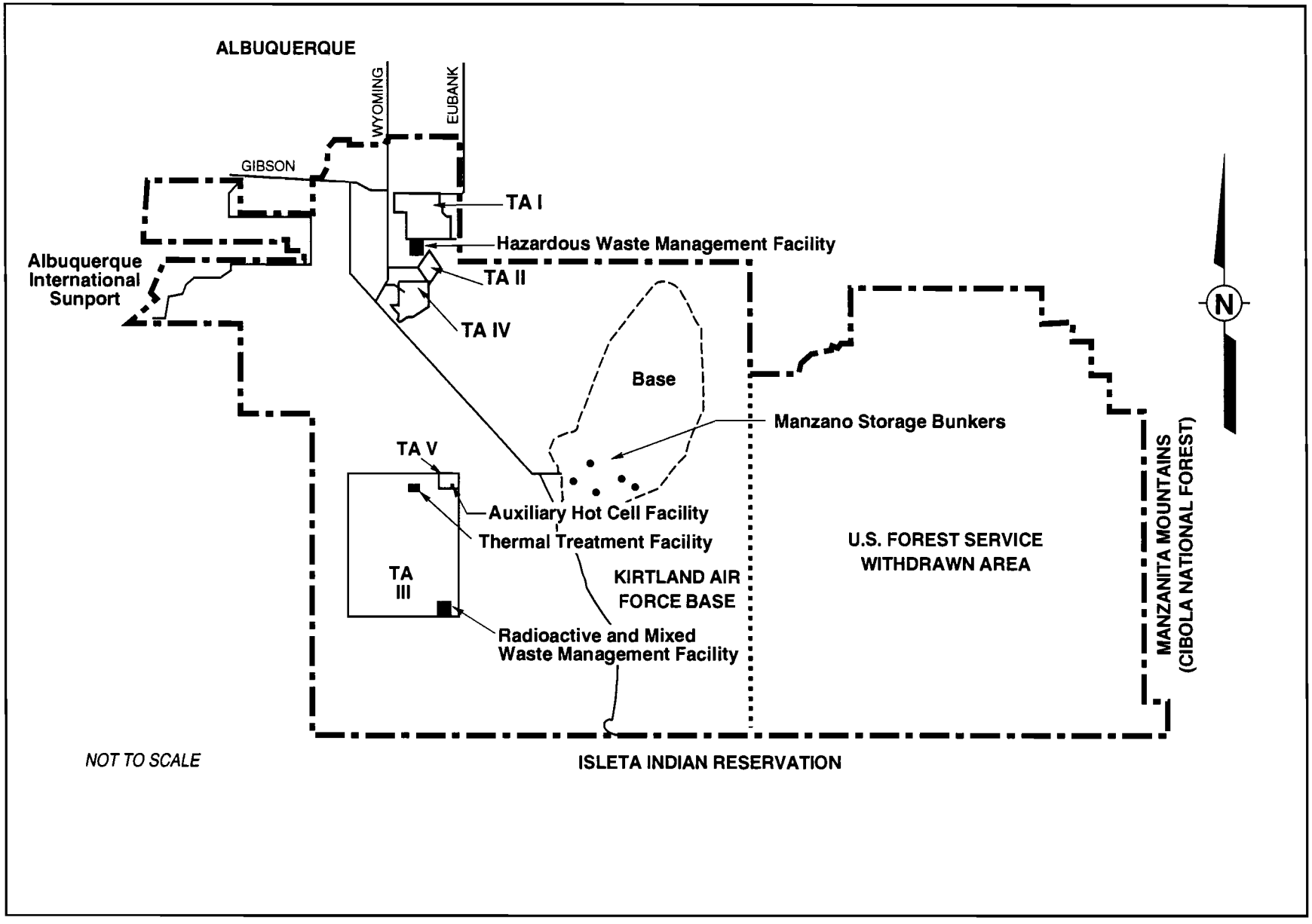

Figure F-1

Sandia National Laboratories/New Mexico, Technical Areas (TAs) and Resource Conservation and Recovery Act-Regulated Waste Management Units

Sandia National Laboratories/New Mexico Hazardous Waste Management Facility Part B Permit Renewal Request

Module I

Revision 2.0

April 2003

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Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
DOE	U.S. Department of Energy
ft	foot/feet
ft^2	square foot/feet
HWMF	Hazardous Waste Management Facility
HSWA	Hazardous and Solid Waste Amendments
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	Solid Waste Management Unit
TSDF	treatment, storage, and disposal facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SANDIA NATIONAL LABORATORIES/NEW MEXICO HAZARDOUS WASTE MANAGEMENT FACILITY PART B PERMIT RENEWAL REQUEST

This Sandia National Laboratories/New Mexico (SNL/NM) Hazardous Waste Management Facility (HWMF) Part B Permit Renewal Request is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage operations at the HWMF. 20 NMAC 4.1.500 and .900, adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application" hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, in the SNL/NM General Part B, and in the appendices to the General Part B meet the applicable requirements for the HWMF that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00], and 20 NMAC 4.1.900/40 CFR 270 [6-14-00].

Sandia/DOE also prepared the "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" (SNL/NM, 2003), hereinafter referred to as the SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the SNL/NM General Part B and Unit-specific Part B modules, including this HWMF Part B Permit Renewal Request.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Hazardous Waste Management Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The HWMF occupies 1.35 acres on DOE property between TA-I and TA-II. It is a fenced compound with several buildings and waste management areas (WMAs). Operations include storage of RCRA-regulated wastes in containers and repackaging the wastes into suitable containers for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A may be managed at the HWMF. Sandia/DOE currently operate the HWMF in accordance with the terms of NMED Permit NM5890110518-1, issued August 6, 1992 (NMED, 1992).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the HWMF WMAs and specific Unit waste management operations. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B.

Specific information in this section regarding Unit operations includes: containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage of RCRA-regulated wastes.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the General Part B, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [6-14-00].

1.1 Designated Waste Management Areas

The location of the HWMF at SNL/NM is shown on Figure 1. The HWMF has three designated WMAs, shown on Figure 2:

- The Hazardous Waste Packaging Building (Building 959),
- The Hazardous Waste Storage Building (Building 958), and
- Two modular storage buildings.

The following sections provide descriptions of the storage structure, location, capacity, and secondary containment of each WMA.

1.1.1 Hazardous Waste Packaging Building (Building 959)

In the Hazardous Waste Packaging Building, lab packs are prepared by placing small containers into larger containers filled with absorbent material, and other wastes are repackaged into containers for shipment to off-site treatment, storage, and disposal facilities (TSDFs).

The Hazardous Waste Packaging Building is the easternmost WMA at the HWMF and is an 1,800-square-foot (ft^2) precast concrete building with an eave height of 12 feet (ft) (Figures 2 and 3). Eight waste-holding cells and a waste packaging area (all with recessed floors) are located in the building. The recessed floors of the cells and packaging area are constructed of reinforced concrete and are covered with metal grating. Waste containers are placed on shelves over the metal grating over the recessed secondary containment areas. The load-bearing capacities of the metal grating and the reinforced concrete floor are 450 and 2,000 pounds per ft^2, respectively. The entire floor of the building and the bottom seven inches of wall surface in each recessed area are covered with an epoxy-based chemical-resistant coating. The coating forms a continuous protective barrier over the concrete and protects the

floor from the effects of solvents and corrosive chemicals that may be released from the containers.

Secondary containment is provided by the recessed areas. The recessed area in each holding cell is 5 feet by 4.5 feet and 7 inches deep, with a capacity of 71 gallons. The recessed area under the packaging area is 5 feet by 12 feet and 7 inches deep, with a capacity of 188 gallons.

Based on the secondary containment capacity (10% of the stored volume or the volume of the largest container), each of the eight holding cells in the Hazardous Waste Packaging Building can hold a maximum of 13 55-gallon drums, or an equivalent volume. The packaging area can hold a maximum of 34 55-gallon drums, or an equivalent volume. The stacking configuration of waste containers will not exceed the load-bearing capacity of the reinforced concrete or metal grating. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

1.1.2 Hazardous Waste Storage Building (Building 958)

The Hazardous Waste Storage Building (Building 958) is located west of the Hazardous Waste Packaging Building (Figure 2). The Hazardous Waste Storage Building is a 3,250-ft^2 precast concrete building with an eave height of 14 ft. In the Hazardous Waste Storage Building, eight separate and recessed waste storage compartments for segregation of waste groups are contained in the building (Figure 4). The floors of Cells 1, 2, 3, 4, 6, 7, and 8 are constructed of reinforced concrete and metal grating. The floor of Cell 5 is constructed of reinforced concrete. The entire floor (all cells and walkway) is coated with an epoxy-based chemical-resistant coating. The coating protects the concrete from the effects of solvents and corrosive chemicals that could be released on the floor in the event of a spill. Waste containers are placed on metal grating over the secondary containment area, or on pallets on the reinforced concrete floor in Cell 5. The load-bearing capacity of the metal grating and reinforced concrete are 450 and 2,000 pounds per ft^2, respectively. The storage compartments vary in size, secondary-containment capacity, and waste-container capacity.

The secondary containment in Bays 1, 2, 3, 4, 6, 7, and 8 is provided by the recessed areas under the grating. The secondary containment capacity in Bay 5 is provided by the volume of the entire recessed area. For example, the recessed area in Bay 1 is 11.75 feet by 14.67 feet by 5 inches deep, with a capacity of 542 gallons. The secondary containment capacity is 10% of the stored volume or the volume of the largest container; thus, the storage capacity in Bay 1 is 5420 gallons, 98 55-gallon drums, or an equivalent volume. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

Based on the secondary containment capacity, the storage compartments are limited to the following maximum storage capacity of 55-gallon drums, or equivalent volume, as listed in Table 1.

Table 1
Secondary Containment Capacity for Building 958

Bay No.	Maximum Number of 55-Gallon Drums
1	98
2	79
3	79
4	79
5	518[a]
6	79
7	79
8	79

[a] A portion of the secondary containment capacity is taken up by pallets.

The stacking configuration of waste containers will not exceed the load-bearing capacity of the reinforced concrete floor or the metal grating.

1.1.3 Modular Storage Buildings (958B and 958C)

The modular storage buildings are located west of Building 958 (Figure 2) and are used for storage of reactive wastes, including, but not limited to, lithium batteries, gas cylinders, and flammable solids.

The exterior dimensions of each modular storage building are 22 ft long, 8 ft wide, and 8 ft high. The buildings are constructed of welded 10- and 12-gauge steel supported by structural steel sections. Each building has three doors, each with a three-point locking system to provide access and security. Each has a 6-inch-deep integral spill containment reservoir under the entire building; the containment capacity is 500 gallons. The secondary-containment subfloor is constructed of continuously welded 10-gauge steel, which is epoxy-coated to resist chemical attack; the coating is compatible with reactive wastes. The floors are 1-inch-thick epoxy-coated, fire resistant plywood. The load-bearing capacity of the floor for each structure is 250 pounds per square foot. The inside walls and ceiling are also coated with chemical-resistant epoxy. Each building rests on structural supports that elevate it and allow visual inspections of the underside of the spill containment reservoir. The secondary containment capacity is 10% of the stored volume or the contents of the largest container; thus, the storage capacity is 5000 gal. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

1.2 Unit Operations

The HWMF WMAs are used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency Hazardous Waste Numbers listed in the General Part A.

Information regarding operation of all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the General Part B. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.15[a] and [b]; 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Containers are inspected for integrity when the wastes arrive at the HWMF, before they are placed on the shelves in the holding cells in Building 959. The shelves have edges, but they are not used to provide additional containment. Containers of highly corrosive liquids may be placed within larger containers to capture any releases that may occur. Containers on the shelves are inspected regularly as noted in Appendix C of the General Part B. Released materials are cleaned up as described in Section 1.1.1 of the General Part B.

Unit personnel begin taking action to evaluate and remove accumulated liquids in each secondary containment area in the HWMF upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 270.15[c] and [d]; 20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177)

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the HWMF. The general precautions and practices employed by Unit personnel are described in Section 1.1.2 of the General Part B. Additional HWMF-specific features, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes and stored in the modular storage buildings. They may temporarily be managed in Building 959 after receipt and during repackaging activities.

- Forklifts are not used for waste movement in Building 959 to minimize potential sources of ignition in the building.

- Unit personnel use the process described in Section 1.1.2 to ground containers during transfer of flammable liquids between containers.

- The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. They are equipped with a dry chemical fire suppression system to assure that water-reactive wastes will not be exposed to water during fire emergencies.

- Wastes are mixed together on a very limited basis during the repackaging operations at the Unit. Ignitable and reactive wastes are only mixed on a case-by-case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences. Personnel use waste characterization data and/or published chemical information (e.g., NIOSH Pocket Guide to Chemical Hazards or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions.

- Containers of wastes are labeled and segregated in different holding cells in Building 959 according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. Containers in Building 958 are labeled. They are segregated into different bays according to general DOT hazard classes in 49 CFR 172 and 20 NMAC4.1.500/ 40 CFR 264 Appendix V as appropriate. The holding cells and bays are separated from each other by concrete walls and independent containment systems.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarms systems at the HWMF.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

General information about fire hydrants at each Unit is provided in Section 1.1.3.1 of the General Part B. The fire hydrant at the HWMF is shown in Figure 10.

The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. All buildings at the HWMF are equipped with automatic fire suppression systems, which are summarized in Table 2.

Information on other required equipment located at the HWMF is provided in Section 6.0 and Table 4 of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the HWMF is provided in Section 1.1.3.2 and in Appendix C of the General Part B, and in Section 4.0 of this module.

Table 2
Fire Suppression Systems at the Hazardous Waste Management Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
959	13, 30	Special	Automatic sprinkler, wet pipe	GB/FS
958	13, 30	Special	Automatic sprinkler, dry pipe	GB/FS
958B	17	N/A	Dry chemical	
958C	17	N/A	Dry chemical	

[a] National Fire Protection Association (NFPA), 2000, 2002
[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the HWMF is provided in Section 1.1.3.3 of the SNL/NM General Part B and in Section 6.0 of this module.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the HWMF to prevent hazards. Additional information applicable to the HWMF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

HWMF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B to prevent hazards in unloading. Loading and unloading activities typically take place on the south side of buildings 958 and 959 (Figure 7). The surface is level, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Containers are typically shrink-wrapped to hold them together on a pallet before being loaded onto vehicles by a forklift for off-site shipment. Containers are typically transported within the Unit with drum dollies or pallet jacks.

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

The land around the HWMF is generally level, sloping gently toward the south and west. The paved areas of the HWMF are higher than the surrounding land on all sides, preventing sheet-flow run-on of surface water from surrounding areas. The western edge of the paved area is also surrounded by a 6-inch high asphalt curb, further preventing runon and runoff from HWMF WMAs.

Within the HWMF, the paved areas are sloped toward a 74,800-gallon catchment pond located at the northwest corner of the Unit. During normal operations, the catchment pond collects only storm water. The catchment pond does not provide secondary containment for RCRA-regulated waste.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the HWMF will affect water supplies, as described in Section 1.1.4.3 of the General Part B.

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B. The HWMF is equipped with battery-operated lights that will automatically turn on in the event of a power failure. A permanent power transformer can provide emergency power from the SNL/NM emergency power network.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

HWMF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B to prevent undue exposure. In addition, a fume hood and drum vacuum hoods are available in Building 959 and can be used if there is a need to open a container of vapor-generating RCRA-regulated waste to sample the waste or transfer it to another container.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

HWMF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere during storage.

Subpart AA

HWMF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. HWMF repackaging operations sometimes involve a pump used in light organic service. It is used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [6-14-00]. The equipment list will be noted in the HWMF records, and equipment use will also be noted in the records.

Subpart CC

HWMF personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B to prevent releases to the atmosphere in accordance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B of the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00].

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR, Subpart I)

The HWMF is permitted for container storage of RCRA-regulated wastes in accordance with the conditions of "Sandia National Laboratories/New Mexico Hazardous Waste Facility Operating Permit Number NM5890110518-1" (NMED, 1992). Container storage practices applicable to the HWMF are presented in the following sections.

1.3.1 Container Types and Labeling

HWMF personnel use the containers types and labeling practices described in Section 1.2.1 of the SNL/NM General Part B.

1.3.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

HWMF personnel employ the container handling practices described in Section 1.2.2 of the SNL/NM General Part B.

1.3.2.1 Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)

The condition of containers at the HWMF is maintained as indicated in Section 1.2.2.1 of the SNL/NM General Part B.

1.3.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

HWMF personnel employ the aisle space and storage configuration as described in Section 1.2.2.2 of the SNL/NM General Part B. Aisle width is typically 2.5 feet in all buildings. This is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked in Building 958 are stored on pallets, and are not stacked more than two pallets high. Smaller containers may be stacked on a single pallet. Box-shaped containers may be stacked two high without pallets. Containers may also be stored directly on the floor or on the grating.

Fifty-five-gallon drums stored in the modular buildings are not stacked. Smaller containers may be stacked.

1.3.2.3 Compatibility of Waste with Containers (20 NMAC 4.1.500/40 CFR 264.172)

HWMF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the SNL/NM General Part B.

1.3.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

All container storage areas at the HWMF are equipped with secondary containment. Therefore, Unit personnel do not verify whether containers contain free liquids before storage.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270) [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Section 2.0 and Appendix A of the SNL/NM General Part B.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the HWMF.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The HWMF is located on DOE property between TA-I and TA-II (Figure 1). The Unit is surrounded by an 8-ft high chain-link fence topped with barbed wire. A single entrance gate is located on the east side of the HWMF. The gate is locked during non-operational hours. An emergency exit gate is located on the west side of the Unit, as shown in Figures 6 and 7. This gate is locked at all times and can only be opened from the inside by pressing on the handle. All buildings are also kept locked during non-operational hours. As noted in Appendix A of the General Part B, Sandia security personnel periodically monitor the HWMF gates during non-operational hours.

During work hours, Unit signs instruct personnel and visitors to report to Office Trailer #1 for site entry privileges and instructions. Resident personnel have Sandia-issued badges.

Nonresidents are escorted while on site. These procedures limit access to the HWMF RCRA-regulated WMAs, in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The permanent perimeter fences surrounding the HWMF and the entrance to the HWMF are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, are legible from a distance of 25 ft, and can be seen from any approach to the HWMF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes to the HWMF include Hardin Boulevard (formerly O Street), Pennsylvania Avenue, Wyoming Boulevard, Eubank Boulevard, and 9th, 14th, and P Streets as shown in Figures A-4 and A-5 in Appendix A of the SNL/NM General Part B.

Waste transport vehicles enter the HWMF from 14th Street (Figure 5). Within the HWMF, waste is transported on paved surfaces.

2.2.2 Traffic Volumes

Traffic volumes on Hardin Boulevard, Wyoming Boulevard, and Eubank Boulevard are generally light to moderate; traffic volumes on Pennsylvania Avenue and 9th, 14th, and P Streets are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Approximately 10 to 30 vehicles per week travel into and out of the HWMF. These include flatbed trucks and trailers carrying supplies, RCRA-regulated wastes from initial generators, and RCRA-regulated wastes to off-site TSDFs.

2.2.3 Traffic Control Signals

Traffic on the access road is controlled by a stop sign at each end of the road: one at the intersection with 14th Street, and a stop sign and speed limit sign posted on the fence adjacent to the HWMF vehicle entrance gate (Figure 5). The speed limit within the HWMF fenced area is 5 miles per hour and no private vehicles are allowed inside the HWMF. Vehicle presence within

the fenced HWMF is limited to work and waste transport vehicles (i.e., no personal vehicles). Therefore, signals or signs are not necessary to control traffic within the HWMF fenced area.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11] [i and ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMAs at the HWMF are not located within 3,000 ft of any fault with Holocene displacements (see Section A.4.2 in Appendix A of the SNL/NM General Part B).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the HWMF are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the General Part B).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).

- Surface waters, including intermittent streams, near the HWMF are shown on Figure A-2 in Appendix A of the General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [6-14-00]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [6-14-00]). The area surrounding the HWMF is occupied by other Sandia-controlled operations (industrial land use). As noted in Appendix A, the nearest residential areas are located west of Pennsylvania Avenue, north of Hardin Blvd (west of SNL/NM TA-I), more than one mile away from the HWMF.

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).

- Legal boundaries of SNL/NM (including the HWMF) are shown on Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [6-14-00]).

- Access control features at the HWMF (e.g., fences, gates) are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the HWMF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).

- The location of the HWMF and associated WMAs and structures, loading and unloading areas, roads, and sanitary sewers are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][x] [6-14-00]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00]).

- Locations of the HWMF and HWMF WMAs are shown on Figures 1, 2, and 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the HWMF. As provided for in 20 NMAC 4.1.900/ 40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to NMED at these scales and contour intervals due to the size of the HWMF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of the Sandia/DOE comprehensive Part B permit request. The HWMF is not a regulated Unit. There have been no releases of RCRA-regulated waste in the past, nor is the HWMF likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

In accordance with 20 NMAC 4.1.900/40 CFR 270.14[b][2] and 20 NMAC 4.1.500/40 CFR 264.13, “General Waste Analysis” [6-14-00], waste analysis requirements applicable to all Units, including the HWMF, are addressed in Appendix B of the SNL/NM General Part B.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] require that waste management areas (WMAs) and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the “Site-Wide Inspection Plan”, provided as Appendix C of the SNL/NM General Part B. HWMF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 3, which includes the inspection criteria and frequency. The items listed in the table are inspected in each HWMF WMA.

Automatic fire suppression systems are included in Table 3. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems in accordance with the requirements of NFPA 25 “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems” (NFPA, 2002), as described in Section 1.1.3.2 of the General Part B.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained at the HWMF. Inspection records for previous calendar years are maintained at the HWMF or the SNL/NM Records Center.

Table 3
Hazardous Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Eye wash / safety shower	Operational, accessible, in good condition	Monthly
Recovery drums and containers	Present and in good condition	Monthly
Self-contained breathing apparatus	Present and in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when wastes are managed. Monthly otherwise.
Secondary containment	Free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when wastes are managed. Weekly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when wastes are managed. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when wastes are managed. Monthly otherwise.
Monitoring equipment	Instruments in good condition, operational, calibrated	Daily when wastes are managed. Monthly otherwise.
Waste transfer pump	Present, operational, and in good condition	Prior to use. Monthly otherwise.

Table 3 (Concluded)
Hazardous Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
STORED CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Daily for individual containers that were handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Daily for individual containers that were handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Daily for individual containers that were handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Daily for individual containers that were handled. Weekly otherwise.
Location	Correct aisle space, correct stacking (2 maximum)	Daily for individual containers that were handled. Weekly otherwise.

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [6-14-00] "Personnel Training."

The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the HWMF.

HWMF personnel receive training in accordance with the "Site-Wide Personnel Training Plan" provided as Appendix D of the General Part B.

Training records for HWMF personnel are maintained at the HWMF.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia /DOE Site-Wide Contingency Plan is included as Appendix E of the SNL/NM General Part B. Supplemental HWMF-specific information is included in this section, in Figures 9 and 10, and in Tables 4 and 5 of this module. Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained at the HWMF and at the SNL/NM Emergency Operations Center.

The HWMF is located at the curve of 14th and P Streets (approximately 1,000 feet (ft) north of the entrance to Technical Area II) at SNL/NM. The Unit is used to repackage and store RCRA-regulated wastes. The RCRA-regulated WMAs at the HWMF include Building 958, Building 959, and the two modular storage buildings. The HWMF WMAs are located within a single area surrounded by a fence. All of the wastes listed in the General Part A may be stored at the HWMF.

- Building 959 is an 1,800-square-foot precast concrete building with an eave height of 12 feet. Inside the building are eight waste holding cells, a repackaging area, a restroom, a general use area, an office area, and an area for packing materials. The floor is coated with an epoxy finish. Small containers of wastes (typically less than 55 gallons) are stored in this building. Containers of incompatible wastes are segregated into different holding cells. The containers and contents are repackaged into other containers for shipment to off-site facilities. Up to 7,590 gallons of waste may be stored in this building.

- Building 958 (west of Building 959) is a 3,520-square-foot precast concrete building with an eave height of 14 feet. The building includes eight separate and recessed waste storage compartments for segregation of waste groups according to compatibility. Containers of wastes are stored in this building. Up to 99,950 gallons of waste may be stored in this building.

- Buildings 958B and 958C are relocatable, prefabricated safety storage structures used for the storage of reactive and ignitable wastes. Each structure is constructed of welded 10- and 12-gauge steel with supporting structural steel sections, and each has three doors. The 500-gallon containment reservoirs within each building, the walls, and the ceilings are coated with chemical-resistant epoxy. The reservoirs are lined with polypropylene, which is compatible with reactive wastes. The floors are epoxy-coated, fire-resistant plywood. Up to 5,000 gallons of waste may be stored in each building.

- Storage of reactive wastes, lithium batteries, gas cylinders and flammable solids is restricted to these two buildings except for temporary storage that may occur in Building 959 following acceptance of the waste at the HWMF.

Figure 9 presents the evacuation routes for the HWMF. Figure 10 presents emergency response and access information for the HWMF. Table 4 lists the emergency equipment typically available at the HWMF. Table 5 lists the emergency coordinators for the HWMF.

Current copies of the Site-Wide Contingency Plan (Appendix E of the General part B) and this supplemental information are maintained at the HWMF and at the SNL/NM Emergency Operations Center.

Table 4
Hazardous Waste Management Facility, Emergency Equipment and Locations

Building 958

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower / eyewash	Near south entrance
	Recovery drums and containers	At south entrance
	SCBA	At south entrance
	Miscellaneous personal protective equipment (protective suits, goggles, gloves)	At south entrance
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One each on the exterior and interior walls near north and south personnel doors
	Audible fire alarms	
External Communication System	Telephones – unlimited employee access	One on the interior walls near the north and south entrances
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One each on the exterior and interior walls near north and south personnel doors
Fire Extinguishers	Portable (A-B-C)	One at both the north and south entrances
Fire Suppression	Automatic wet-pipe water sprinkler system, with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	One hydrant, location shown in Figure 10

KAFB Kirtland Air Force Base.
SCBA Self-contained breathing apparatus.

Table 4 (Continued)
Hazardous Waste Management Facility, Emergency Equipment and Locations

Building 959

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower/eyewash	Near south entrance
	Recovery drums and containers	Near south entrance
	SCBA	Near south entrance
	Miscellaneous personal protective equipment (protective suits, goggles, gloves)	Near south entrance
	First aid kit	One in the bathroom
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).	One each on the exterior and interior walls near each personnel door
	Audible fire alarms	
External Communication System	Telephones – unlimited employee access	One in the office
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).	One each on the exterior and interior walls near each personnel door
Fire Extinguishers	Portable (A-B-C)	One at both the north and south entrances
	Lith-X	One in the general use area One in the office
Fire Suppression	Automatic wet-pipe water sprinkler system, heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	One hydrant, location shown in Figure 10

KAFB Kirtland Air Force Base.

Table 4 (Concluded)
Hazardous Waste Management Facility, Emergency Equipment and Locations

Modular Storage Buildings (958B and 958C)

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Personal protective equipment Recovery drums and containers	Buildings 958 and 959
Internal Communication and Alarm System	Voice command	
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system). Audible fire alarms	Buildings 958 and 959
External Communication System	Telephones – unlimited employee access	Buildings 958 and 959
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)	Buildings 958 and 959
Fire Suppression	Ansul automatic dry chemical system	Coverage throughout the building

KAFB = Kirtland Air Force Base.

Table 5
Hazardous Waste Management Facility, Emergency Coordinator List

April 16, 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Charles Roma Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 844-0590 (office) (505) 263-7714 (cellular) (505) 540-4333 (pager)	(505) 271-5368
First Alternate	Brett Cummins Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 844-1346(office) (505) 238-3662(cellular) (505) 540-5362 (pager)	(505) 275-1131
Second Alternate	David Castillo Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-4192 (office) (505) 540-9375 (pager)	(505) 899-1956

One or more of these personnel are routinely available during operating hours (8:00 am to 4:30 pm, Monday through Friday)

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13], and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, [6-14-00]. General closure information applicable to all RCRA-regulated Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B. The site-wide Closure Plan includes a description of the SNL/NM facility; waste description; closure performance standards;; closure methods; sampling and analysis plan; closure schedule; procedures for amendment of the Closure Plan; closure certification and report; and survey plat and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The Hazardous Waste Management Facility (HWMF) is located at the curve of 14th and P Streets (approximately 1,000 feet (ft) north of the entrance to Technical Area II) at SNL/NM and is used to repackage and store RCRA-regulated wastes. The RCRA-regulated WMAs at the HWMF include Building 958, Building 959, and the two modular storage buildings. The HWMF WMAs are located within a single area surrounded by a fence.

- Building 959 is an 1,800-square-foot precast concrete building with an eave height of 12 feet. Inside the building are eight waste holding cells, a repackaging area, a restroom, a general use area, an office area, and an area for packing materials. The floor is coated with an epoxy finish. Small containers of wastes (typically less than 55 gallons) are stored in this building. Containers of incompatible wastes are segregated into different holding cells. The containers and contents are repackaged into other containers for shipment to off-site facilities

- Building 958 (west of Building 959) is a 3,520-square-foot precast concrete building with an eave height of 14 feet. The building includes eight separate and recessed waste storage compartments for segregation of waste groups according to compatibility. Containers of wastes are stored in this building.

- Buildings 958B and 958C are relocatable, prefabricated safety storage structures used for the storage of reactive and ignitable wastes. Each structure is constructed of welded 10- and 12-gauge steel with supporting structural steel sections, and each has three doors. The 500-gallon containment reservoirs within each building, the walls, and the ceilings are coated with chemical-resistant epoxy. The reservoirs are lined with polypropylene, which is compatible with reactive wastes. The floors are epoxy-coated, fire-resistant plywood. Storage of reactive wastes, lithium batteries, gas cylinders and flammable solids is restricted to these two buildings except for temporary storage that may occur in Building 959 following acceptance of the waste at the HWMF.

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total inventory of RCRA-regulated waste in storage at any time at the HWMF is estimated at 117,550 gallons of liquids and/or solids (including lab packs that contain substantial quantities of absorbent). The maximum total waste inventory is broken down as follows:

- Building 959: 7,590 gallons
- Building 958: 99,950 gallons
- Building 958B: 5,005 gallons
- Building 958C: 5,005 gallons

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 in Appendix F of the SNL/NM General Part B, partial closure activities specified in this plan assume the following conditions were met during the operational life of the HWMF:

- RCRA-regulated waste handling activities involving the opening of waste containers were confined to the interiors of HWMF RCRA-regulated waste management areas (WMAs). If contamination occurred, it would have been confined to these areas; and

- The interior walls and floors of WMAs were maintained to retain their integrity by following established maintenance and inspection procedures, and breaches of protective coatings did not occur.

7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan in Appendix F provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the HWMF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the HWMF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan in Appendix F presents sample collection equipment and techniques applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the HWMF. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the HWMF.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan in Appendix F presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or

improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the HWMF.

8.0 TREATMENT PLAN

Sandia /DOE do not perform treatment of RCRA-regulated wastes requiring a permit at the HWMF.

9.0 REFERENCES

National Fire Protection Association (NFPA), 2000, "Flammable and Combustible Liquids Code," NFPA 30, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Installation of Sprinkler Systems," NFPA 13, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, " Standard for Dry Chemical Extinguishing Systems," NFPA 17, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," NFPA 25, National Fire Protection Association, Quincy, Massachusetts.

NFPA, see National Fire Protection Association

Sandia National Laboratories/New Mexico (SNL/NM), 2003, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 5.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico

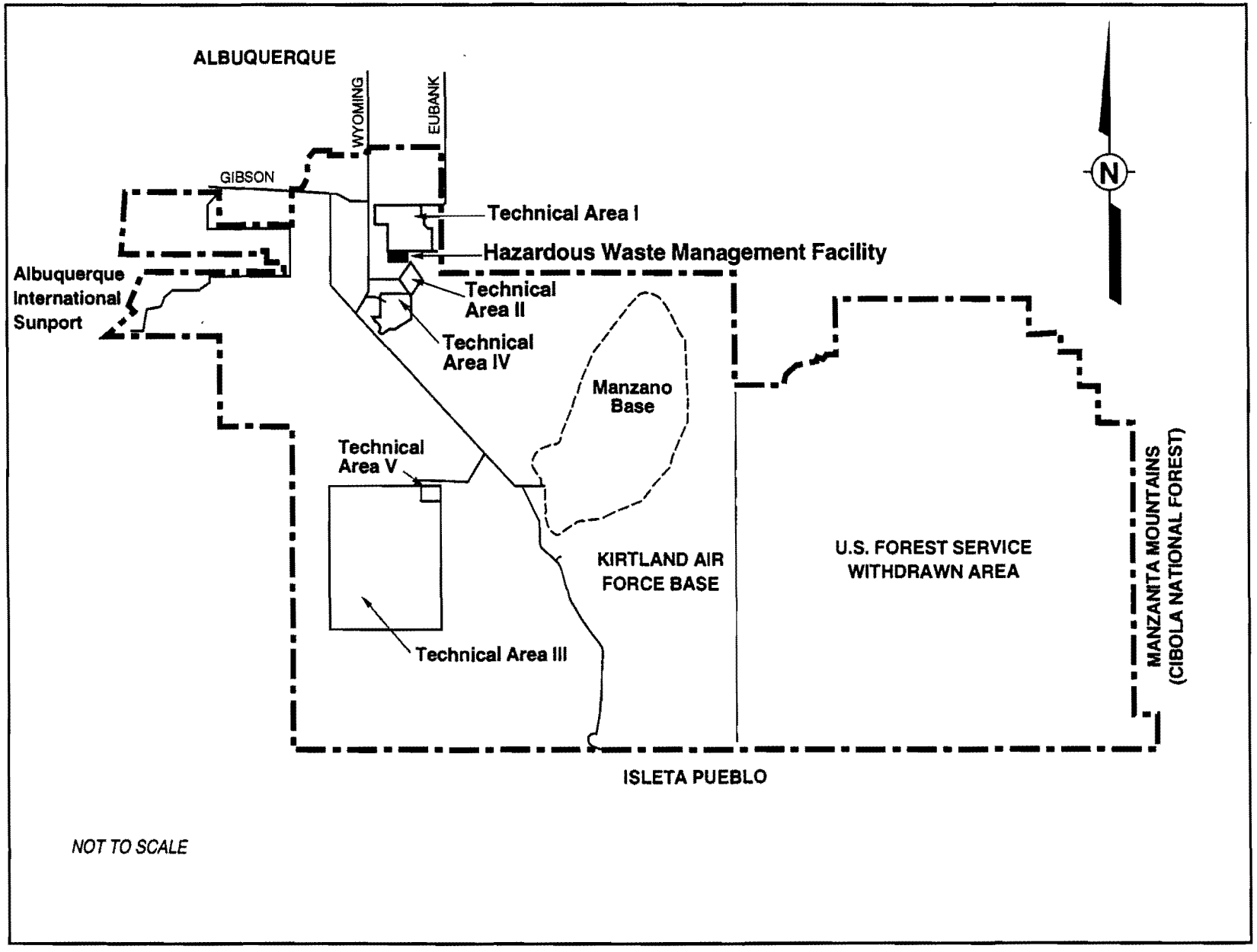


Figure 1
Location of the Hazardous Waste Management Facility at Sandia National Laboratories/New Mexico

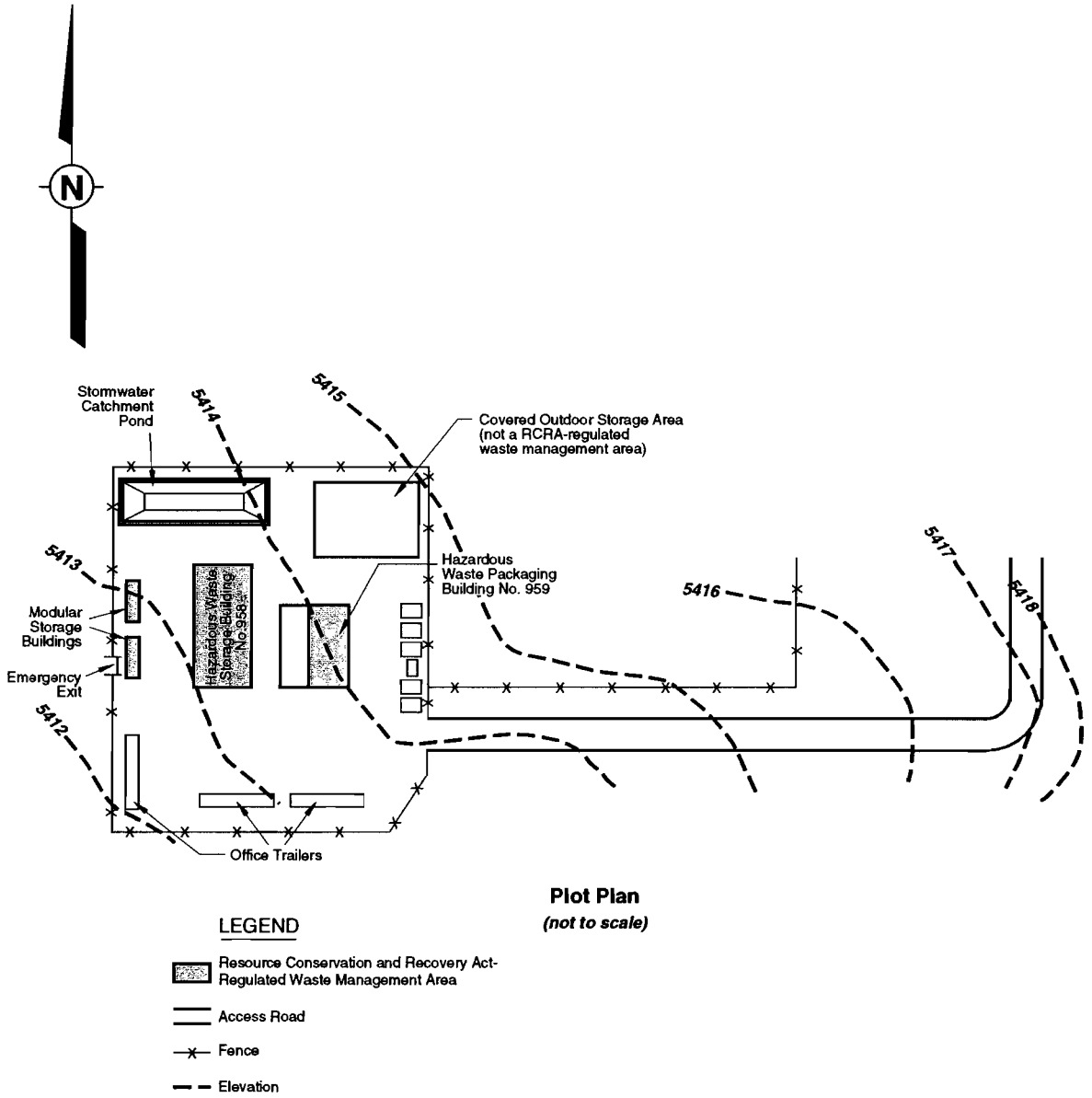
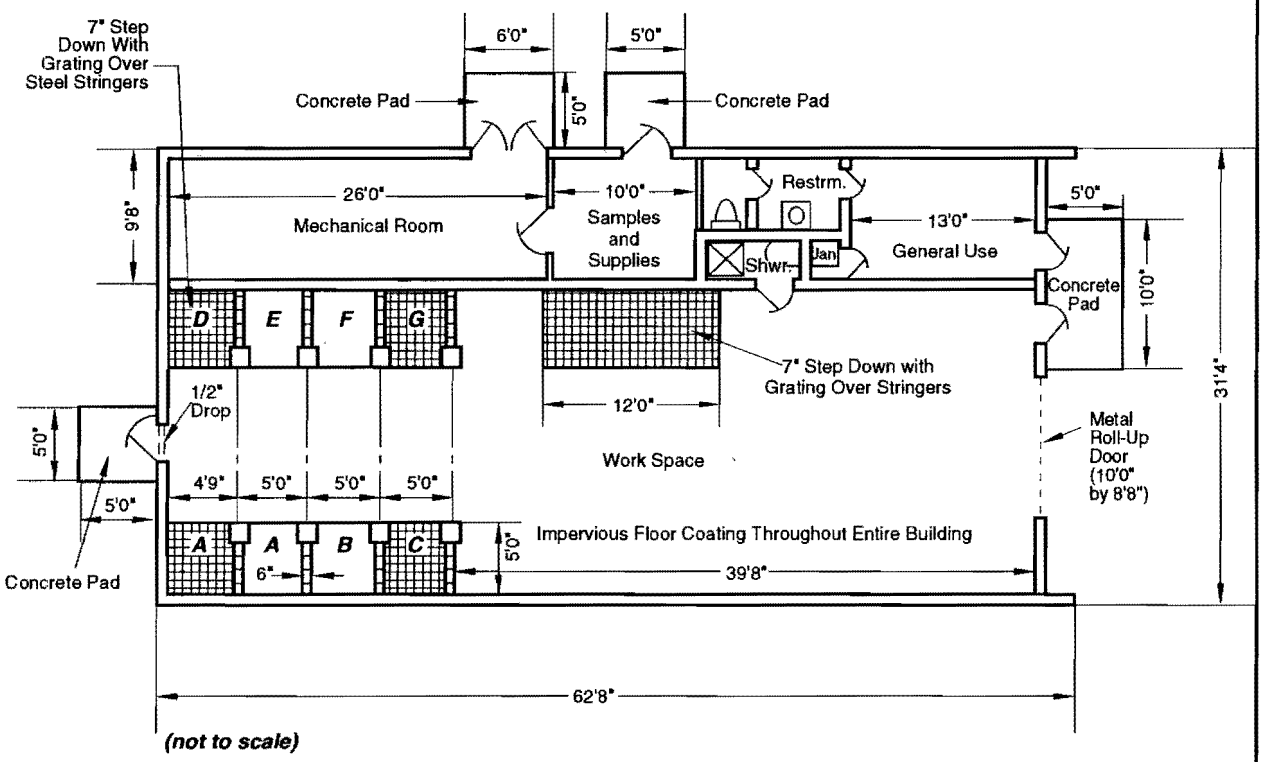


Figure 2
Hazardous Waste Management Facility, Resource Conservation and Recovery Act-Regulated Waste Management Areas

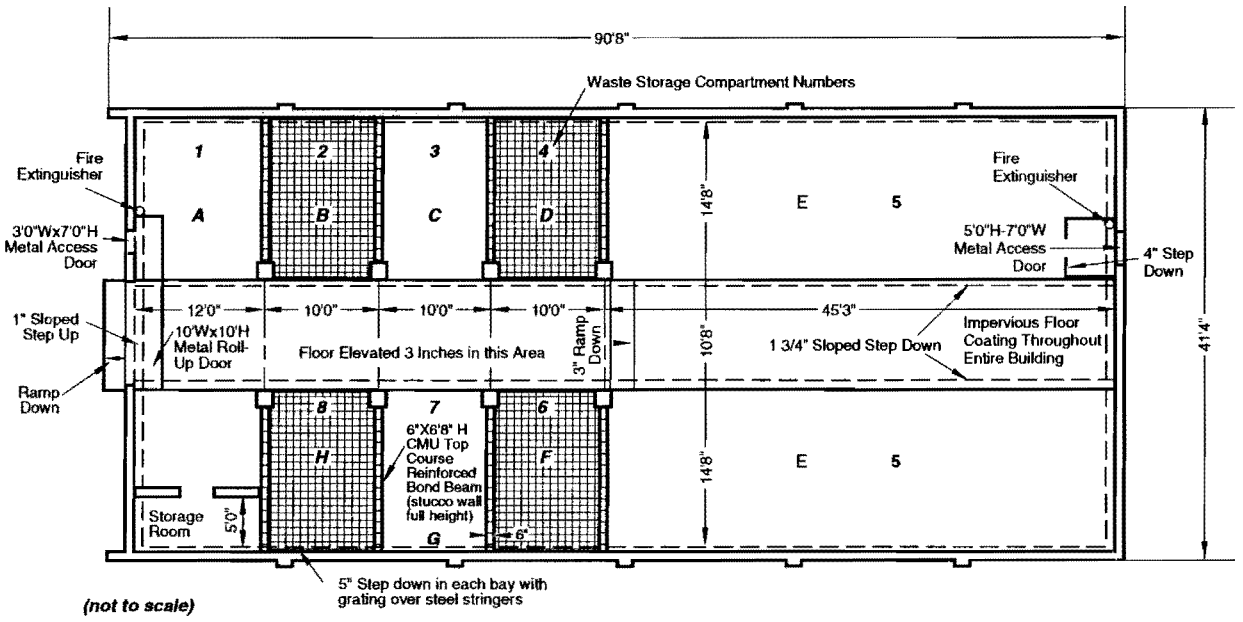


Typical Waste Segregation Groups

A Hydrocarbons, Organics, and Solvents
B Class 9 Solids and Liquids
C Poisons
D Oxidizing Mineral Acids, Non-Acidic Oxidizers
E Non-Regulated Waste
F Caustics
G Organic Acids, Non-Oxidizing Mineral Acids, Mercury

Note: All storage cells equipped as shown for Cell D: 7" step down and steel grating over stringers.

Figure 3
Hazardous Waste Packaging Building (Building 959), Floor Plan



Typical Waste Segregation Groups

- A Holding Bay
- B Poisons
- C Flammables
- D Oxidizers
- E Hydrocarbons, Organics, Solvents, Non-Regulated Wastes
- F Corrosives (caustics)
- G Corrosives (acids or caustics)
- H Corrosives (acids)

Note: Cells 1-4 and 6-8 are constructed with a 5" step down and grating over steel stringers. Cell 5 is not equipped with grating.

Figure 4
Hazardous Waste Storage Building (Building 958), Floor Plan

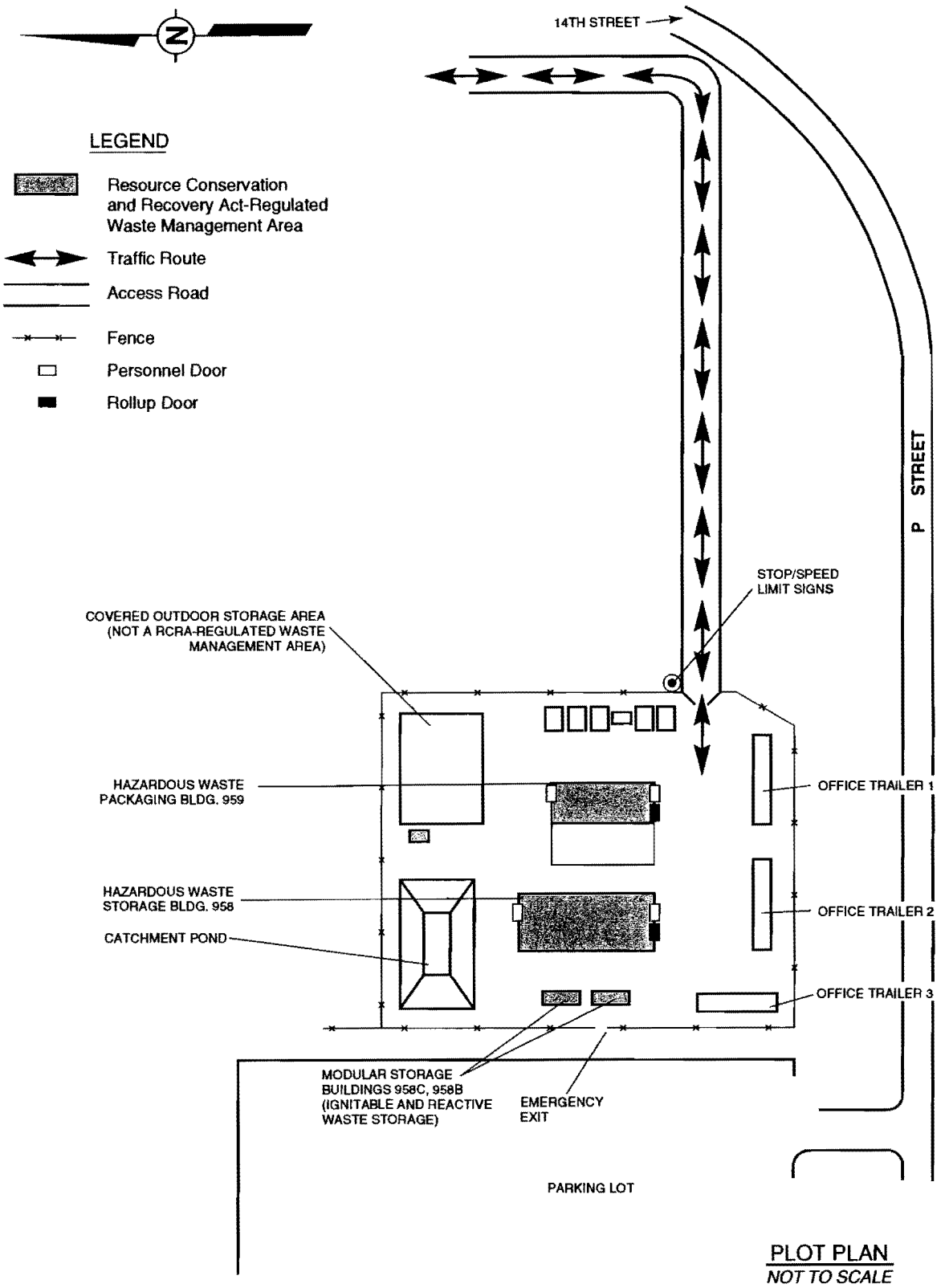


Figure 5

Hazardous Waste Management Facility, Traffic Routes and Controls

TO VIEW THE MAP/MAPS ASSOCIATED WITH THIS DOCUMENT PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

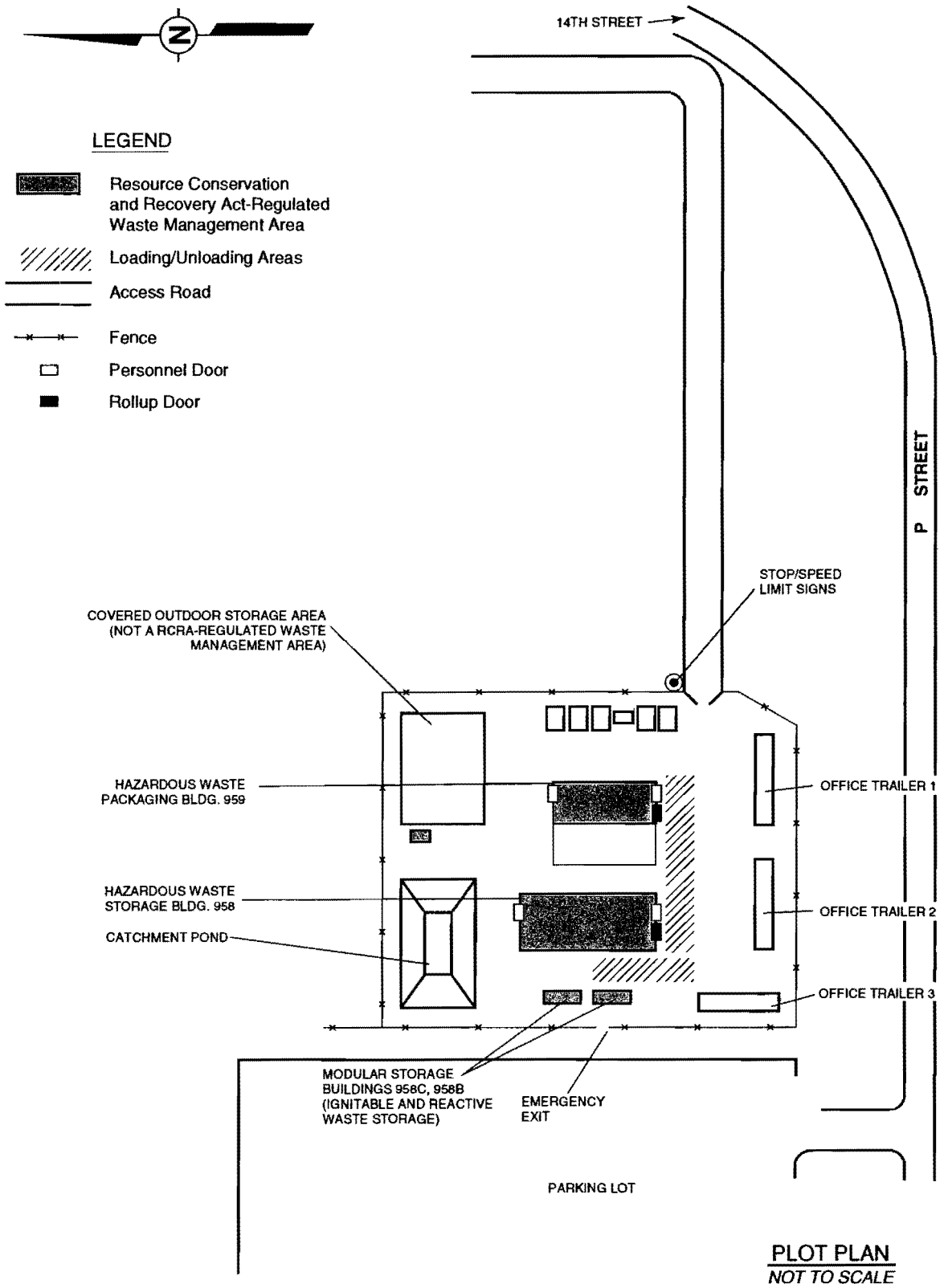


Figure 7

Hazardous Waste Management Facility, Access Control Features

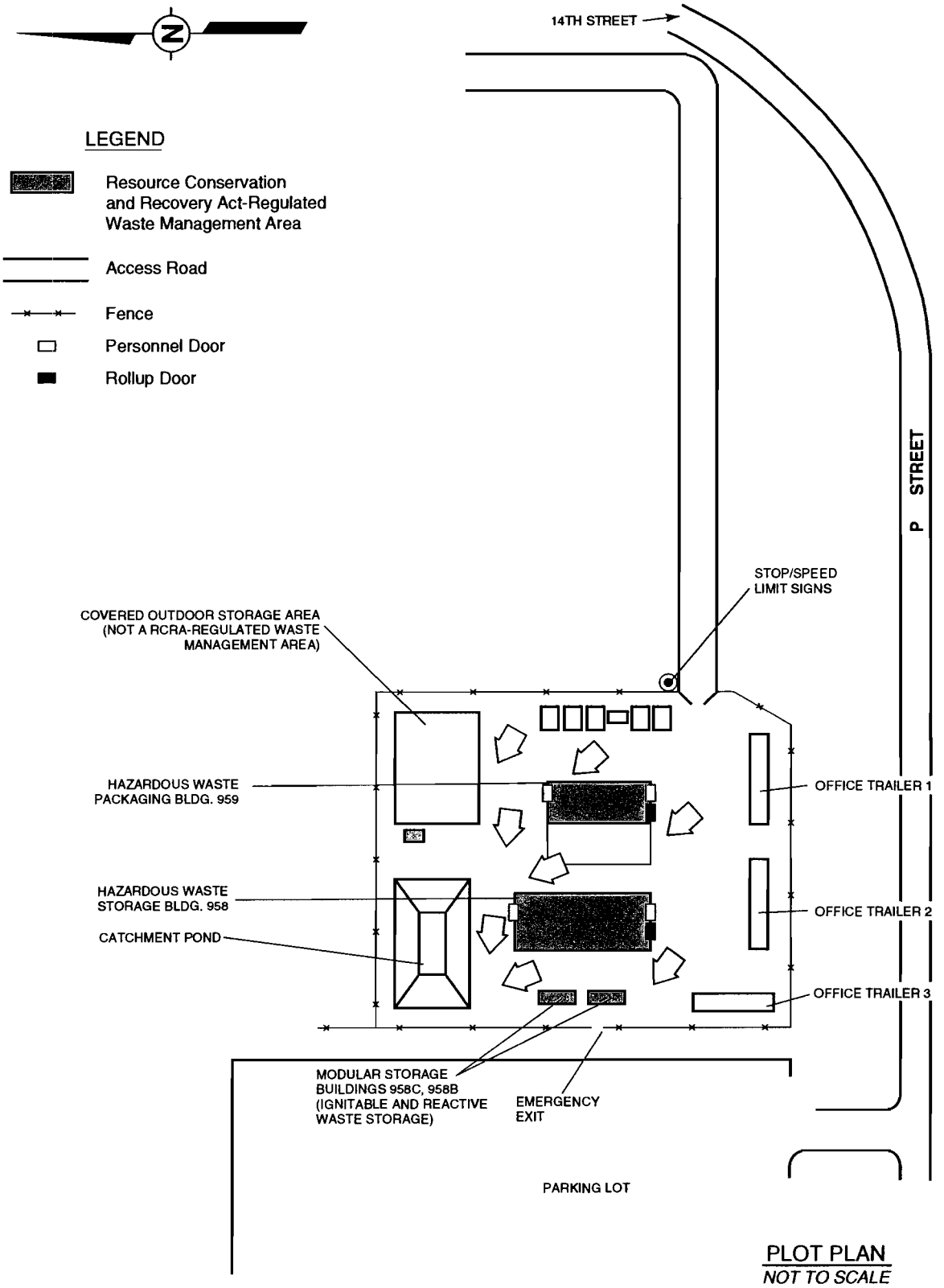


Figure 8

Hazardous Waste Management Facility, Drainage Control Features

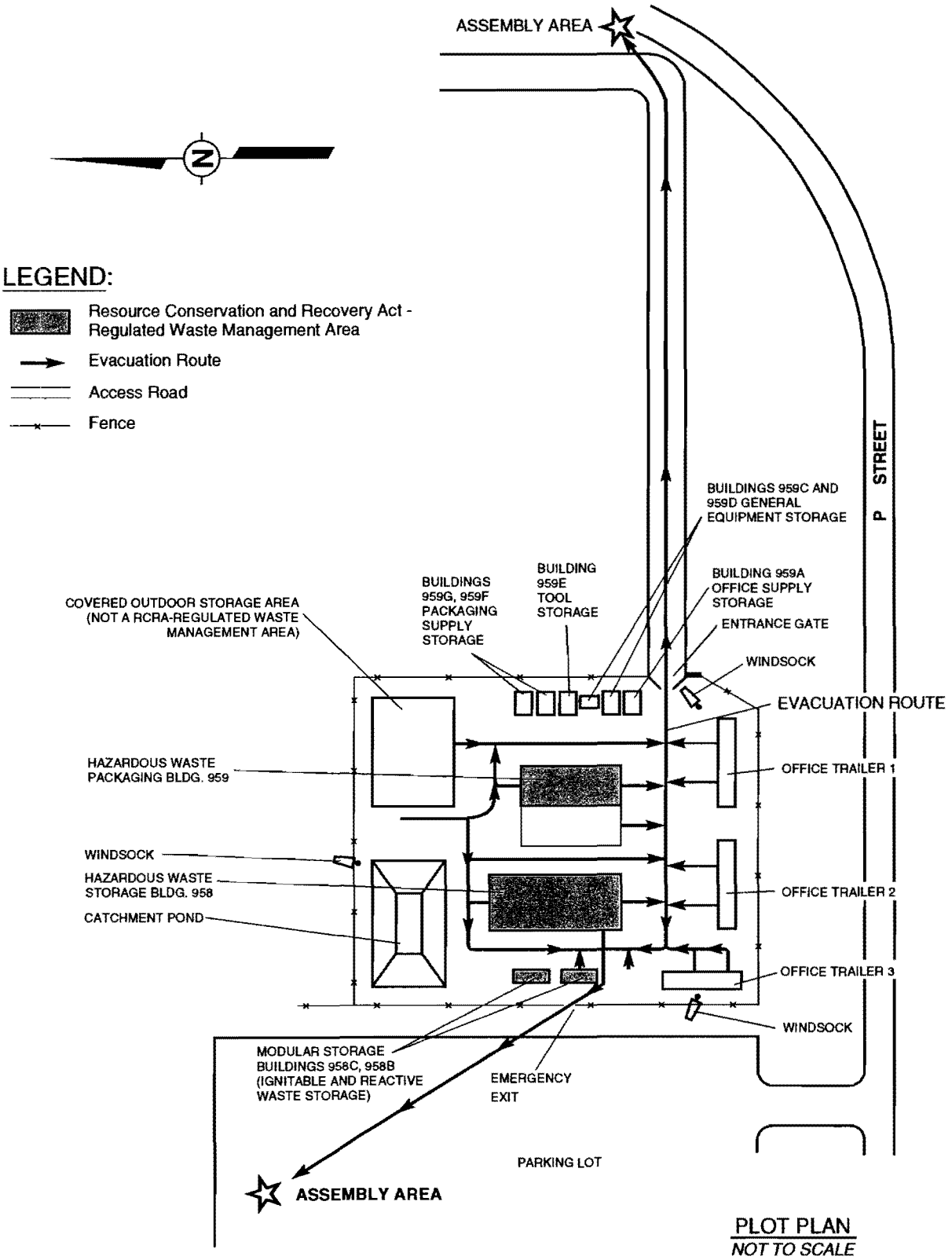


Figure 9
Hazardous Waste Management Facility, Evacuation Routes

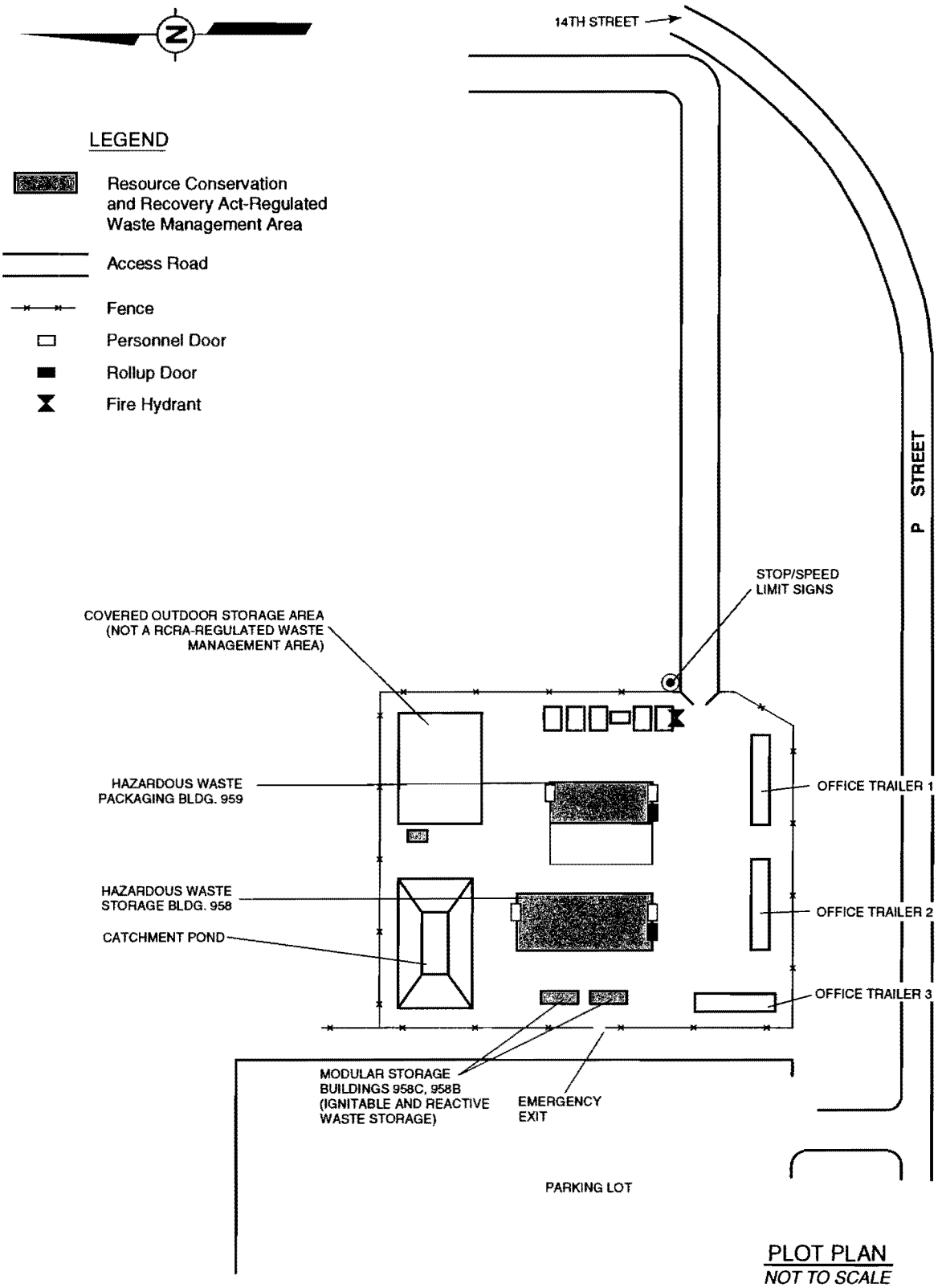


Figure 10

Hazardous Waste Management Facility, Emergency Response and Access Information

Sandia National Laboratories/New Mexico
Thermal Treatment Facility
Part B Permit Renewal Request

Module II

Revision 2.0

April 2003

Prepared by
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185

Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
AAQS	Ambient Air Quality Standards
A/BCAQCB	Albuquerque/Bernalillo County Air Quality Control Board
COPC	chemicals of potential concern
DOE	U.S. Department of Energy
EA	environmental assessment
ER	Environmental Restoration
ft	foot/feet
HQ	hazard quotient
HSWA	Hazardous and Solid Waste Amendments
in.	inch(es)
mi	mile
mg/kg	milligram per kilogram
$\mu g/m^3$	microgram(s) per cubic meter
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NMFRCD	New Mexico Forestry and Resource Conservation District
PETN	Pentaerythritol tetranitrate
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SASN	silver acetylide/silver nitrate

ACRONYMS AND ABBREVIATIONS (Concluded)

SNL/NM	Sandia National Laboratories/New Mexico
SSL	soil screening level
SWMU	solid waste management unit
T and E	threatened and endangered
TA	Technical Area
TSDF	treatment, storage, and disposal facility
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WMA	waste management area

SANDIA NATIONAL LABORATORIES/NEW MEXICO THERMAL TREATMENT FACILITY PART B PERMIT RENEWAL REQUEST

This Sandia National Laboratories/New Mexico (SNL/NM) Thermal Treatment Facility (TTF) Part B Permit Renewal Request is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste treatment operations at the TTF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the “Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application”, hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, in the SNL/NM General Part B, and in appendices to the General Part B meet the applicable requirements for the TTF that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00], and 20 NMAC 4.1.900/40 CFR 270 [6-14-00].

Sandia/DOE also prepared the “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0” (SNL/NM, 2003a), hereinafter referred to as SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the SNL/NM General Part B and Unit-specific Part B modules, including this TTF Part B Permit Renewal Request.

In the SNL/NM General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Thermal Treatment Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The TTF occupies 196 square feet south of Building 6715 in Technical Area (TA)-III. It is a thermal treatment unit surrounded by an earthen berm and a fence. The entire area within the fence is 8140 square feet. It is used for treatment of explosive waste exhibiting the characteristic of reactivity (D003) generated during operations in Building 6715 (adjacent to the Unit). Sandia/DOE currently operate the TTF in accordance with the terms of NMED Permit NM5890110518-2, issued November 4, 1994 (NMED, 1994).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the TTF waste management area (WMA) and TTF operations. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B.

Specific information in this section regarding Unit operations includes containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; and hazards prevention. Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/ 40 CFR 264, Subparts X, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.23 [6-14-00].

The TTF is used to treat specific and well-defined explosive (D003) wastes generated at a test facility in Building 6715. The wastes also meet the definition of ignitable waste (D001), and may bear EPA Hazardous Waste Numbers D011 and F003, depending on the presence of silver and spent solvents. Explosive silver acetylide/silver nitrate (SASN) slurry is formulated from raw ingredients as needed for tests. SASN is present in the solid and liquid wastes treated at the TTF. SASN is categorized as a primary explosive, and each discrete crystal (when dry) has the potential to detonate. According to published technical data (Wilden, 1986), SASN can be initiated by the energy of bright light (by raising the surface temperature to the auto ignition temperature of 457 degrees Fahrenheit) or small contact shock. SASN is not approved for transport on public roads. Thermal treatment is an accepted treatment technology for the deactivation of explosive waste (20 NMAC 4.1.800/40 CFR 268.40 [6-14-00]) to meet treatment standards.

1.1 Designated Waste Management Area (20 NMAC 4.1.900/40 CFR 270.23[a])

The location of the TTF at SNL/NM is shown on Figure 1. The TTF has one designated WMA, the treatment area, shown on Figure 2.

The treatment area at the TTF is located outside the south end of Building 6715 in TA-III at SNL/NM. The treatment area consists of a square burn pan constructed of 0.375-inch (in.) steel, 2 feet (ft) 6 in. on a side and 6-in. deep. The burn pan is located near the center of a square curbed slab of concrete 14 ft on a side lined with 0.5-in. steel, with a 4-in. high, steel-lined concrete curb around the edge. The burn pan is enclosed within a square cage approximately 4 ft on a side, consisting of expanded metal screen approximately 8-ft high with a nearly solid metal roof having slots for tracks and cables. An expanded metal screen door, remotely activated from inside Building 6715, provides access to the treatment area (i.e., the burn pan). TTF site plans and drawings are presented in Figures 3 and 4.

An enclosure on the east side of the cage houses three propane burners, which can be remotely activated from inside Building 6715. Two propane burners are positioned to heat the burn pan. A third burner is positioned to ignite the contents of the burn pan and flammable vapors above the pan. Liquid wastes to be treated are transferred from Building 6715 to the

TTF through flexible transfer hoses utilizing a remotely operated peristaltic pump. The hoses are contained inside a metal channel that provides secondary containment. The flexible hoses and channel terminate approximately 5 ft. from the burn pan and metal tubing transfers the waste the final distance into the burn pan. Solid items to be treated in the TTF are manually loaded into the burn pan.

Liquids that might accumulate at the TTF WMA are contained within a secondary containment system (i.e., the steel-lined concrete pad that drains into a catch tank) that is sufficiently impervious to contain spills or accumulated precipitation until the liquid is removed. The secondary containment system provided by the steel-lined concrete pad is designed to contain at least 20.8 gallons of liquid waste. This is the maximum volume of RCRA-regulated liquid waste in the TTF burn pan at any time. The catch tank has a containment capacity of approximately 157 gallons.

A circular tank located north of the unit and south of Building 6715 is primarily utilized as a process tank for collecting non-RCRA-regulated wastewater from test operations; wastewater collected in this tank is not intended to be treated at the TTF.

Because the TTF is located outside, it is difficult to prevent equipment deterioration; however, the unit and its ancillary equipment are periodically inspected to insure proper operation as described in Section 4.0 of this module. If deterioration sufficient to affect the operation, safety, or reliability of the unit is identified, the affected equipment is either refurbished or replaced.

1.2 Unit Operations (20 NMAC 4.1.900/40 CFR 270.23[a])

Information regarding operation of all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the SNL/NM General Part B. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.23; and 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Because the TTF is located outside, the steel-lined concrete pad periodically collects water from precipitation; the water drains into the catch tank. Unless waste spills, untreated RCRA-regulated waste “kicks out” or is ejected from the burn pan during treatment, or otherwise contaminates the steel-lined concrete pad, the water collected in the catch tank consists of precipitation.

Treatment operations occur periodically at the TTF and may involve burns during one to three days. Each treatment operation is followed by a post-treatment inspection, described in Section 8.0 of this module, which identifies kick-out or contamination of the steel-lined concrete pad, if any. If the post-treatment inspection does not reveal kick-out or contamination of the steel-lined concrete pad, then the water that collects in the steel-lined concrete pad and/or in the catch tank prior to the next treatment operation is known to be runoff resulting from precipitation and is not contaminated with RCRA-regulated waste constituents. If the post-treatment inspection reveals kick-out or contamination of the steel-lined concrete pad but the situation is remediated prior to the next precipitation event, then the water that collects in the steel-lined concrete pad and/or in the catch tank after remediation and prior to the next

treatment operation is known to be runoff resulting from precipitation and is not contaminated with RCRA-regulated waste constituents.

In both instances, the accumulated water will be assumed to meet City of Albuquerque wastewater discharge parameters and will be discharged (pumped) directly to the Technical Area III sanitary sewer system after appropriate notifications and approvals. Previous analyses of storm water collected in the catch tank indicate the water meets the wastewater discharge parameters set by the City of Albuquerque.

If a post-treatment inspection reveals kick-out or contamination of the steel-lined concrete pad that is not remediated prior to a precipitation event that results in the accumulation of water in the steel-lined concrete pad and/or the catch tank, then the accumulated water will be managed as described in Section B.3.3.1 of the Waste Analysis Plan (Appendix B)

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 20 NMAC 4.1.500/40 CFR 264.17)

1.2.2.1 General Precautions for Handling Reactive Waste

The grounds and berms near the TTF are routinely cleared of dry or dead weeds and brush. This helps to prevent brush fires near the TTF. During normal operations, wastes are not stored at the TTF prior to treatment, and the wastes are treated soon after transfer to or placement in the TTF burn pan, as described in Section 8.0 of this module.

Incompatible wastes are not accepted for treatment at the TTF. In particular, copper is incompatible with the explosive slurry of silver acetylide/silver nitrate (SASN) treated at the TTF; therefore, no exposed copper is allowed when SASN is present. No other materials that would produce undesirable reactions with RCRA-regulated waste (e.g., explosion, toxic fumes, or structural damage) are located at the TTF.

Unit personnel also take the measures described in Section 1.1.2.1 of the General Part B to prevent accidental ignition or reaction of wastes at the TTF.

1.2.2.2 Engineering Precautions to Prevent Reactions

<u>General Treatment Operations</u>

Unit personnel operate the TTF from the control room inside Building 6715. Personnel are not present in the area between Building 6715 and the Unit during treatment operations. Treatment operations begin only after an audible warning signal, an area check for personnel, and a public address announcement that the TTF will begin operations. The TTF access gates are closed and locked. The Building 6715 Complex fence access gates are closed during TTF waste transfer operations.

Solid Items

Solid items, saturated in water, are loaded manually into the burn pan. Unit personnel open the TTF expanded metal screen door from the key-operated control console in Building 6715. The door is operable only from the control console. Unit personnel then remove the only key from the control console, which disables the gas burner system before manually loading waste into the TTF burn pan. Typically, the gas burner system is controlled by the same operator who manually loads the TTF burn pan.

Liquids

Liquids are transferred to the burn pan through the waste transfer pump and lines. The operator at the control console in the building operates the pump remotely. The burners may or may not be operating during the transfer, depending on the stage of the treatment operations.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.500/40 CFR 264, Subpart C)

The following sections address required equipment, testing, and maintenance of equipment, and access to communications or alarm systems at the TTF.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

Information about fire hydrants is provided in Section 1.1.3.1 of the General Part B. The fire hydrant at the TTF is shown in Figure 9. Information on other required equipment located at the TTF is provided in Section 6.0 and Table 3 of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the TTF is provided in Appendix C of the SNL/NM General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the TTF is provided in Section 1.1.3.3 of the SNL/NM General Part B and in Section 6.0 of this module.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the TTF to prevent hazards. Additional information applicable to the TTF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

TTF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B to prevent hazards in unloading, as applicable. Waste treated at the TTF is pumped or hand-carried to the Unit from Building 6715. Unloading activities are limited to removal of ash residue from the burn pan or contaminated water from the catch tank, followed by loading of containers of ash or contaminated water onto a flatbed truck or other vehicle for transport to another Unit. Vehicles are typically loaded on the paved area southeast of Building 6715 (Figure 7). The surface is level, the pavement is in good condition in the area, and there is sufficient room for the vehicles used to transport RCRA-regulated wastes between the TTF and the receiving Unit(s).

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

The land surrounding the TTF slopes gently toward the west. Sheet-flow runon of surface water from surrounding areas is diverted around the TTF treatment area by an 8-ft-high earthen berm that surrounds the Unit on the east, south, and west. The diverted storm water drains to the west.

Sheet-flow runoff from the outside face of the berms surrounding the TTF flows away from the Unit. Sheet flow runoff from the inside face of the berms is directed toward the center of the bermed area, around the steel-lined concrete pad, and toward the opening in the berm on the north side. The TTF burn pan sits near the center of the steel-lined concrete pad, which is surrounded by a 4-inch-high concrete curb and is elevated approximately 12 to 24 inches above the surrounding soil, further preventing runon.

The curbs also prevent runoff from the TTF WMA. Storm water that collects in the pad drains to the catch tank. The containment capacity of the catch tank exceeds the volume of treatment area runoff expected during a storm event.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the TTF will affect water supplies, as described in Section 1.1.4.3 of the SNL/NM General Part B. Section 2.6 of this module includes a discussion of the surface water and groundwater in the vicinity of the TTF. Section 9.0 discusses the potential for the deposition or migration of waste or waste constituents to surface water and groundwater in the vicinity of the TTF.

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B.

Four pieces of equipment at the TTF would be affected by a power failure: the burners, the motor-driven burn cage door, the motor-driven burn pan lid, and the waste transfer pump. In the event of a power failure, personnel would take the following actions.

1. If the power failure occurs before waste is placed inside the burn pan, treatment operations will be delayed until power is restored.

2. If the power failure occurs after wastes are present in the burn pan but before the burners are ignited, personnel will manually lower the burn pan lid and wait until power is restored before proceeding with treatment. If the treatment cannot be conducted during the same day, Unit personnel will wet the waste with water as needed to stabilize it, secure the area and notify Sandia/DOE security personnel of the presence of and potential hazards associated with the waste. Unit personnel will conduct treatment when power is restored and all other permit requirements for treatment operating conditions, listed in Section 8.1.3 of this module, have been met.

3. If the power failure occurs during treatment, personnel will not enter the TTF until all combustion has ceased and water has been added to the waste and residue to reduce the explosive hazard, and it is deemed safe to enter. If the power is not restored in time to complete treatment during the day, personnel will secure the area, manually lower the burn pan lid if it is deemed safe to do so, and allow the waste to remain in the burn pan. Unit personnel will notify Sandia/DOE security personnel of the presence of and potential hazards associated with the waste. Unit personnel will complete treatment when power is restored and all other permit requirements for treatment conditions have been met.

4. If power failure occurs during waste transfer, personnel will stop transferring waste and follow the procedures outlined in #3 above.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

TTF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B to prevent undue exposure to the wastes to be treated at the TTF.

Hazards associated with the waste treated at the TTF (e.g., the explosive nature of the wastes) serve to increase the potential for personnel exposure to RCRA-regulated waste constituents. These are addressed through Unit design and operations:

- Treatment operations are scheduled as soon as practicable after the operations in Building 6715 are completed, minimizing the amount of time that explosive wastes are present on site.

- RCRA-regulated waste that cannot be pumped to the TTF (solid items) is first wetted with water to temporarily reduce the explosive sensitivity and minimize hazards to personnel.

- During treatment operations, Unit personnel keep the burn pan covered with the lid except when combustion is occurring. This practice serves to minimize personnel exposure to the wastes.

- The TTF is operated from a control console inside Building 6715. Operating personnel observe the treatment through a video camera. During combustion, personnel are not allowed in the area between Building 6715 and the TTF. Both of these practices serve to minimize the potential for exposure to the wastes.

In addition to the hazards associated with treatment of explosives, there are three sources of noise during treatment:

- Detonation of dried explosive SASN crystals from the liquids and solids treated at the TTF. Because the particles are small, the detonations are relatively small, with a popping noise similar to a popping balloon.

- Operation of the propane burners. The sound of the operating burners is similar to the sound of burners used in a hot air balloon.

- Warning bells. The warning bells and buzzers are designed to alert Unit personnel to treatment operations. The bells are louder than the propane burners or the detonation.

Because Unit personnel are inside Building 6715 during treatment, they are not subjected to the noise. Personnel in neighboring Sandia operations and buildings will hear the warning bells but will not be affected by the noise of TTF treatment. The closest continuously occupied building is approximately 795 feet east southeast of Building 6715 and the TTF. The physical locations of neighboring buildings and personnel are summarized in Section 9.3 of this module.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi]; 20 NMAC 4.1.500/40 CFR 264 Subparts AA, BB, and CC)

TTF operations do not include storage of RCRA-regulated wastes in containers subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC. Further, operations do not include any storage or management associated with storage that would be subject to the requirements of 20 NMAC 4.1.500/40 CFR Subparts AA or BB.

The treatment process and releases to the atmosphere are described in Section 8.0 of this module. Compliance with the requirements of 20 NMAC 4.1.500/40 CFR Subparts AA, BB, and CC is discussed in Section 8.1.4.

1.3 Container Storage Practices

Sandia/DOE do not conduct container storage of RCRA-regulated wastes requiring a permit at the TTF.

1.4 Treatment Operations

The TTF is currently permitted for the treatment of RCRA-regulated wastes in accordance with the conditions of the “Sandia National Laboratories/New Mexico Hazardous Waste Facility

Operating Permit Number NM5890110518-2" (NMED, 1994). Treatment practices applicable to the TTF are presented in Section 8.0 of this module.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]).
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]).
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]).
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]).
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).
- Unit-specific environmental setting information (20 NMAC 4.1.900/40 CFR 270.23[b] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.601[a][2-6], [b][3-9], [c][4,5] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of the SNL/NM General Part B.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the TTF.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The TTF is completely surrounded by an approximately 8-ft high, single chain-link fence topped with three strands of barbed wire. Three gates provide access to the TTF and remain locked except when TTF personnel are performing treatment operations, inspections, maintenance, or repairs. The active portion of the TTF is also the south portion of the Building 6715 complex. Access to the north TTF fence, and, therefore, all three TTF gates, is from inside the Building 6715 complex, which is also completely surrounded by an 8-foot tall chain link fence with three strands of barbed wire at the top and lock-equipped gates. The gates to the Building 6715

complex and the building doors are kept locked during non-operational hours. As noted in Appendix A of the SNL/NM General Part B, Sandia security personnel periodically monitor the Building 6715 complex and TTF gates during non-operational hours.

TTF personnel have Sandia-issued badges. Individuals who do not have a Sandia-issued badge are escorted. TTF personnel and visitors typically enter the Building 6715 Complex through the east gate. During treatment events, all TTF gates are locked. These procedures limit access to the TTF RCRA-regulated WMAs, in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The Building 6715 complex is located inside TA-III (Figures 1 and 2). TA III is surrounded by a barbed-wire fence with designated access gates. TA-III access control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-III.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The permanent perimeter fences surrounding the TTF are posted with “Danger: Unauthorized Personnel Keep Out” (or functionally equivalent) signs. The signs contain the warning in English and Spanish, are legible from a distance of 25 ft, and can be seen from any approach to the TTF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes from the TTF include Wyoming Boulevard, Hardin Boulevard (formerly O Street), P Street, Pennsylvania Avenue, and the access road to TA-III.

Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved access road to TA-III turns southwestward off Pennsylvania Avenue at a point just over 5 miles south of the Wyoming Boulevard Kirtland Air Force Base entrance gate as shown on Figure A-4 in Appendix A of the SNL/NM General Part B.

Within TA-III, traffic access to and from the TTF is along the 2-lane asphalt-paved roads shown on Figure A-6 in Appendix A of the SNL/NM General Part B. Vehicles entering the Building 6715 complex travel on a 2-lane asphalt-paved drive from the road to the east gate (Figure 5). Within the Building 6715 Complex, waste is typically transported on concrete- or asphalt-paved surfaces.

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard, Hardin Boulevard, and P Street are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Traffic volumes within TA-III are light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Fewer than 5 vehicles typically enter/exit the compound per week. These include flatbed trucks and trailers carrying supplies, treated residues, and contaminated catch tank water from the TTF. SASN materials and wastes are generated in Building 6715; therefore, wastes are not transported in vehicles to the TTF for treatment. Treated residues are transported to another Unit for storage and/or treatment prior to disposal. Catch tank water may also be transported to another unit, as discussed in Section 1.2.1.

2.2.3 Traffic Control Signals

Vehicles must stop at a gate prior to entering or leaving TA-III. Only authorized personnel are permitted to enter TA-III. Speed limit signs (i.e., “30 mph Unless Otherwise Posted”) are located at several locations in TA-III.

There are no traffic control signals or signs at the Building 6715 Complex. The TTF is locked except when personnel are present. Treatment operations are carefully coordinated with appropriate individuals to limit vehicle presence and access to operating and treatment personnel. The paved access surface from the Building 6715 Complex east gate to the TTF is approximately 100 ft long. Therefore, signals or signs are not necessary to control traffic within the Building 6715 Complex.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11]; 20 NMAC 4.1.900/40 CFR 264.18)

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i] and [ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMA at the TTF is not located within 3,000 ft of any fault with Holocene displacement (see Section A.4.2 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMA at the TTF is not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19] and 270.23[b]; 20NMAC 4.1.500/40 CFR 264.601[a][6] and [b][9])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) and 270.23[b] [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).

- Surface waters, including intermittent streams, near the TTF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii][6-14-00]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B and Figure 6 of this module. (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] and 270.23[b]; 20NMAC 4.1.500/40 CFR 264.601[a][6] and [b][9] [6-14-00]). The area surrounding the TTF is occupied by test areas and Sandia-controlled operations (industrial land use). The area of KAFB immediately north of SNL/NM TA-III is mostly open (other land use).

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).

- Legal boundaries of SNL/NM (including the TTF) are shown on Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [6-14-00]).

- Access control features at the TTF (e.g., fences, gates) are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the TTF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).

- The location of the TTF WMA and associated structures, loading and unloading areas, roads, and sanitary sewers are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [6-14-00]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figures 6 and 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00]).

- The location of the TTF WMA is shown on Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the TTF. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to the New Mexico Environment Department at these scales and contour intervals due to the size of the TTF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information for SNL/NM is provided in Part 3 of the Sandia/DOE comprehensive Part B permit request. The TTF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the TTF likely to affect groundwater quality during normal operations or during unusual events.

2.6 Environmental Setting (20 NMAC 4.1.900/40 CFR 270.23[b] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.601[a][2-5], [b][3-8], [c][4,5] [6-14-00])

As described in Appendix A of the General Part B, SNL/NM is located in the western part of Kirtland Air Force Base in Bernalillo County. DOE/Sandia monitor weather conditions and ambient air quality at SNL/NM through a network of monitoring stations. Meteorological data from a tower at the northeast corner of TA-III indicate that the prevailing winds at SNL/NM are from the southeast and east. The annual wind rose is shown on Figure 6. During daylight hours, the prevailing winds are from the west, southwest, and northwest. Rapid nighttime ground cooling after sunset on cloudless or near-cloudless nights generates drainage winds out of the mountains; in TA-III, these winds come from the southeast and east (SNL, 2002).

Bernalillo County meets the New Mexico and national ambient air quality standards (AAQS) for ozone, particulates, lead, and oxides of nitrogen and sulfur. Bernalillo County currently meets the New Mexico and national AAQS standards for carbon monoxide. DOE/Sandia monitor ambient air quality at several stations; the two nearest the TTF are located north of TA-III and at the southeast corner of TA-III (near the RMWMF). Data from both stations indicate air quality is in compliance with New Mexico and national AAQS. The monitoring results also allow DOE/Sandia to establish background airborne concentration levels for pollutants of concern and determine that SNL/NM operations do not affect ambient air quality (SNL, 2002).

SNL/NM is located in an arid region with an average annual precipitation of approximately 8 inches (National Oceanographic and Atmospheric Administration [NOAA], 1990). Half of the average annual precipitation occurs in the form of brief but heavy thunderstorms during the summer period, July through September.

Water rarely infiltrates more than a few feet into the soil, and typically returns to the atmosphere via evapotranspiration. Evapotranspiration in the area has been estimated at 95 percent of the annual rainfall (Thomson and Smith 1985). Sandia/DOE have conducted extensive field investigations and analytical studies in TA-III. Data collected from boreholes, groundwater monitoring wells, and instantaneous profile tests have measured saturated and unsaturated zone characteristics that include volumetric water content, saturated and unsaturated hydraulic conductivity, bulk density, and isotopic chloride content (Peace et al., 2002). Based upon these

data, groundwater recharge is negligible at TA-III and most of the water from precipitation returns to the atmosphere via evapotranspiration. Vegetation, although sparse at the site, increases the rate of moisture loss from the subsurface soil through transpiration.

Sandia/DOE's ongoing Terrestrial and Ecological Surveillance Program includes monitoring for the presence of various compounds in soil, sediment, surface water, and vegetation near past or present SNL/NM operations (SNL/NM, 2002). As part of the program, samples of soil and vegetation have been collected for several years at a location in the northern part of TA-III (approximately 600 feet northeast of the TTF). The samples collected in 2001 were analyzed for several metals, including silver. Concentrations of silver and other metals in the soil and vegetation vary slightly from year to year due to slight variations in sampling location, differences in climatic conditions, and laboratory variations or errors. The silver concentrations in the samples from this location were consistent with the levels in off-site samples. Silver has historically and consistently been detected in soils at concentrations that are consistent with those found in off-site locations, and the data do not indicate a trend toward increasing concentrations over time (SNL/NM, 2002).

As noted in Appendix A of the General Part B, the nearest major body of surface water (the Rio Grande river) is situated approximately 7 mi west of the TTF. Surface water (with the exception of several springs in the eastern part of KAFB) is found only as ephemeral streams that flow for short periods from runoff after storm events or during the spring melt of mountain snowpacks. The primary surface water drainage channels on KAFB are Tijeras Arroyo and Arroyo del Coyote (which joins Tijeras Arroyo north of TA-III.) Surface water in TA-III infiltrates into the soil, and does not flow to either of the arroyos or to the Rio Grande.

The depth to saturated groundwater underlying SNL/NM TA-III is approximately 500 feet. Sandia/DOE have an established extensive groundwater monitoring system to assess the quality of the groundwater in the SNL/NM area. The monitoring network includes observation wells, test wells, production wells, and other hydrogeologic devices. Routine samples are analyzed for toxic constituents, basic water quality, and water levels. The results are published annually in the Groundwater Monitoring Report (SNL/NM, 2003b).

The historical direction (no longer apparent) of regional groundwater flow in the western part of KAFB (including the area west of TA-III) has been westward from the mountains toward the Rio Grande (Gram, 1985). However, due to groundwater pumping by KAFB and the City of Albuquerque, a depression in the water table has created a broad trough (drawdown) directing flow towards the well fields at the northwest end of KAFB. The trough extends as far south as TA-III and affects groundwater flow at the western edge of TA-III. The TTF is east of the trough, and groundwater flow under the TTF is toward the west (SNL/NM, 2001a, 2001b).

The well fields at the northwest end of KAFB are located approximately 3 miles northwest and downgradient of the TTF, and the closest downgradient water supply well is KAFB-4. Approximately 117,000 gallons of water were pumped from Well KAFB-4 during the 12-month period ending September 30, 2001. During the same time period, approximately 1.2 billion gallons of water were pumped from all the KAFB wells (SNL/NM, 2003b).

Over 280 archeological sites have been recorded on KAFB (including the withdrawn area), and in the buffer zones west of KAFB. No archeological sites or Native American traditional cultural properties have been identified in TA-III (DOE, 1999).

3.0 WASTE ANALYSIS PLAN

In accordance with 20 NMAC 4.1.900/ 40 CFR 270.14[b][2] and 20 NMAC 4.1.500/ 40 CFR 264.13, “General Waste Analysis” [6-14-00], waste analysis requirements applicable to all units, including the TTF, are addressed in Appendix B of the SNL/NM General Part B.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] require that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

20 NMAC 4.1.500/40 CFR 264.15(b)(4) [6-14-00], requires inspections of specific portions of a facility, rather than the general facility. RCRA-regulated waste at the TTF is managed in a miscellaneous unit requiring inspection as a “specific portion” of the SNL/NM facility. 20 NMAC 4.1.500/40 CFR 264.602 [6-14-00], requires that inspections required in 20 NMAC 4.1.500/ 40 CFR 264.15 and 264.33 [6-14-00], as well as any additional requirements needed to protect human health and the environment, be met. The requirements of 20 NMAC 4.1.500/ 40 CFR 264.15 and 264.33 [6-14-00] are discussed in this section, Section 6.0, and Appendices C and E of the SNL/NM General Part B.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the “Site-Wide Inspection Plan”, provided as Appendix C of the SNL/NM General Part B. TTF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 1, with the inspection criteria and frequency.

The inspection results (including any remedial actions taken) are recorded on a form similar to those in Appendix C. The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms similar to the ones presented in Appendix C. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained in Building 6715. Inspection records for previous calendar years are maintained in Building 6715 or the SNL/NM Records Center.

Table 1
Thermal Treatment Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Eye wash and safety shower	Operational, accessible, in good condition	Monthly.
First-aid kit	Present and stocked	Monthly.
Personal protective equipment	Required items present and in good condition	Monthly.
Spill control equipment	Present, accessible, quantities per inventory, in good condition	Monthly.
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly.
Public address system	Operational	Monthly.
Telephone(s)	Present and operational	Monthly.
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly.
OPERATING AND STRUCTURAL EQUIPMENT		
Waste transfer pump	Present, operational, and in good condition	Prior to use
Waste transfer tubes	Free of apparent leaks and in good condition	Prior to use
Burn pan	Present, free of apparent leaks, and in good condition	Prior to treatment. Monthly otherwise.
Burn pan lid	Operational and in good condition	Prior to treatment. Monthly otherwise.
Burn cage	Present and in good condition	Prior to treatment. Monthly otherwise.
Burn cage door	Operational and in good condition	Prior to treatment. Monthly otherwise.
Steel-lined concrete pad	Free of apparent cracks and in good condition	Monthly
Filter element	Present, free of apparent tears or holes, and in good condition	Monthly
Rain catch tank	Free of apparent leaks and in good condition	Monthly

Table 1 (Concluded)
Thermal Treatment Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
Area condition	Free of combustible materials and weeds and in good condition	Prior to treatment. Monthly otherwise.
Red warning beacons	Present and operational	Prior to treatment. Monthly otherwise.
Water spigot and hose	Present, operational, and in good condition	Prior to treatment. Monthly otherwise.
Burner control warning bell	Operational	Prior to treatment. Monthly otherwise.
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present legible, and in good condition	Monthly
Gates	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/ 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [6-14-00] "Personnel Training." The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the TTF.

TTF personnel receive training in accordance with the "Site-Wide Personnel Training Plan" provided as Appendix D of the SNL/NM General Part B.

Only the following job descriptions identified in Appendix D, Table D-2 are applicable at the TTF: Training Director, Project Leader, Emergency Coordinator, Field Technician, and Inspector.

Additional training designed to specifically teach TTF personnel (i.e., TTF Project Leader, TTF Field Technician, TTF Inspector) to perform their duties safely and in conformance with regulatory requirements is presented in this section. TTF training course content includes, at a minimum, the topics shown in Table 2.

Training records for TTF personnel are maintained in Building 6715.

Table 2
Thermal Treatment Facility
Resource Conservation and Recovery Act-Regulated Waste Management Unit
Training Content

Explosives Personnel Safety Course

Duration: Variable (Typically 16 hours)
Frequency: Initial
Method: Classroom instruction

Minimum content may include:

- Basic explosives definitions
- Overview of explosives and explosive device categories and characteristics
- Initiation stimuli and safety guidelines for avoiding accidental ignition
- Standards for explosives operations, including compatibility, storage, and standard operating procedures

Operating Procedures of the Thermal Treatment Facility

Duration: Variable (Typically 4 hours)
Frequency: Annual
Method: Classroom instruction, on-the-job training, and/or document review

Minimum content may include:

- Overview of written operating procedures
- Overview of the waste analysis plan
- Safety practices
- Security, site entry, and site control
- Facility operations
- Facility equipment and structures
- Procedures to prevent the reaction of reactive waste
- Permit requirements for the Thermal Treatment Facility

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia /DOE Site-Wide Contingency Plan is included as Appendix E of the SNL/NM General Part B. Supplemental TTF-specific information is included in this section, in Figure 9, and in Tables 3 and 4 of this module. Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained in Building 6715 and at the SNL/NM Emergency Operations Center.

The TTF is located in the north-central portion of Technical Area III at SNL/NM, just south of Building 6715. The TTF consists of a square, steel burn pan, 30 inches (in.) on each side and 6 in. deep. A remotely-operated metal lid can be raised to open, or lowered to cover, the burn pan. The burn pan is enclosed by an expanded metal screen (i.e., open to the air) cage, approximately 4 feet (ft) on each side and 8 ft tall. Access to the burn pan is provided by a door on the north side of the burn cage, which is operated remotely using controls inside Building 6715. The burn cage sits in the center of a steel-lined concrete pad. The concrete pad is surrounded on the west, south, and east sides by an earthen berm, approximately 8 ft tall. An 8-ft-high chain-link security fence surrounds the entire TTF.

The TTF is used to thermally treat (i.e., burn) small quantities of waste explosive substances, waste liquids (e.g., water, volatile organics) contaminated with explosive substances, and waste items (e.g. rags, wipes, swabs) contaminated with explosive substances. Wastes treated at the TTF may have U.S. EPA Hazardous Waste Numbers D001, D003, D011, and F003.

RCRA-regulated waste is not stored at the TTF and is only present just before and during treatment operations. However, if for some reason treatment operations are aborted and it is deemed unsafe to remove the waste, the waste will be wetted as needed to stabilize it, the burn pan lid will be lowered remotely to cover the burn pan and the waste will remain there until it is possible to perform the treatment or safely remove the waste.

Figure 9 presents the evacuation route, emergency response, and access information for the TTF. Table 3 lists the emergency equipment typically available at the TTF. Table 4 lists the emergency coordinators for the TTF.

Table 3
Thermal Treatment Facility, Emergency Response Equipment

Building 6715 Complex

Category	Description/Capabilities	Location
Safety and Decontamination Equipment	Permanent eyewash/hand-held deluge showers	Building 6715
	First aid kit	Building 6715
	Absorbent	Building 6715
	Miscellaneous PPE (protective suits, goggles, gloves)	Building 6715
Internal Communication and Alarm System	Fire alarm pull station (pulling handle sends signal to KAFB fire department)	One on east wall inside Building 6715 near personnel door
	Public address system	Microphone in Building 6715
External Communication System	Telephones	Building 6715
	Fire alarm pull station (pulling handle sends signal to KAFB fire department)	Near personnel doors in Building 6715.
Fire Extinguishers	Portable (A-B-C)	One at or near each personnel door in Buildings 6715
Fire Suppression	Water supplied by fire hydrant	One hydrant, location shown in Figure 10

KAFB Kirtland Air Force Base.

Table 4
Thermal Treatment Facility, Emergency Coordinator List

April 16, 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	David Castillo Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-4192 (office) (505) 540-9375 (pager)	(505) 899-1956
First Alternate	Bill Suderman Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-4218 (office) (505) 540-4019 (pager)	(505) 265-1786
Second Alternate	Tim Covert Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-4664 (office) (505) 530-0215 (pager)	(505) 299-5367

One or more of these personnel are routinely available during operating hours (7:00 am to 5:00 pm on days when activities are conducted in Building 6715).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13], and 20 NMAC 4.1.500/40 CFR 264, Subparts G and X, [6-14-00]. General closure information applicable to all RCRA-regulated Units at SNL/NM, and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B. The site-wide Closure Plan includes a description of the SNL/NM facility; waste description; closure performance standards; closure methods; sampling and analysis plan; closure schedule; procedures for amendment of the Closure Plan; closure certification and report; and survey plat and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The TTF is located in the north-central portion of Technical Area III at SNL/NM, just south of Building 6715. The TTF consists of a square, steel burn pan, 30 inches (in.) on each side and 6 in. deep. A remotely-operated metal lid can be raised to open, or lowered to cover, the burn pan. The burn pan is enclosed by an expanded metal screen (i.e., open to the air) cage, approximately 4 feet (ft) on each side and 8 ft tall. Access to the burn pan is provided by a door on the north side of the burn cage, which is operated remotely from controls inside Building 6715. The burn cage sits in the center of a steel-lined concrete pad. The concrete pad is surrounded on the west, south, and east sides by an earthen berm, approximately 8 ft tall. An 8-ft-high chain-link security fence surrounds the entire TTF.

7.2 Estimate of Maximum Waste Inventory (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total inventory of RCRA-regulated waste in treatment at any time at the TTF is no more than 20.8 gallons of explosive-contaminated material. The total quantity of RCRA-regulated waste treated in the TTF during its operating life will be estimated at the time of closure.

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 in Appendix F of the SNL/NM General Part B, partial closure activities specified in this plan assume the following conditions were met during the operational life of the TTF:

- RCRA-regulated waste handling activities at the TTF were confined to the burn pan and immediate surrounding area. If contamination occurred, it would have been confined to those areas; and

- The burn pan was maintained to retain its integrity by following established maintenance and inspection procedures.

7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan in Appendix F provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the TTF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the TTF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan in Appendix F presents sample collection equipment and techniques applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the TTF. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the TTF.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan in Appendix F presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the TTF.

7.7 Contingent Post-Closure Care

The intent of the site-wide and Unit-specific Closure Plans is to establish procedures for clean closure of RCRA-regulated waste management Units. It is expected that the closure activities described herein will successfully remove or decontaminate all RCRA-regulated constituents from the Unit and surrounding soils. In the event that soil contamination remains upon completion of closure activities at the TTF, Sandia/DOE will prepare a post-closure plan to address this contamination in accordance with 20 NMAC 4.1.500/40 CFR 264.118.

8.0 TREATMENT PLAN

In accordance with 20 NMAC 4.1.900/40 CFR 270.23 [6-14-00], treatment operations for RCRA-regulated wastes treated at the TTF are described in this section. Waste analysis procedures are provided in Appendix B (Section B.3.2 and Section B.3.3) of the General Part B.

8.1 Treatment Operations

The treatment is designed to deactivate the reactive and ignitable components of the waste. Thermal treatment is an accepted treatment technology for the deactivation of explosive waste (20 NMAC 4.1.800/40 CFR 268.40 [6-14-00]) to meet treatment standards. The waste may also contain pentaerythritol tetranitrate (PETN, an explosive); however, PETN is rarely used in the process. PETN and SASN both exhibit the RCRA characteristic of reactivity (D003). The treatment also effectively deactivates the ignitable (D001) components in the SASN slurry and liquid wastes. The residue may require further treatment to address other constituents, as discussed in Section B.3.3.1 in Appendix B of the General Part B.

The waste treated at the TTF is typically generated as a result of the formulation of SASN slurry, its application to test articles, and post-test cleanup activities. Liquid RCRA-regulated waste is generated from the formulation and application of SASN slurry. Solid RCRA-regulated waste (e.g., paper wipes, cotton rags, swabs, filter elements, cardboard masks) is generated as a result of post-test cleanup, which may occur the day after formulation. The solid items are typically saturated with water to protect personnel from explosive hazards.

According to published technical data (Wildin, 1986), SASN can be initiated by the energy of bright light (by raising the surface temperature of the SASN to the auto ignition temperature of 457 ºF) or small contact shock. The TTF was specifically built to treat SASN slurry and SASN contaminated waste because of the hazards associated with handling the waste.

A description of the TTF burn pan design, construction, and materials is provided in Section 1.1 of this module to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.23(a) [6-14-00]; and 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00].

Prior to treatment operations, TTF personnel perform a pretreatment inspection of the Unit as described in Section 4.0 of this module. During treatment operations, Unit personnel have immediate access to a telephone or two-way radio to summon help, if needed, as described in Section 6.0 of this module.

8.1.1 Waste Quantities

The TTF is limited to the treatment of the following quantities of reactive wastes during treatment operations:

- The maximum net explosive weight of explosive treated during any treatment operation will not exceed 2.4 pounds (1.092 kilograms).

- The maximum total volume of SASN-contaminated waste (solid and liquid combined) present in the burn pan at any time will not exceed 20.8 gallons (75.7 liters), the capacity of the burn pan.

- The maximum total mass of waste (solid and liquid combined) present in the burn pan at any time will not exceed 190 pounds (86 kilograms).

If more restrictive conditions are imposed by the annual Open Burn Permit issued by the Albuquerque/Bernalillo County Air Quality Control Board (A/BCAQCB), those conditions will be followed. The Open Burn Permit and conditions are described in Section 8.1.4.

8.1.2 Operations

Waste treatment at the TTF will generally occur on the same day that the RCRA-regulated waste is generated in Building 6715.

Liquid waste is generally pumped to the TTF utilizing a remotely-operated peristaltic pump that is located inside the area where SASN is formulated and used. The waste is transferred to the TTF burn pan via flexible hoses and metal tubing that lead into the burn pan. RCRA-regulated waste that cannot be pumped to the TTF (solid items) is first wetted with water to temporarily reduce the explosive sensitivity and then hand carried in appropriate containers and manually placed or poured into the burn pan by qualified personnel, using extreme care to prevent spills. TTF personnel are required to wear appropriate personal protective equipment when performing treatment operations.

After the waste is pumped and/or manually placed or poured into the burn pan, all open TTF gates are closed and locked and the door to the TTF is closed remotely. Transfer of liquid waste to the TTF can be accomplished remotely, without opening the TTF door or accessing the fence gates. The burn pad lid remains closed as much as possible except during combustion to minimize evaporation of volatile waste.

The area between the TTF north fence and Building 6715 is cleared of all personnel by announcing over the public address system that treatment operations will soon commence. The TTF is controlled from the console inside Building 6715. Propane burners are pre-positioned to both heat the burn pan and ignite the contents; this is necessary to vaporize water-bearing wastes so that the explosive component can be treated effectively. The burn pan lid is raised and the burners are ignited and operate until combustion is complete. To provide additional assurance of complete treatment, personnel operate the burners for a period of time (typically 30 to 60 minutes) after the treatment is complete (i.e., all the explosives are deactivated and the ignitable liquids are combusted). Unit personnel use visual and audible evidence to determine treatment completion. Evidence of complete deactivation of explosives is the cessation of audible popping noises and visual flashes of light and/or puffs of smoke. Evidence of the complete combustion of ignitable liquids includes the absence of large yellow flames from the burn pan and absence of liquid inside the burn pan. After treatment and the post-treatment burn are complete, Unit personnel turn off the propane burners and lower the lid to preclude wind dispersal of treatment residue and water infiltration into the burn pan during the cool-down period. The cool-down period varies, but will not exceed 24 hours.

After the unit has cooled sufficiently, Unit personnel perform a post-burn inspection to identify any untreated waste in the burn pan and contamination and/or "kick-out" on the steel-lined concrete pad. Kick-out is defined as untreated RCRA-regulated waste ejected from the burn pan during treatment. If any kick out is identified, Unit personnel return it to the burn pan. Untreated waste remaining in the pan and kick-out returned to the burn pan are subsequently retreated. If the inspection indicates that all the waste has been treated, the contents of the burn pan (i.e., ash) are removed, containerized, managed, and characterized as described in Section B.3.3.1 of the WAP. If the post-treatment inspection identifies contamination on the steel-lined concrete pad, it will be decontaminated by wiping with paper wipes, and the wipes will be treated at the TTF.

8.1.3 Operating Conditions

To minimize air emissions or exposure of people to toxic or hazardous air emissions, the TTF will be operated only:

- Between the hours of 7 a.m. and 7 p.m. Operations may extend beyond 7 p.m. if necessary to complete treatment of the wastes in the burn pan.
- When the wind speed is less than or equal to 20 miles per hour (mph).
- When threatening weather is more than 10 miles (mi) from the TTF. Threatening weather is defined as winds in excess of 35 mph; tornadoes; electrical storms with or without precipitation of any type; snow storms with a visibility of less than 2000 feet; rain with accumulations greater than 0.3 inch per hour; or any hail, sleet, or ice storms.

8.1.4 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi]; 20 NMAC 4.1.500/40 CFR 264 Subparts AA, BB, and CC)

TTF personnel employ the practices described in Section 8.2 of the SNL/NM General Part B to prevent releases to the atmosphere during treatment.

<u>Subpart AA</u>

TTF treatment operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

<u>Subpart BB</u>

TTF operations involve a pump and transfer lines in light organic service. These are used less than 300 hours per calendar year and are therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052-.1060 as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f). A list of the equipment will be maintained in the Unit records, as described in Section 9.0 of the General Part B. Hours of operation will also be noted in the Unit records.

The TTF is subject to the regulations of the A/BCAQCB. Open burning of high explosives is allowed under A/BCAQCB Regulation Number 3 when transporting the material would be unnecessarily hazardous. The TTF is granted a permit for open burning of explosives by the City of Albuquerque on an annual basis. Treatment will be restricted to the open burning conditions imposed by the most current City of Albuquerque Open Burn Permit.

Subpart CC

TTF treatment operations do not include management of RCRA-regulated wastes in containers subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC.

8.2 Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

The thermal treatment of RCRA-regulated waste at the TTF is completely effective in deactivating explosive and ignitable constituents in the wastes. The auto ignition temperature of SASN is 457 degrees Fahrenheit (°F). Propane, used to ignite the waste, has a flame temperature of 3500°F. The TTF burners are operated for a minimum of 30 minutes after there is no visual (sparks) or audible evidence of untreated explosive waste remaining in the burn pan. No waste explosives have been observed in the treated TTF ash.

Given the extremely high vapor pressure and low flash points of ignitable solvents (e.g., acetone, acetonitrile) that may be treated at the TTF (the flash point of acetone is 15°F and the flash point of acetonitrile is 35.6°F), it can be concluded that the materials are completely burned and decompose to gaseous by-products and ash.

The principal by-products of combustion of liquids and solids treated at the TTF are ash (carbon), gases, and silver. Gases consist primarily of nitrogen, water vapor, carbon dioxide, carbon monoxide, sulfur dioxide, diatomic oxygen, and traces of nitrous oxides. Treated residues (ash) are managed in accordance with applicable RCRA requirements and characterized in accordance with Section B.3.3.1 of the Site-Wide WAP (Appendix B).

9.0 ENVIRONMENTAL PERFORMANCE STANDARDS FOR THE MISCELLANEOUS UNIT

The TTF will be operated, maintained, and closed in a manner that will ensure protection of human health and the environment, in accordance with 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00]. The Unit is located in a sparsely populated area, and is designed and operated to facilitate safe handling and treatment of RCRA-regulated wastes in order to prevent adverse impacts to human health and the environment. The Unit features, small quantities of waste treated, and operating requirements minimize the potential for a release. Operations, including hazard prevention features and practices, are described in Sections 1.2 and 8.1 of this module. Contingency and emergency response actions to minimize impacts of unanticipated events, such as spills, are described in Section 6.0 of this module. Treatment operations and effectiveness are described in Sections 8.1 and 8.2 of this module.

In conformance with 20 NMAC 4.1.500/40 CFR 264.601 [6-14-00], a miscellaneous RCRA-regulated waste storage, treatment, or disposal facility must be shown to prevent any releases to groundwater, surface water, soil, or air that may have adverse effects on human health and the environment. The TTF has been designed and is operated in such a manner as to meet these requirements, as described below.

9.1 Characteristics of the Waste and the Unit (20 NMAC 4.1.500/40 CFR 264.601[a][1], [b][1,2], and [c][1-3])

Sandia/DOE assessed the potential risk to human health and ecological receptors due to operation of the TTF under the conditions described in this module. The chemicals of potential concern (COPCs) and Unit features are summarized below.

9.1.1 Waste Characteristics

Waste quantities are discussed in Section 8.1 of this module. The RCRA-regulated wastes treated at the TTF consist of the following:

- A liquid or slurry containing varying amounts of acetone, acetonitrile, nitric acid, water, and typically some SASN crystals. The liquid or slurry may also contain PETN.
- Solid items that may contain small quantities of SASN, including paper wipes, cotton rags and swabs, filter elements, incidental silver nitrate that did not react to form SASN, and traces of Viton™ fluoroelastomer.

The estimated quantity of waste generated by testing operations is based on individual batches of SASN. Table 5 summarizes the COPCs in the wastes treated at the TTF.

Table 5
Estimated Maximum Quantities of Constituents in SASN Wastes

Constituent	Approximate quantity in wastes from cleanup of aborted test using four batches of solution

Constituent	Approximate quantity in wastes from cleanup of aborted test using four batches of solution
Acetone	65 L [a]
Acetonitrile	Trace [b]
Nitric acid	0.25 L
Silver nitrate	Trace [b]
SASN	1.092 kg [c]
PETN (optional)	0.04 kg [c]
Water	20 L
Solid items (paper, cloth, wood, cardboard)	50 kg

kg kilogram
L liter
[a] In normal operations, most of the acetone would be applied to the test article, and approximately 5L of acetone would be present in the solution to be treated at the TTF.
[b] An ingredient consumed in the formulation of the SASN slurry. Traces of unreacted material may be present in the waste from normal operations and from aborted tests.
[c] In normal operations, all the explosive would be applied to the test article, and a trace would remain in the solution to be treated at the TTF. Some explosive would also be present on the solid items treated.

Most test operations will require at least two batches of SASN; the largest may require four batches. PETN is used on rare occasions. Normal test operations result in a mixture containing nitric acid, some acetone, water, and traces of acetonitrile, silver nitrate, and SASN that requires treatment at the TTF. Aborted tests may result in the entire quantity of formulated SASN requiring treatment in addition to the normal wastes. The latter situation is shown in Table 5.

Of the COPCs identified above, silver is the only COPC remaining in the ash after treatment at the TTF. There are limited analytical data for residual ash from the TTF. For the analytical data available (a total of 5 samples), silver was detected at a maximum concentration of 140 milligrams per kilogram (mg/kg). Sandia/DOE used this concentration as the exposure point concentration when considering direct contact in the human health screening evaluation.

9.1.2 Unit Features

The TTF is described in Section 1.1 of this module. It is comprised of a steel burn pan with a cover, located inside a steel cage. The cage and burn pan rest on a steel-lined concrete pad. The cage and pad are surrounded by an earthen berm.

Seven situations present the potential for the release of RCRA-regulated waste to the environment surrounding the TTF. Each situation is addressed below:

- *Transfer of liquid wastes to the TTF burn pan*. Liquid wastes are transferred to the Unit through enclosed tubing equipped with secondary containment. No more than 20.8 gallons of liquid wastes are present in the Unit at any time, limiting the maximum release

to 20.8 gallons. Spills on the ground or on the TTF pad will be wetted with water using spray hoses. When saturated with water, the explosive waste is stable. The spilled, wet waste can then be wiped or scooped up and deposited in the burn pan for destruction. Similarly, contaminated soils will be wetted, excavated, and placed in the TTF burn pan for treatment.

- *Transfer of solid items to the TTF burn pan*. Solid items such as explosive-contaminated paper and filters are contained and carried to the TTF burn pan by qualified Unit personnel. Solids that are spilled during transfer would be handled in the same manner as described above for liquids.

- *Runoff of potentially contaminated precipitation*. Once waste is transferred to the burn pan, treatment generally takes place immediately. In the unlikely event of spillage from the burn pan, waste material will be contained on the steel-lined concrete pad. Any precipitation or spillage in the steel-lined concrete pad drains through a filter and settling basin into the 157-gallon catch tank. In addition, no untreated waste or treated residue is allowed to remain for extended periods of time in the burn pan,

- *Discharge of potentially contaminated precipitation from the catch tank*. Water collected in the catch tank is managed as described in Section 1.2.1 of this module.

- *Evaporation of liquid wastes from the burn pan*. Untreated wastes are not allowed to remain for extended periods in the burn pan, and treatment generally takes place immediately during normal operations. If treatment cannot be performed, the burn pan lid is lowered. During treatment, the high vapor pressure and low flash point of the organic liquids in the waste, combined with the burner design (Section 1.1), maximize the destruction of organic constituents through combustion.

- *Emission of particulates and gaseous combustion products during treatment*. Combustion products are described in Section 8.2. Products of complete combustion include nonhazardous gases. As noted above, the high vapor pressure and low flash point of the organic liquids in the waste, combined with the burner design (Section 1.1), maximize combustion performance.

- *Emission of particulates following treatment*. Ash and particulate matter (residues) from the thermal treatment process are removed from the burn pan as soon as possible, and the pan is covered between treatment.

9.2 Potential for Deposition or Migration of Wastes or Waste Constituents (20 NMAC 4.1.500/40 CFR 264.601[a][7])

The potential for release of COPCs to the soil is directly associated with the operations and residual waste at the TTF. COPCs may be released to the surface soil as a result of wind-blown ash deposition. Wind can transport ash particles with adsorbed COPCs (silver) as suspended dust, capable of dry or wet deposition away from the site. The site is sparsely vegetated, and is susceptible to wind and water erosion. Surface runoff and biota are natural, but minor mechanisms of COPC transport. Water percolation through the soil is the primary

mechanism for the transport and migration of COPCs in the subsurface soil and into groundwater.

It has been estimated that loss through evapotranspiration accounts for 95 percent of the total precipitation received at SNL/NM (Thomson and Smith 1985). Vegetation, although sparse at the site, will increase the rate of moisture loss from the subsurface soil through transpiration. As moisture evaporates from the soil surface, the direction of COPC movement near the surface may be reversed (i.e., upward transport) with capillary rise of the soil moisture.

Because of the arid nature of the environment at the TTF, characterized by low precipitation and high evapotranspiration rates, recharge to the water table at TA-III (measured at a solid waste management unit in north central TA-III) is insignificant under current climatic and vegetative conditions (Peace et al., 2002). Because groundwater at the TTF is approximately 500 feet below ground surface, the potential for COPCs to reach groundwater through the unsaturated zone above the water table is very low and can be ruled out as a transport pathway of concern.

Plant roots can access COPCs that are in the soil solution and transported to the aboveground tissues with the xylem stream. This may be a passive process, but active uptake (i.e., requiring energy expenditure on the part of the plant) or exclusion of some constituents in the soil solution may also take place. Aboveground tissues can absorb constituents directly from the air or by contact with dust particles. Constituents in plant tissues that are consumed by herbivores may pass through the gut and be returned to the soil in feces (at the site or transported from the site in the herbivore), or be absorbed into tissues, to be held, metabolized, or later excreted. The herbivore may be eaten by a primary carnivore or scavenger, and the constituents still held in the consumed tissues will repeat the sequence of absorption, metabolization, excretion, and consumption by higher predators, scavengers, and decomposers. The potential for transport of the constituents within the food chain is dependent upon both the mobility of the species that comprise the food chain and the potential for the constituent to be transferred across the links in the food chain. Inorganic COPCs (silver) at the TTF are elemental in form and are, therefore, not considered to be degradable via biotic or abiotic processes.

Table 6 summarizes the fate and transport processes that may occur at the TTF. Because the topography of the site is relatively flat and maintained for treatment operations, the potential for surface-water transport is low. Because winds in the Albuquerque area can be fairly strong in late winter and early spring, the potential for transport of COPCs in surface soil by wind is moderate. In both cases, however, the significance of these transport mechanisms is lessened by the fact that the principal COPC that would be released (i.e., silver) has been and is expected to be present in the residual ash at low initial concentrations. Because of the arid nature of the climate at the site, significant movement of water through the subsurface soil is unlikely and migration to groundwater is not expected to occur. The potential for food chain uptake is low because of the small size of the site, the disturbed nature of the habitat, and the continued operations at the site. The potential for degradation is minimal due to the elemental and inorganic nature of the COPC (silver).

Table 6
Summary of Fate and Transport Mechanism at the TTF

Fate and Transport Mechanism	Existence at Site	Significance
Wind	Yes	Moderate
Surface runoff	Yes	Low
Migration to groundwater	No	None
Food chain uptake	Yes	Low
Transformation/degradation	No	None

9.3 Potential Risks to Human Health (20 NMAC 4.1.500/40 CFR 264.601[a][8], [b][10], and [c][6])

Sandia/DOE performed a screening human health risk assessment to estimate the potential risk to human receptors that may be exposed to residual COPCs at the TTF under the proposed operating conditions. The assessment indicates that exposure to the COPCs at the TTF poses no significant human health risks under current and anticipated future conditions, as discussed in the following sections. The assessment was performed in accordance with the "Risk Assessment Guidance for Superfund" (RAGS) (EPA, 1989) and "Technical Background Document for Development of Soil Screening Levels" (NMED, 2000).

9.3.1 Receptors

Six buildings are occupied on a regular basis within the vicinity of the TTF. The remaining buildings are used sporadically for other tests or research activities, in the same manner as Building 6715. Table 7 summarizes the occupants of the TTF and the full-time occupants near the TTF.

Table 7
Full-Time Occupants of Buildings Near TTF in TA-III at SNL/NM

Building	Distance From TTF (feet)	Direction From TTF	Number of Full-time Occupants	Percent of Time Downwind from the TTF[a]
6715	20	N	10 [b]	6
6585	1250	E	152	9
6584	950	E	59	9
MO-228	1050	ESE	12	8
6536	795	SE	5	10
6530	820	SE	1	10
6710	1080	SW	8	11

[a] Based on prevailing winds during daylight hours
[b] The TTF is not continuously occupied, but personnel who are present during tests and treatment have the highest potential for exposure

The occupants of surrounding buildings are upwind from the TTF for a large percentage of the time. The wind rose on Figure 5 shows that overall prevailing winds at the TTF are from the east to southeast. However, winds in the area exhibit a diurnal pattern as described in Section 2.6: nighttime winds are from the southeast, and daytime winds are generally from the northwest to southwest (SNL, 2002). The daytime winds are reported in Table 7, because the buildings are occupied during the daytime.

9.3.2 Methodology

To evaluate potential human health risk at the TTF, maximum exposure point concentrations of the residual ash COPCs were compared to the corresponding occupational NMED soil screening levels (SSLs) (NMED, 2000). An individual SSL represents the soil concentration below which no significant adverse health effects are expected to occur from the assumed soil exposure pathways. The SSLs are fixed to conservative levels of risk (i.e., a cancer risk of 1×10^{-05} or a hazard quotient of 1.0). For metals and high explosives, the SSL uses three exposure pathways in the risk calculations:

- Incidental ingestion of chemicals in soil
- Dermal contact with chemicals in soil
- Inhalation of fugitive dust from soil.

The modeled duration of exposure assumes a continuous exposure during a 40-hour work week, 50 weeks each year, for a 25-year period.

The proposed current and future land use at the TTF is occupational under operating conditions. In addition, the onsite occupational receptors are not expected to exceed 50 days per year operational use at the TTF (i.e., the actual annual exposure period is less than 20% of the modeled exposure). Therefore, use of the occupational SSLs to calculate potential risk is highly conservative. Groundwater is not considered a viable exposure medium due to due the limited potential fate and transport soil-to-groundwater mechanisms operating at TA-III. Vapors released during treatment operations at the TTF do not to significantly contribute to the operational risk due to the following factors:

- The short duration of TTF treatment operations.
- The majority of the COPCs are incinerated during treatment.
- The treatment takes place outdoors and, therefore, the remaining vapors are quickly dispersed.
- Unit personnel are inside Building 6715 during treatment.
- The nearest continuously-occupied building is 795 feet away from the TTF and upwind most of the time (Table 7).

A hazard quotient (HQ) can be estimated using an exposure point concentration and a respective non-carcinogenic SSL, according to the following formula:

$$HQ = THQ \frac{EPC_i}{SSL_i}$$

Where:

- THQ = The target hazard quotient of 1.0
- EPC_i = Maximum exposure point concentration of $COPC_i$ detected in soil (mg/kg)
- SSL_i = Occupational SSL for $COPC_i$ detected in soil (mg/kg) based upon non-carcinogenic effects

None of the COPCs at the TTF are carcinogenic; therefore, no estimation of incremental lifetime cancer risk was conducted.

9.3.3 Results

Table 8 summarizes the COPC HQ values, based on comparing the maximum exposure point concentrations with the occupational SSLs.

Table 8
Results of the Human Health Risk Screening Analysis for the TTF

COPC	Occupational NMED SSL (mg/kg) [a]	Concentration (mg/kg) [b]	Hazard quotient	Incidental lifetime cancer risk
Silver	1200 n	140	0.12	NA

[a] NMED 2000.
[b] concentration at point of maximum exposure, assuming direct contact
mg/kg milligram per kilogram.
n Non-carcinogenic metal.
NA Not applicable.

This screening human health risk assessment indicates the maximum concentration of silver in residual ash does not pose a potential significant risk to human health. The HQ calculated is 0.12, which is significantly less then the screening criteria of 1.0.

As noted in Section 9.3.2, the actual risks presented by treatment at the TTF and the residual ash are significantly less than those calculated due to the limited actual use of the TTF (i.e., it is only used 50 days per year, and the actual annual exposure is less than 20% of the modeled exposure). Therefore, under current and anticipated future conditions, exposure to COPCs at the TTF poses no significant human health risks.

9.4 Potential Damage to Animals, Vegetation, and Physical Structures (20 NMAC 4.1.500/40 CFR 264.601[a][9], [b][11], and [c][7])

Sandia/DOE evaluated the risk and potential damage to animals and vegetation through a screening ecological assessment, which examines the potential presence of endangered or threatened species at or around the TTF. The assessment indicates the expected impact of the TTF is minimal. No sensitive species have been identified at the TTF. The habitat quality of the TTF is poor (due to industrial land use patterns in the surrounding area), indicating that future habitation by sensitive species is unlikely.

Damage to physical structures (primarily Building 6715) that are in close proximity to the Unit could be caused by detonation of the explosive wastes treated in the TTF. However, the potential for such damage is effectively minimized through the design and operation of the Unit (described in Sections 1.2 and 8.1 of this Module).

9.4.1 Ecological Screening Assessment

The screening ecological assessment is limited to the potential threatened or endangered (T and E) species that may occur within the vicinity of the TTF. It includes: summary of the threatened and endangered (T and E) species survey for SNL/NM; the ecological receptors found at SNL/NM; and a summary of the receptors found at TA-III and, more specifically, the TTF as reported in *Sensitive Species Survey Results* (IT, 1995).

9.4.2 Survey Description

Sandia/DOE conducted biological field surveys and reviewed previously documented surveys to identify the presence of sensitive species and key habitat areas at each of the SNL/NM solid waste management units (being addressed through the Sandia/DOE Environmental Restoration (ER) program) that are located within the boundaries of KAFB.

The term "sensitive species" is used in these surveys refers to all state or federally listed threatened or endangered species, proposed or candidate species, and other species afforded special management consideration, thereby providing that species legal protection from actions that may jeopardize its further existence, by a state or federal resource management agency (e.g., U.S. Forest Service [USFS] Sensitive Species). Both plant and animal species are included under this definition. The actual or potential occurrence of permanent or transient sensitive species populations with the vicinity of the TTF is discussed.

The current list of species that fall under the definition of sensitive and that may occur on KAFB was compiled from information obtained from the U.S. Fish and Wildlife Service (USFWS), the New Mexico Department of Game and Fish (NMDGF), and the New Mexico Forestry and Resource Conservation Division (NMFRCD) of the Energy, Minerals and Natural Resources Department. Federal protection of a species (plant or animal) principally falls under the jurisdiction of the USFWS, although special management status may be granted to a species by other resource management agencies, such as the USFS and the Bureau of Land Management. In New Mexico, the state agencies empowered to identify and protect sensitive biological resources are the NMDGF (for vertebrate wildlife and some invertebrates) and the NMFRCD (for plants).

Other species designations are also recognized through the listing process. Those that are considered sufficient to warrant inclusion as a sensitive species are proposed species, C1 candidate species, and C2 candidate species. A proposed species is one for which a proposal for listing has been published in the Federal Register, but a final rule on the listing has not yet been made. Candidate species are those that are under review for possible listing. The C1 classification means that the USFWS believes sufficient information exists to support listing. The C2 classification means that insufficient information currently exists to support listing.

Similarly, the New Mexico Wildlife Conservation Act authorizes the NMDGF to designate species of wildlife native to New Mexico as endangered, thereby granting the species protection from further threats to their continued existence in New Mexico. Under this authority, the NMDGF uses two levels of classification, endangered group 1, and endangered group 2, which are equivalent to the endangered and threatened classifications (respectively) of the USFWS. The NMDGF also designates certain species and groups of wildlife (e.g., raptors and horned lizards) as "protected"; however, this designation is directed at protecting individuals of these species from unregulated hunting, killing, trapping, capture, or harassment and does not carry with it the criterion of threat of extinction or extirpation.

The NMFRCD has the authority to designate and protect plant species and varieties that are threatened by extinction or extirpation in New Mexico. The NMFRCD maintains four lists of plant species, each representing a separate level of classification. List 1 plants are designated endangered in New Mexico and are legally protected from unauthorized collection. List 1 plants include all plant species in New Mexico that are listed by the USFS as endangered or threatened as well as other species that may be threatened with extirpation from the state. List 2 plants are either rare throughout their range or have a very restricted range, making them vulnerable to environmental perturbations. Although List 2 plants are monitored for change in status, they are not protected under the New Mexico Endangered Plant Species Act. List 3 plants are rare plants that are currently under review for listing. List 4 plants are those that, after review, have been dropped from consideration at this time. As with the List 2 plants, neither List 3 nor List 4 plants are protected under the New Mexico Endangered Plant Species Act. Plants on the NMFRCD Lists 1, 2, and 3 are considered to be sensitive species because all are either known to be vulnerable to disturbance or are of uncertain sensitivity.

9.4.3 Receptors Found at SNL/NM

There are no federally listed T or E species known to occur within KAFB. The federally endangered peregrine falcon (*Falco peregrinus*) could potentially occur in the mountainous areas of KAFB; however, the likelihood is low due to poor habitat quality for this species. The federally threatened Mexican spotted owl (*Strix occidentalis lucida*) occurs in canyons similar to Sol se Mete and Lurance Canyons in eastern KAFB; however, a special survey of these canyons by Roger W. Skaggs found the habitat conditions to be unsuitable and concluded that the probability of this species occurring in these canyons is low. The federally endangered black-footed ferret (*Mustela nigripes*) was once native to central New Mexico but has not been recorded in the state in recent years. It is probably extinct in New Mexico.

Two candidate species (C2) for federal listing are known to occur on KAFB. These are the grama grass cactus (*Pediocactus papyracanthus*) and the Texas horned lizard (*Phrynosoma cornutum*). The grama grass cactus is also a State-listed endangered plant species (List 1) and

a USFS sensitive plant and has been recorded throughout the lower elevations of KAFB, from the base of the Manzanita Mountains to the fence marking the western boundary of the base. The Texas horned lizard has been observed at the North Thunder Range and in Lurance Canyon. As a horned lizard, this species is protected by state law from collection but has no other state-granted special status.

Seven other federal candidate species are considered as potentially occurring on KAFB but have not been recorded on KAFB. These include three birds, three bats, and one rodent species. Three of these species, the southwestern willow flycatcher (*Empidonax traillii extimus*), the spotted bat (*Euderma maculatum*), and the "New Mexican" meadow jumping mouse (*Zapus hudsonius luteus*), are also listed by the NMDGF as endangered (group 2). All three of the birds -- the "Apache" northern goshawk (*Accipiter gentilis apache*), the ferruginous hawk (*Buteo regalis*), and the southwestern willow flycatcher -- are likely to be migrants on KAFB, if they occur at all. The northern goshawk typically nests at higher elevations and in denser coniferous forests than those provided by the Manzanita Mountains, although it winters at lower elevations, usually along riparian zones. Although a ferruginous hawk was observed soaring over the South Thunder Range during surveys, nesting, roosting, or feeding by this species on KAFB has not been observed. The lack of dense willow stands (which are the preferred nesting habitat for the southwestern willow flycatcher), makes it an unlikely breeding species on KAFB. The three species of bats listed as federal candidate species (C2) potentially use the mine shafts in the Manzanita Mountains as roosts, although the small number of records for the greater western mastiff bat (*Eumops perotis californicus*) in New Mexico make it very unlikely to occur in these mine shafts. The "New Mexican" meadow jumping mouse has been recorded along the Rio Grande and in higher montane meadows, but suitable habitat for this species (thick grass with high soil moisture) does not occur on KAFB.

Two species of birds, the gray vireo (*Vireo vicinior*) and Baird's sparrow (*Ammodramus bairdii*), are listed by the NMDGF as endangered (group 2) but have no federal status. A gray vireo was observed in Sol se Mete Canyon but was probably a migrant. Past observational records indicate that the Baird's sparrow is unlikely in the area of KAFB.

Three State-listed endangered plants (List 1) are known to occur on KAFB. These are the grama grass cactus, the Wright's pincushion cactus (*Mammillaria wrightii*), and the visnagita cactus (*Neolloydia intertexta*). Two other State-listed endangered plants, Simpson's cactus (*Pediocactus simpsonii*) and Great Plains lady tresses (*Spiranthes magnicamporum*), are possible but have not been recorded on KAFB. The latter, an orchid, is unlikely due to the rarity of moist habitats required for this species.

One State-listed rare and sensitive plant (List 2) is known to occur on KAFB, and two others may potentially occur. The Santa Fe milkvetch (*Astragalus feensis*) has been recorded in the North Thunder Range area. The cyanic milkvetch (*Astragalus cyaneus*) and Plank's catchfly (*Silene plankii*) are sporadic but locally common on dry slopes along the Rio Grande Valley. Neither has been observed on KAFB.

Finally, only one species under review by the NMFRCD (List 3) may potentially occur on KAFB. The strong prickly pear (*Opuntia valida*) occurs along the foothills of the Sandia Mountains and has typically been treated as a form of the common and highly varied Engelmann or "sprawling" prickly pear (*Opuntia phaeacantha*). Its taxonomic elevation to species is not widely accepted and requires further study. It has not been recorded on KAFB but may be easily overlooked due to the prevalence of Engelmann prickly pear.

9.4.4 Sensitive Species Found at TA-III

TA-III was surveyed for sensitive species during the spring and summer of 1992 and 1993. This survey effort included all ER Project sites that are within TA-III, as well as an area northwest of TA-III. Portions of the west central part of TA-III have been identified as Priority 1 habitat for grama grass cacti, indicating that the species occurs in vigorous populations in the area of TA-III.

Although no other sensitive species have been recorded on SNL/NM ER Project sites in TA-III, the potential occurrence of some cannot be ruled out. Among the plants, both the Santa Fe milkvetch and Simpson's cactus are possible in the habitats of the lower foothills and may have eluded detection. The Texas horned lizard, which has been recorded in Lurance Canyon, could occur in the grassland sites within this canyon and on the mesa. Finally, the abandoned mines in the eastern part of KAFB may contain bats, among which both the spotted bat and occult little brown bat are possible occupants. However, none of these are expected to occur at the TTF.

No sensitive species have been identified at the TTF. Additionally the habitat quality of the TTF is poor, indicating that future habitation by sensitive species is unlikely to occur. Therefore, a quantitative assessment of potential risk to ecological receptors at the TTF is not warranted at this time.

9.5 Monitoring (20 NMAC 4.1.500/40 CFR 264.601 602)

Sandia/DOE do not routinely perform environmental monitoring at the TTF because of the sporadic nature of the operations and the minimal effect of the operations on human health and the surrounding environment (discussed in Sections 9.3 and 9.4 of this module). However, as discussed in Sections 2.6 and 9.0, Sandia/DOE perform routine environmental monitoring in the vicinity of the TTF. The results of the activities are provided in annual environmental monitoring reports (SNL/NM 2002). Contamination attributable to the TTF has not been detected during environmental monitoring activities at SNL/NM.

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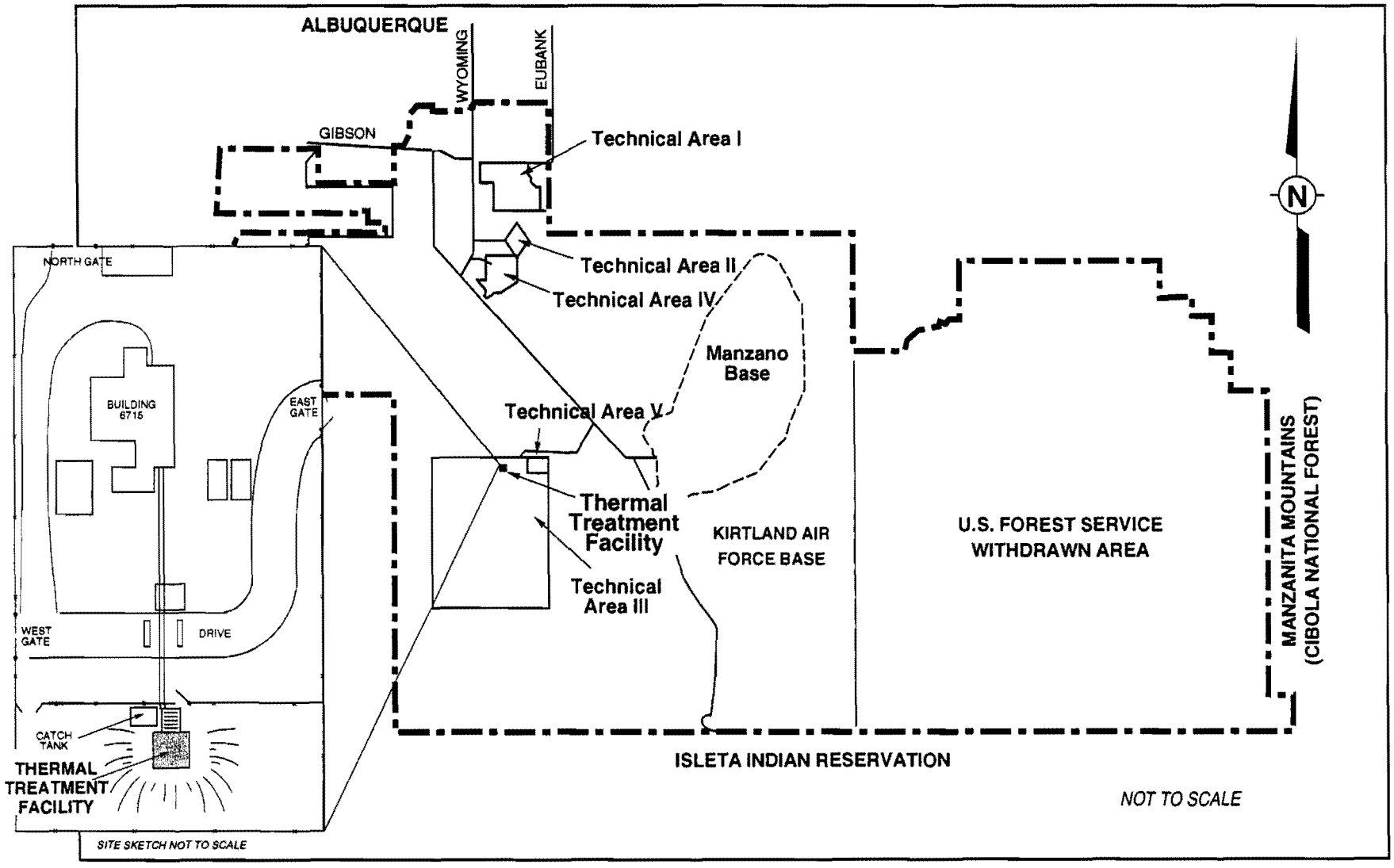
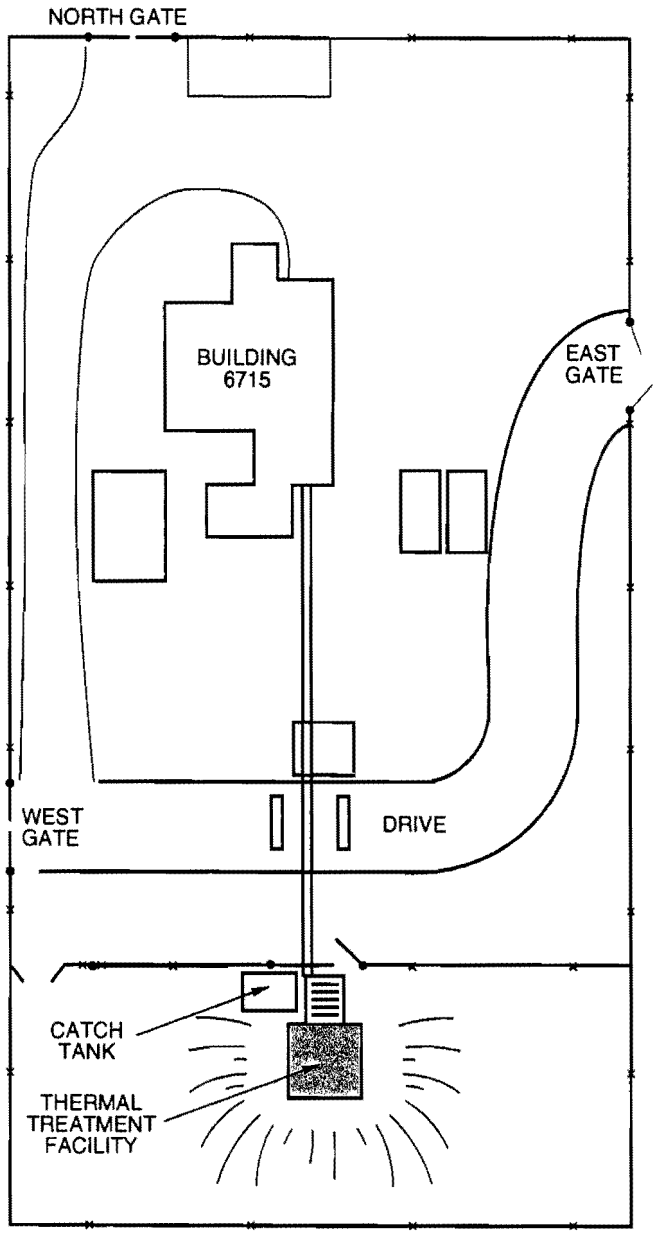


Figure 1
Location of the Thermal Treatment Facility at Sandia National Laboratories/New Mexico



SITE SKETCH NOT TO SCALE

LEGEND

- Resource Conservation And Recovery Act-Regulated Waste Management Area
- Access Road
- Fence
- Gate
- Steps
- Earthen Berm

NOTE:

SECURITY HAS KEYS TO THE NORTH AND WEST GATES. DURING OPERATIONS, A SECOND LOCK IS ATTACHED BY UNIT PERSONNEL. THESE TWO GATES ARE ALWAYS LOCKED.

Figure 2
Thermal Treatment Facility,
Resource Conservation and Recovery Act-Regulated Waste Management Area

774470.10000001 A82

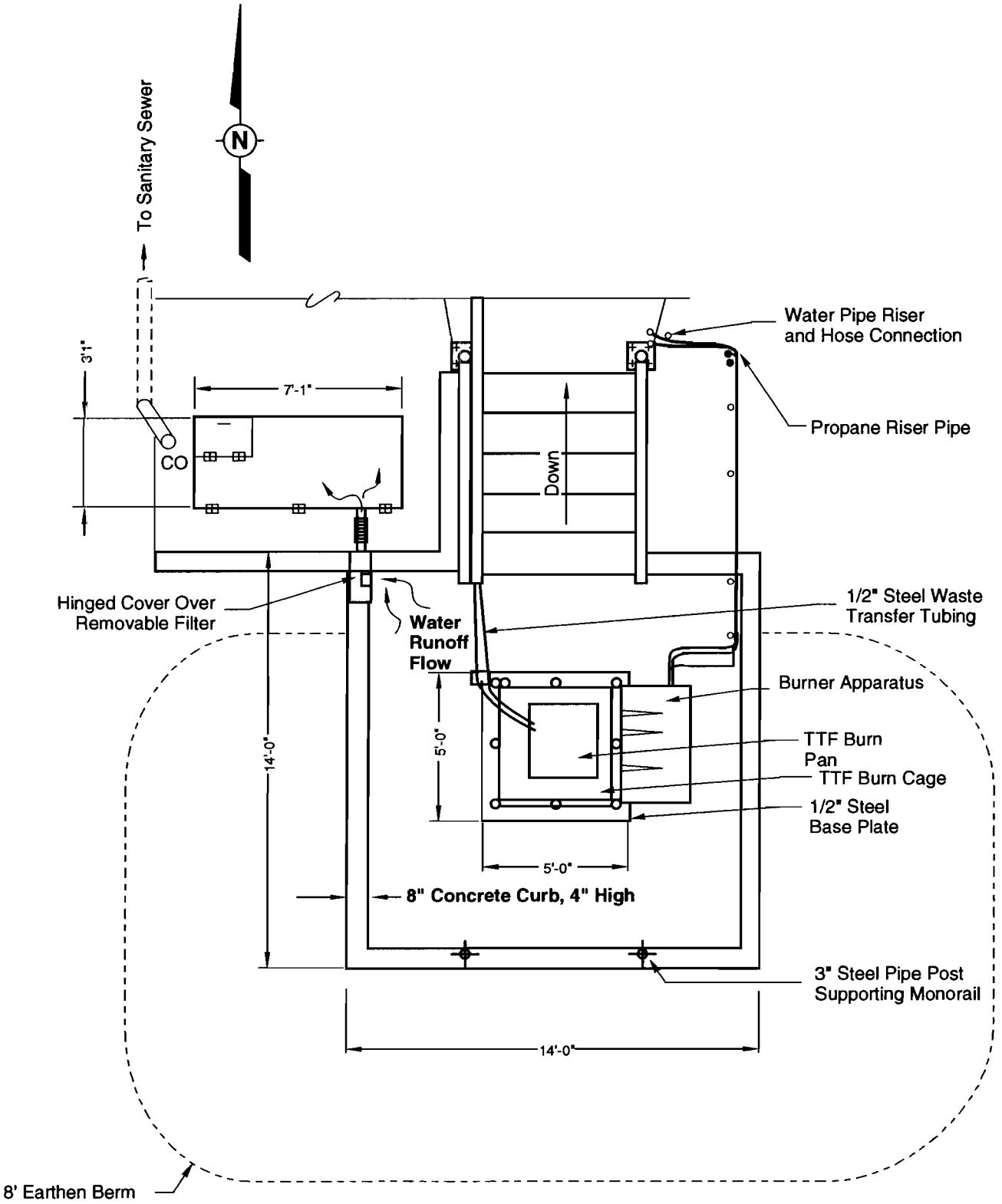


Figure 3
Thermal Treatment Facility (TTF)—Plan View

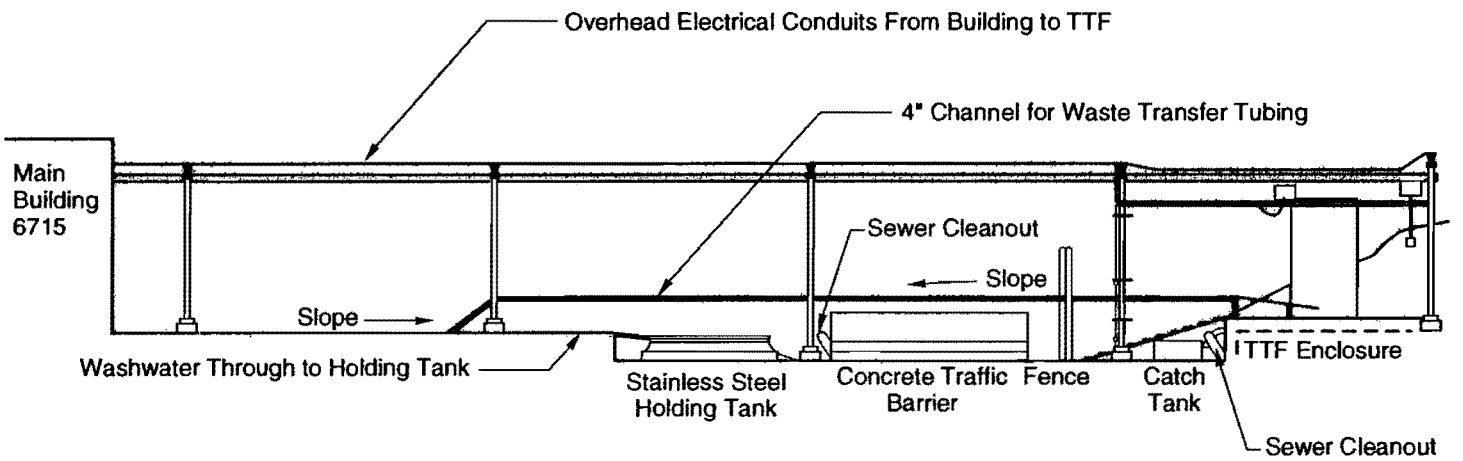


Figure 4
Thermal Treatment Facility (TTF)—Section View

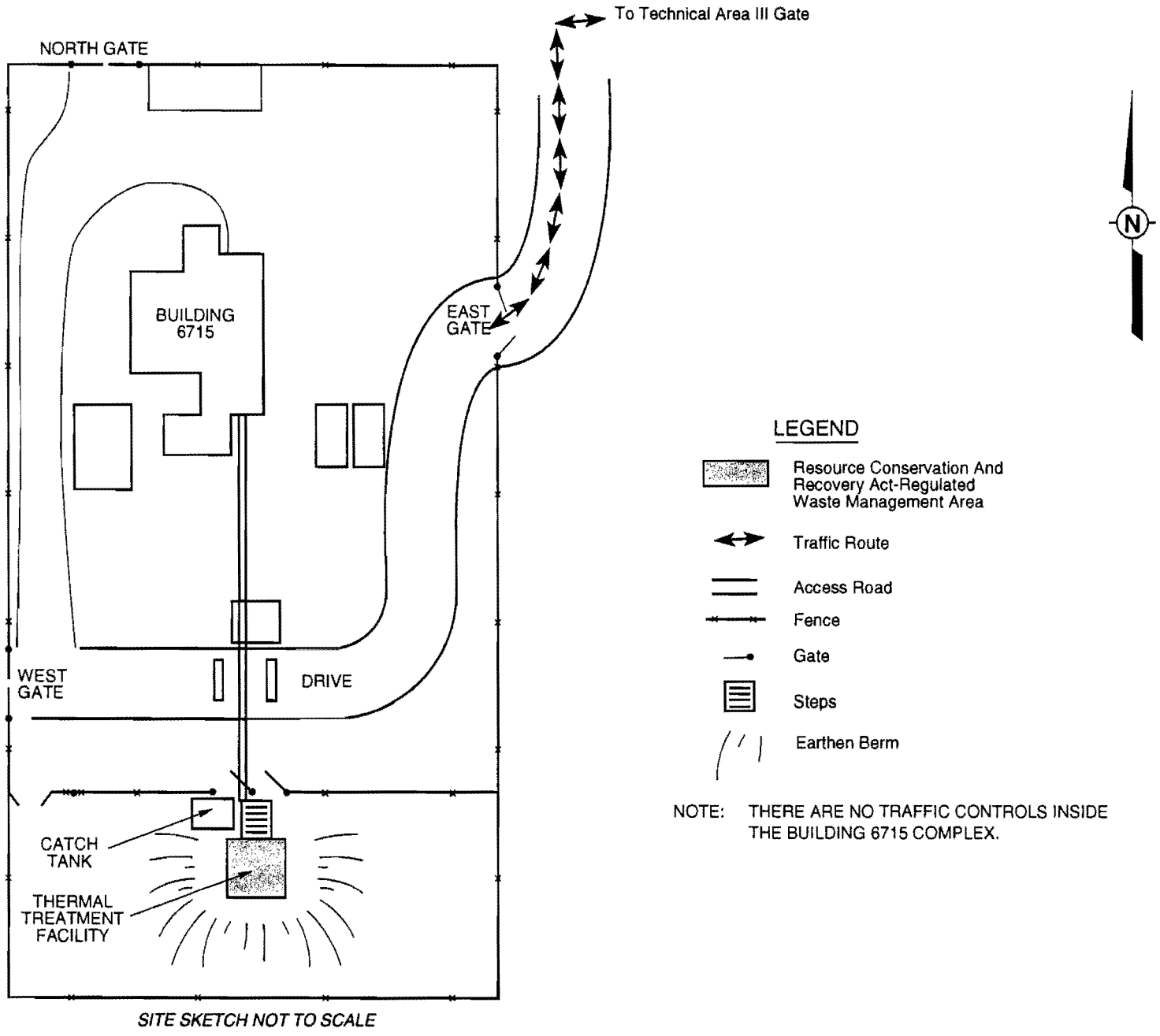


Figure 5
Thermal Treatment Facility, Traffic Routes and Controls

TO VIEW THE MAP/MAPS ASSOCIATED WITH THIS DOCUMENT PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

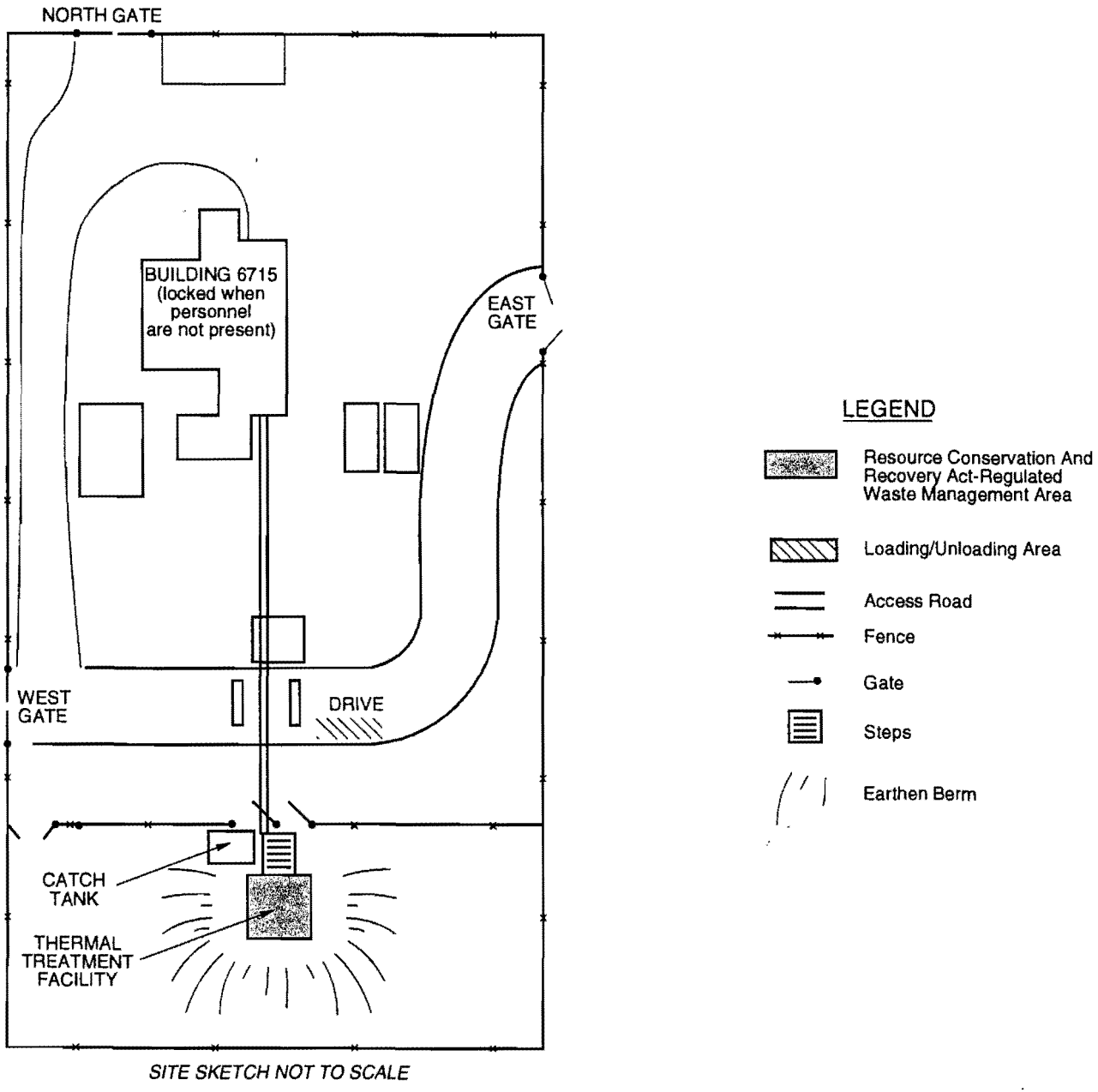


Figure 7
Thermal Treatment Facility, Access Control Features

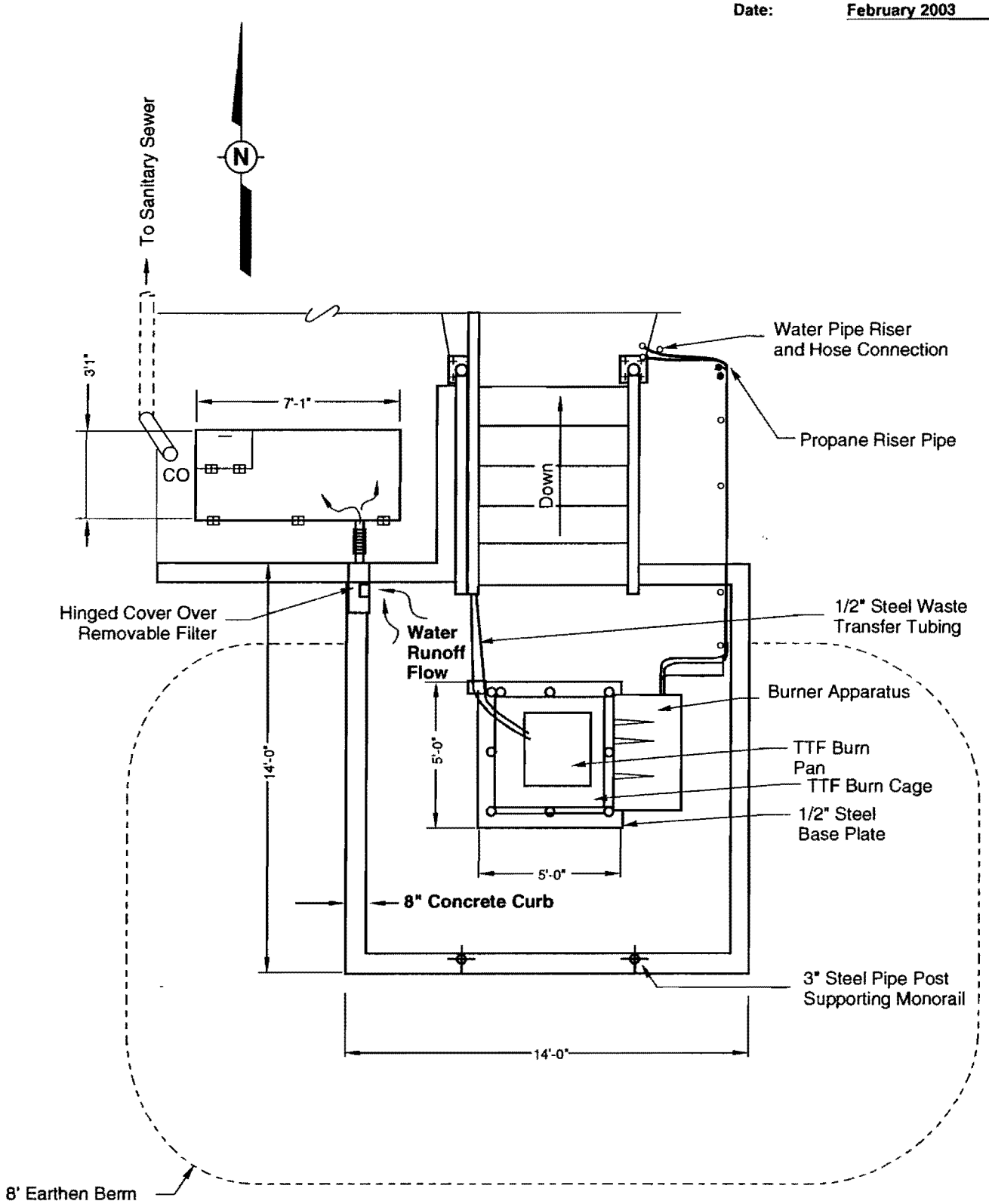


Figure 8
Thermal Treatment Facility (TTF), Drainage Control Features

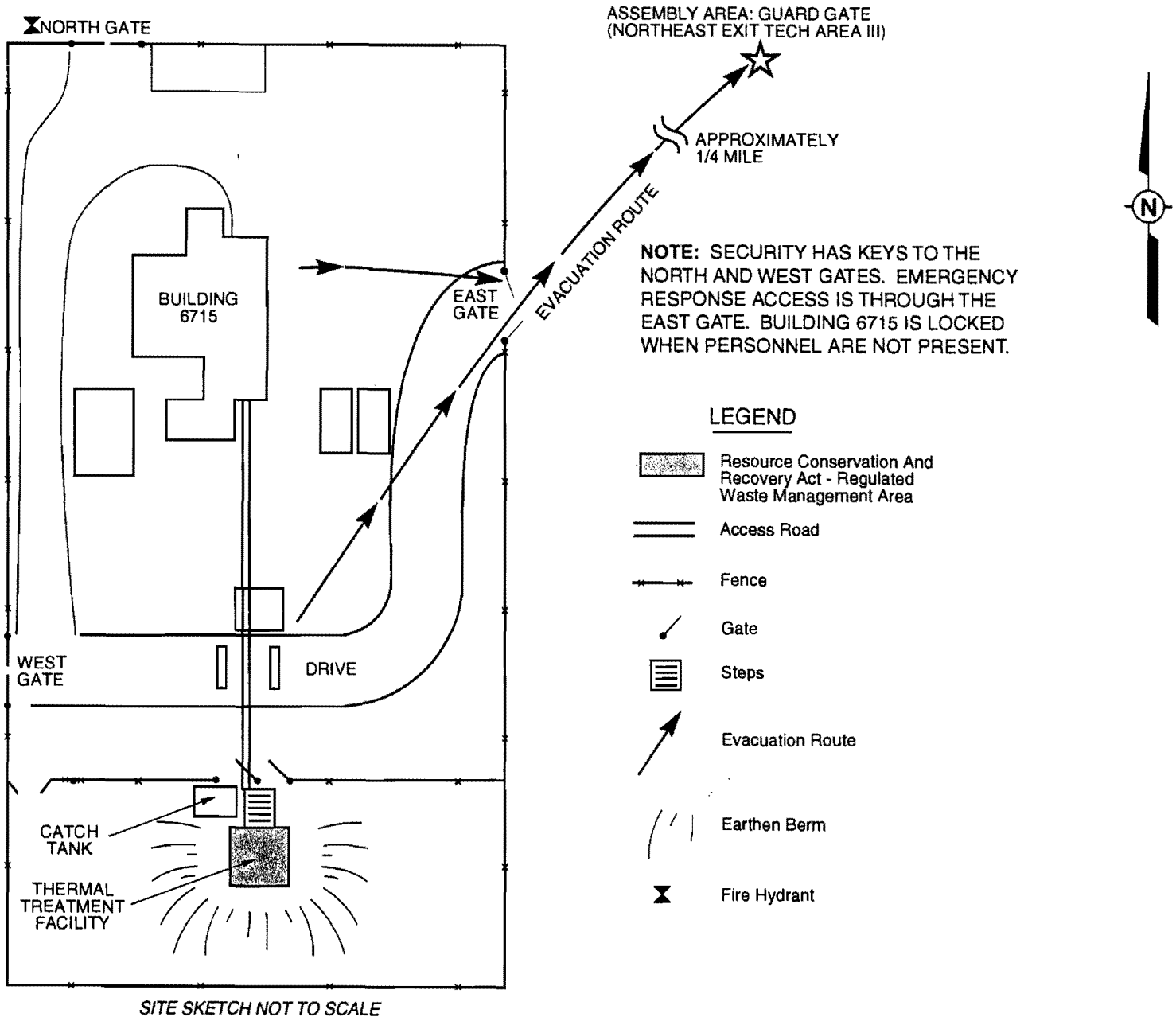


Figure 9
Thermal Treatment Facility, Evacuation Route and Emergency Response and Access Information

Sandia National Laboratories/New Mexico Radioactive and Mixed Waste Management Facility Part B Permit Application

Module III

Revision 2.0

April 2003

Prepared by
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185

Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2XX, Section 2*XX.XX*
CMU	concrete masonry unit
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ft	foot/feet
ft^2	square foot/feet
HSWA	Hazardous and Solid Waste Amendments
in.	inch(es)
lb/ft^2	pound(s) per square foot/feet
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
RMWMF	Radioactive and Mixed Waste Management Facility
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	solid waste management unit
TA	Technical Area
TSDF	treatment, storage, and disposal facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SANDIA NATIONAL LABORATORIES/NEW MEXICO RADIOACTIVE AND MIXED WASTE MANAGEMENT FACILITY PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Radioactive and Mixed Waste Management Facility (RMWMF) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage and treatment operations at the RMWMF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the “Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application,” hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, in the General Part B, and in the appendices to the General Part B meet the applicable requirements for the RMWMF that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00], and 20 NMAC 4.1.900/40 CFR 270 [6-14-00].

Sandia/DOE also prepared the “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0” (SNL/NM, 2003), hereinafter referred to as the SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the SNL/NM General Part B and Unit-specific Part B modules, including this RMWMF Part B Permit Application.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Radioactive and Mixed Waste Management Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The RMWMF occupies 3.11 acres in the southeast corner of Technical Area (TA)-III. It is a fenced compound with several buildings and waste management areas (WMAs). Operations include storage of RCRA-regulated wastes in containers, repackaging wastes, and treating the wastes as needed to render them more suitable for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A may be managed at the RMWMF. Sandia/DOE currently operate the RMWMF under interim status in accordance with the terms of the Part A approved by the New Mexico Environment Department (NMED) (May 2002) and the most recent Part B permit request submitted to NMED (April 16, 2003).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the RMWMF waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B.

Specific information in this section regarding Unit operations includes: containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage of RCRA-regulated wastes. Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/ 40 CFR 264, Subparts I, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [6-14-00].

1.1 Designated Waste Management Areas

The location of the RMWMF at SNL/NM is shown on Figure 1. The location of the RMWMF within TA-III is shown on Figure 2. The RMWMF has six designated WMAs (Figure 3): Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence to the north, east, and west of Building 6920).

In each RMWMF WMA (except where noted), containers holding RCRA-regulated liquid wastes are stored on portable spill pallets and pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives, solvents, and other liquids. The containers of liquids (typically 5- to 55-gallon capacity) are stored on the grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [6-14-00] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3) [6-14-00].

Each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are not stacked on each other on the pallets. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

RCRA-regulated wastes are typically stored inside one of the buildings or inside transportainers in the outdoor storage area. The containers are protected from precipitation by the buildings and transportainers, and by the slope of the asphalt pavement and concrete pads outside the buildings that direct storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(4).

The following sections provide descriptions of the storage structure, location, and capacity of each WMA.

1.1.1 Building 6920

The principal structure at the RMWMF is Building 6920. The floor plan for Building 6920 is presented on Figure 4. The WMAs in Building 6920 include waste staging and storage areas and waste treatment areas. Building 6920 is a single-story concrete and steel structure with a total RCRA-regulated waste management area of approximately 5,000 square feet (ft^2) with a maximum capacity of approximately 13,420 gallons. The floors are 6-inch (in.) reinforced, sealed concrete on compacted subgrade sloped to sumps with no outlets. Walls are 8-in. load-bearing concrete masonry unit (CMU) with prefinished metal building panels in some areas. Nongrouted cells of the 8-in. CMU exterior walls are filled with vermiculite insulation. The staging area at the east end of the building has 14-foot (ft) high reinforced concrete walls. The exterior walls are 2-ft thick, interior walls are 1-ft thick, and the shared wall between the north and south parts of the building is 1.5-ft thick. Inner partitions are 8-in. reinforced CMU.

The roof consists of 24-in. deep steel joists with a 1.5 in. metal deck with 3-in. rigid insulation and a single-ply roof membrane. The roof system is a single-ply fully adhered elastomeric system, installed over rigid insulation with factory-laminated fiberglass-coated skin on both sides, and attached to the deck with metal fasteners. Ceilings are exposed and painted.

Building 6920 consists of two bays (north and south) isolated from each other by an interior airlock at the west end of the building. Waste treatment is performed in certain portions of Building 6920 (Figure 4). There are six exterior personnel doors and four cargo entrances to the building, as well as separate entrances to the exterior mechanical and electrical rooms. The seven personnel doors include: three at the eastern side of the building, one on the northern side, and three at the western side. There is a cargo entrance (i.e., roll-up door) at each end of each bay. Rollup doors enclose the airlocks on the south bay. Both bays in Building 6920 are equipped with secondary containment. The floor in each bay slopes from the doorways toward one or more shallow (6-in.-deep) blind sumps covered with grating. Containers of liquid RCRA-regulated wastes are typically stored over or near the sumps in the south bay. In the north bay and other areas of Building 6920, containers of liquid RCRA-regulated wastes are stored on portable spill pallets and pans covered with grating. Floors, (including the sumps), and the wallsin the WMAs of Building 6920 are sealed with a chemical-resistant epoxy, which withstands degradation by chemical substances and resists wear from forklift traffic. The sumps and pallets meet the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

1.1.2 Building 6921

The Waste Assay Facility (Building 6921) is located east of Building 6920 (Figure 3). The Building 6921 floor plan is presented on Figure 5. Building 6921 is a single-story structure constructed with interior walls of 8-in. CMU and metal studs. The roof is comprised of steel bar joists with metal decking, rigid insulation, and single-ply membrane roofing. The floors are 6-in.-thick concrete slab-on-grade. The floors in the assay area on the south side of the building are sealed with a chemical-resistant epoxy that extends up the walls for 6 in. The total RCRA-regulated waste management area is approximately 1,450 ft^2 with a maximum capacity of approximately 7,810 gallons.

1.1.3 Buildings 6925 and 6926

Buildings 6925 and 6926 are used for storage and some treatment of RCRA-regulated waste at the RMWMF. The floor plans for Buildings 6925 and 6926 are presented on Figure 6. Building 6925 has a total storage area of approximately 4,000 ft^2 with a maximum capacity of approximately 83,160 gallons. Building 6926 also has a total storage area of approximately 4,000 ft^2 with a maximum capacity of approximately 83,160 gallons. Each is a prefabricated steel building erected on a concrete slab floor and foundation. The concrete floors are covered with chemical-resistant epoxy coating. Steel rollup doors are located on the southern wall of each building, on the eastern wall of Building 6925, and on the western wall of Building 6926. Personnel doors are located on the east, south, and west sides of each building.

1.1.4 Modular Storage Buildings (TP150 and TP153)

There are two modular storage buildings located west of Building 6920 that are used for storage of RCRA-regulated reactive and ignitable/flammable wastes (Figure 3).

The exterior dimensions of each modular storage building are 23-ft long, 9-ft wide, and 8.6-ft high. The structures are constructed for a snow loading of 40 pounds per square foot (lb/ft^2), Uniform Building Code seismic Zone 3, and a wind loading with exposure C open area at 110 miles per hour. The walls and roof of each structure are rated for a 2-hour fire. Each building has two 5-ft wide doors, and each door has a single-point locking mechanism with inside safety release. Each building is vented. The inside walls and ceiling of each building are covered with an epoxy coating which is resistant to reactive wastes.

Each modular storage building has a 5.5-inch-deep integral spill containment reservoir under the entire building; the capacity is 650 gallons. The secondary containment capacity is 10% of the stored volume of the contents of the largest container; thus, the storage capacity based on secondary containment is 6500 gallons. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4). The reservoirs are constructed of 10-gauge American Society for Testing and Materials A36 steel and are coated with a chemical-resistant epoxy. The building floors are epoxy-coated steel grating. Each building rests on structural supports that elevate it and allow visual inspections of the underside of the spill containment reservoir. The maximum storage capacity at each building is not based on secondary containment. It is approximately 1,100 gallons.

1.1.5 Outdoor Waste Storage Area

The outdoor waste storage area consists of the asphalt paved areas to the north, east, and west of Building 6920 and within the RMWMF fence (Figure 3). The outdoor waste storage area may be used for containerized RCRA-regulated waste storage. It has an area of approximately 48,500 ft^2 with a total storage capacity of approximately 19,800 gallons. The area is curbed and paved with berms on the east end of the site, and slopes toward the water retention pond. In the event of any releases of liquids in the outdoor storage area, the curbing and berms and the retention pond would capture released liquids, including precipitation so that any contaminants would not exit the site.

Containers of RCRA-regulated wastes are typically stored inside enclosed steel transportainers, which are 10- to 40-cubic-yard transportable containers. A transportainer typically has doors at one end and can be lifted onto a large flatbed truck for transportation.

1.2 Unit Operations

The RMWMF WMAs are used to store and/or treat any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency Hazardous Waste Numbers listed in the SNL/NM General Part A.

Information regarding operation of all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the SNL/NM General Part B. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14 [b][8][ii] and 270.15[a] and [b]; 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Liquid wastes released from individual containers will accumulate in the spill pallets. Unit personnel begin taking action to evaluate and remove accumulated liquids in the spill pallets and sumps (in Building 6920) upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 270.15[d]; and 20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177)

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the RMWMF. Unit personnel employ the practices described in Section 1.1.2 of the SNL/NM General Part B. Additional RMWMF-specific features, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes and typically stored in the modular storage buildings. They may also be stored in Building 6925. Water-reactive wastes are not stored in areas equipped with water sprinklers for fire suppression.

- Forklifts are not used for waste movement near treatment operations involving ignitable or reactive wastes in Building 6920 to minimize potential sources of ignition while containers are or may be open.

- The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. They are equipped with a dry chemical fire suppression system to assure that water-reactive wastes will not be exposed to water during fire emergencies.

- Wastes are mixed together on a very limited basis during the treatment and repackaging operations at the Unit. Ignitable and reactive wastes are treated or mixed on a case-by-

case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences. Personnel use waste characterization data and/or published chemical information (e.g., "NIOSH Pocket Guide to Chemical Hazards" [DHHS, 1994] or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions. Treatment operations are described in Section 8.0 of this module.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas; each row or area containing only compatible wastes.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.5.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the RMWMF.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

General information about fire hydrants is provided in Section 1.1.3.1 of the General Part B. The fire hydrants at the RMWMF are shown in Figure 12.

The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. All buildings at the RMWMF are equipped with automatic fire suppression systems, summarized below:

Information on other required equipment located at the RMWMF is provided in Section 6.0 and Table 2 of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the RMWMF is provided in Appendix C of the SNL/NM General Part B and in Section 4.0 of this module.

Table 1
Fire Suppression Systems at the
Radioactive and Mixed Waste Management Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
6920 (general area)	13	Ordinary/Group 2	Automatic sprinkler, wet pipe	GB/FS
6920 (small rooms)	13	Extra/Group 1	Automatic sprinkler, wet pipe	GB/FS
HEPA filters	15	N/A	Deluge, dry/open	Detection
6921	13	Ordinary/Group 2	Automatic sprinkler, wet pipe	GB/FS
6925	13	Storage	Automatic sprinkler, dry pipe	GB/FS
6926	13	Storage	Automatic sprinkler, dry pipe	GB/FS
TP150	17	N/A	Dry chemical	
TP153	17	N/A	Dry chemical	

[a] National Fire Protection Association (NFPA), 2000, 2002
[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the RMWMF is provided in Section 1.1.3.2 of the SNL/NM General Part B and in Section 6.0 of this module.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the RMWMF to prevent hazards. Additional information applicable to the RMWMF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

RMWMF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B to prevent hazards in unloading. Loading and unloading activities take place on the paved areas, typically immediately outside the buildings. The surface is sloped gently toward shallow drainage ditches, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Drums and other containers of RCRA-regulated waste are typically strapped together on a pallet before being loaded onto vehicles. Containers are typically transported within the Unit with drum dollies or pallet jacks.

Unit personnel typically use the loading dock for loading and unloading wastes from trucks. The ramp on the west side of Building 6926 slopes gently up to the dock, allowing forklift operators to drive onto trailers of trucks parked at the dock. The dock and ramp are in good condition and are covered with a corrugated metal roof to provide protection from weather.

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

The area around the Unit slopes gently toward the west. Sheet-flow run-on of surface water from surrounding areas outside the Unit is prevented from entering the WMAs by several features. The elevated gravel road located outside the east fence of the Unit serves to divert water flowing from areas farther to the east. An 8-in. curb at the east edge of the asphalt pavement and an asphalt-lined drainage swale along the eastern edge of the Unit (inside the fence) divert run-on from the gravel road toward the south away from the Unit. On the south and west sides, the Unit is higher than the surrounding land. On the north side, the Unit and a narrow ledge of land outside the fence are higher than the surrounding land. Thus, run-on from all directions is prevented from entering the Unit.

The asphalt-paved areas within the Unit are surrounded by an 8-inch curb, further preventing run-on and run-off. The outside storage area slopes toward the south and west. The concrete pads outside the doors and the asphalt pavement surrounding Buildings 6920, 6921, 6925, and 6926 all slope away from the doors and toward shallow drainage channels that run between buildings 6920, 6925, and 6926. The channels lead to the synthetic-lined water retention pond at the southwest corner of the Unit, providing controlled drainage of storm water from roof downspouts and the paved areas in the RMWMF into the water retention pond. During normal operations, the water retention pond collects only storm water. The water retention pond does not provide secondary containment for RCRA-regulated waste.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the RMWMF will affect water supplies, as described in Section 1.1.4.3 of the SNL/NM General Part B.

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B. RCRA-regulated waste management activities at the RMWMF will be suspended in response to equipment failures of power outages affecting those WMAs.

The RMWMF is equipped with an auxiliary diesel generator that can provide backup power to Building 6920. The generator maintains containment ventilation, alarm systems, heating equipment, and controls necessary to keep water in pipes from freezing should the main power supply fail.

Equipment and/or power failures at Buildings 6920, 6921, 6925, 6926; the outdoor waste storage area; or the two modular storage buildings will not result in a loss of RCRA-regulated waste containment.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

RMWMF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B to prevent undue exposure. In addition, a negative pressure ventilation system in Building 6920 is provided for the RCRA-regulated waste storage, staging/packaging, and treatment areas. The ventilation air flow from these areas passes through high-efficiency particulate air filters before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

RMWMF personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B to prevent releases to the atmosphere during storage.

Subpart AA

RMWMF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service at the RMWMF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [6-14-00]. The equipment list will be maintained in the RMWMF records. Equipment use will also be noted in the records.

Subpart CC

Unit personnel follow the practices described in Section 1.1.4.6 of the SNL/NM General Part B and maintain compliance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B of the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00].

1.3 Container Storage (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264, Subpart I)

Container storage practices applicable to the RMWMF are presented in the following sections.

1.3.1 Container Types and Labeling

RMWMF personnel use the containers types and labeling practices described in Section 1.2.1 of the SNL/NM General Part B.

1.3.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

RMWMF personnel employ the container handling practices described in Section 1.2.2 of the SNL/NM General Part B.

1.3.2.1 Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)

The condition of containers at the RMWMF is maintained as indicated in Section 1.2.2.1 of the SNL/NM General Part B.

1.3.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

RMWMF personnel employ the aisle space and storage configuration as described in Section 1.2.2.2 of the SNL/NM General Part B. Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

In Buildings 6920, 6921, 6925, and 6926, drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than three pallets high. Box-shaped containers may be stacked three high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are not stacked.

Containers of liquids are not stacked when stored in the modular buildings.

1.3.2.3 Compatibility of Waste with Containers (20 NMAC 4.1.500/40 CFR 264.172)

RMWMF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the SNL/NM General Part B.

1.3.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

RMWMF personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the SNL/NM General Part B before storing containers in areas that are not equipped with secondary containment.

1.4 Treatment Operations

Treatment practices applicable to the RMWMF are presented in Section 8.0 of this module.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of SNL/NM General Part B.

2.1 Security Procedures And Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the RMWMF.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The RMWMF is completely surrounded by an 8-ft-high chain-link and barbed-wire fence. A single personnel entrance door adjacent to the main vehicle entrance gate is located on the south side of the RMWMF. Another personnel entrance door and vehicle gate are located on the north side of the RMWMF. The gates and doors in the RMWMF fence are maintained in closed and locked positions. As noted in Appendix A of the General Part B, Sandia security personnel periodically monitor the RMWMF gates during non-operational hours.

During work hours, RMWMF employees may enter the area through the locked personnel doors by entering the appropriate code into a keypad on the RMWMF fence near each personnel door. Emergency and service vehicles may enter the RMWMF through the electronically-controlled main vehicle gate if RMWMF personnel enter the appropriate code into a keypad

inside the office trailer or on the keypads located near the personnel doors on the RMWMF fence. Signs instruct personnel and visitors to report to the office trailer for site entry privileges and instructions. Resident personnel have Sandia-issued badges. Individuals who do not have a Sandia-issued badge are escorted. These procedures limit access to the RMWMF RCRA-regulated WMAs in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The RMWMF is located inside TA-III (Figures 1 and 2). TA-III is surrounded by a barbed wire fence with designated access gates. TA-III access control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-III.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The permanent perimeter fence surrounding the RMWMF and the entrance to the RMWMF are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, are legible from a distance of 25 ft, and can be seen from any approach to the RMWMF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated waste to the RMWMF include Wyoming Boulevard, Hardin Boulevard (formerly “O” Street), and Pennsylvania Avenue. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved road to TA-III turns southwestward off of Pennsylvania Avenue at a point just over 5 miles south of the Wyoming Boulevard entrance gate as shown on Figure A-4 in Appendix A of the SNL/NM General Part B.

Within TA-III, traffic access to and from the RMWMF is along 2-lane asphalt-paved roads shown on Figure A-6 in Appendix A of the SNL/NM General Part B. Vehicles entering the RMWMF travel on an asphalt-paved 2-lane drive from the road through the south vehicle gate, as shown on Figure 7. Within the RMWMF, waste is transported on asphalt-paved surfaces.

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard and Hardin Boulevard are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Traffic volumes within TA-III are light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Approximately 10 to 30 vehicles per week travel into and out of the RMWMF. These include flatbed trucks and trailers carrying supplies, RCRA-regulated wastes from initial generators, and wastes to off-site TSDFs.

2.2.3 Traffic Control Signals

Vehicles must stop at a gate prior to entering or leaving TA-III. Only authorized personnel are permitted into TA-III. Speed limit signs (i.e., "30 mph Unless Otherwise Posted") are located at several locations in TA-III.

There are no traffic control signals or signs within the RMWMF fenced area. A speed limit sign (i.e., "Max. Speed 5 mph On Site") is posted on the fence adjacent to the RMWMF entrance gate (Figure 7). Vehicle presence within the RMWMF fenced area is limited to official and waste transport vehicles. Therefore, signals or signs are not necessary to control traffic within the RMWMF fenced area.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i] and [ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMAs at the RMWMF are not located within 3,000 ft of any faults with Holocene displacements (see Section A.4.2 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the RMWMF are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).

- Surface waters, including intermittent streams, near the RMWMF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [6-14-00]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [6-14-00]). The area surrounding the RMWMF is occupied by test areas and Sandia-controlled operations (industrial land use).

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).

- Legal boundaries of SNL/NM (including the RMWMF) are shown on Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [6-14-00]).

- Access control features at the RMWMF (e.g., fences, gates) are shown on Figure 8 and 9 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the RMWMF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).

- The location of the RMWMF and associated WMA structures, loading and unloading areas, roads, and sanitary sewers are shown on Figures 8 and 9 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [6-14-00]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 10 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00]).

- Locations of the RMWMF and the RMWMF WMAs are shown on Figures 3 and 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the RMWMF. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to the NMED at these scales and contour intervals due to the size of the RMWMF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of this comprehensive Part B permit request. The RMWMF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the RMWMF likely to affect groundwater quality during normal operations or during unusual events.

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3.0 WASTE ANALYSIS PLAN

Waste analysis requirements applicable to all Units, including the RMWMF, are addressed in Appendix B of the SNL/NM General Part B as required by 20 NMAC 4.1.900/40 CFR 270.14[b][2], 20 NMAC 4.1.500/40 CFR 264.13, “General Waste Analysis.”

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] require that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the “Site-Wide Inspection Plan”, provided as Appendix C of the SNL/NM General Part B. RMWMF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 2, with the inspection criteria and frequency. The items listed in the table are inspected in each RMWMF WMA.

Automatic fire suppression systems are included in Table 2. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems in accordance with the requirements of NFPA 25 “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems” (NFPA,2002), as described in Section 1.1.3.2 of the General Part B.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained at the RMWMF. Inspection records for previous calendar years are maintained at the RMWMF or the SNL/NM Records Center.

Table 2
Radioactive and Mixed Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Eye wash / safety shower	Operational, accessible, in good condition	Monthly
Spill control equipment	Present, accessible, quantities per inventory, in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when wastes are managed. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when wastes are managed. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when wastes are managed. Monthly otherwise.
Treatment area	Good condition, clean, uncluttered, no spills	Daily when wastes are managed. Monthly otherwise.
Treatment equipment	Good condition (i.e., no releases or deterioration); fume hood, drum, and room ventilation flows within established parameters	Daily when wastes are managed. Monthly otherwise.
Monitoring equipment	Instruments in good condition, operational, calibrated	Daily when wastes are managed. Monthly otherwise.

Table 2 (Concluded)
Radioactive and Mixed Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
STORED CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Daily for individual containers that were handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Daily for individual containers that were handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Daily for individual containers that were handled. Weekly otherwise.
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Daily for individual containers that were handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Daily for individual containers that were handled. Weekly otherwise.
Location	Correct aisle space, correct stacking (3 maximum)	Daily for individual containers that were handled. Weekly otherwise.

5.0 PERSONNEL TRAINING

Training Requirements for Unit personnel are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][12] and 20 NMAC 4.1.500/40 CFR 264.16 [6-14-00], “Personnel Training.”

The Sandia/DOE training program is designed and implemented to prepare personnel to safely operate and maintain those areas used for managing RCRA-regulated wastes. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the RMWMF.

RMWMF personnel receive training in accordance with the “Site-Wide Personnel Training Plan,” provided as Appendix D of the SNL/NM General Part B. All job descriptions identified in Appendix D, Table D-2 of the SNL/NM General Part B are applicable at the RMWMF.
Training records for RMWMF personnel are maintained at the RMWMF.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia/DOE Site-Wide Contingency Plan is included in as Appendix E of the SNL/NM General Part B. Supplemental RMWMF-specific information is included in this section, in Figures 11 and 12, and in Tables 3 and 4 of this module. Current copies of the Site-wide Contingency Plan (Appendix E of the SNL/NM General Part B) and this supplemental information are maintained at the RMWMF and at the SNL/NM Emergency Operations Center.

The RMWMF is located in the southeastern corner of TA-III at SNL/NM. It is used for treatment and storage of RCRA–regulated wastes. The RCRA-regulated WMAs at the RMWMF include Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence and north, east, and west of Building 6920). All are surrounded by a fence.

- Building 6920 is a single-story concrete masonry unit (CMU) and steel building with approximately 5,000 square feet of space used for RCRA-regulated storage and treatment activities. Inside the building are two bays (north and south), separated by an interior airlock. The south bay includes four small rooms used for treatment and storage. The building also includes a control room, restrooms, and electrical and mechanical rooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored over a sump in the south bay or on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. RCRA-regulated wastes may be treated by chemical deactivation, macroencapsulation, stabilization, thermal deactivation, or physical treatment. Up to 13,420 gallons of waste may be stored in this building.

- Building 6921 is a single-story CMU building with approximately 1450 square feet of space used for RCRA-regulated storage and treatment activities. The building also includes office space and restrooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. RCRA-regulated wastes may be treated by chemical deactivation, macroencapsulation, stabilization, or physical treatment. Up to 7,810 gallons of waste may be stored in this building.

- Buildings 6925 and 6926 are each 4000-square-foot prefabricated steel buildings on concrete foundations. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are segregated into different areas. The containers and contents may be repackaged into other containers for shipment to off-site facilities. RCRA-regulated wastes may also be treated by chemical deactivation, macroencapsulation, stabilization, and physical treatment. Up to 83,160 gallons of waste may be stored in each building.

- Two modular, prefabricated safety storage structures located west of Building 6920 are used for the storage of reactive and ignitable wastes. Each structure is constructed of 10- and 12-gauge welded steel with supporting structural steel sections, and includes a welded steel containment pan covered by grating. Each structure may contain up to 1,100 gallons of waste.

- The outdoor waste storage area consists of 48,500 square feet of asphalt-paved areas to the north, east, and west of Building 6920 within the RMWMF fence that may be used for storage of containers of RCRA-regulated wastes. Containers of RCRA-regulated wastes are typically stored inside enclosed transportainers. Containers with liquids are stored on portable spill containment pallets inside the transportainers. Up to 19, 800 gallons of wastes may be stored in these areas.

RCRA-regulated wastes bearing the U.S. EPA Hazardous Waste Numbers listed in the SNL/NM General Part A may be stored and/or treated at the RMWMF WMAs, which may be used for RCRA-regulated waste storage and treatment.

Figure 11 presents evacuation routes for the RMWMF. Figure 12 presents emergency response and access information for the RMWMF. Table 3 lists the emergency equipment typically available at the RMWMF. Table 4 lists the emergency coordinators for the RMWMF.

Table 3
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6920

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Eyewash Stations/ Showers	• On north wall in south bay • Near office in north bay
	Absorbent	In hallway between north and south bays
	Miscellaneous PPE (protective suits, goggles, gloves)	In hallway between north and south bays
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southeast corner of south bay • In southwest corner of southwest airlock • By personnel door in west mechanical room • By personnel door on north wall of north bay • By personnel door in entryway west of office
	Audible fire alarms	Located throughout the building

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6920

Category	Description/Capabilities	Location
External Communication System	Telephones	Control room, south and north bays
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southeast corner of south bay • In southwest corner of southwest airlock • By personnel door in west mechanical room • By personnel door on north wall of north bay • By personnel door in entryway west of office
Fire Extinguishers	Portable (A-B-C)	• By personnel door in northeast corner of building • By personnel door in southeast corner of south bay • By personnel door in southwest corner of south bay • In hallway between north and south bays • By personnel door in west mechanical room •
	Portable (D)	In northwest corner of north bay
	Portable (A-B-C)(D)	By personnel door on north wall of north bay
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

PPE personal protective equipment
KAFB Kirtland Air Force Base

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6921

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Eyewash Station/Shower	On north wall of assay area
	Absorbent	By north wall of assay area
	Miscellaneous PPE (protective suits, goggles, gloves)	By north wall of assay area
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in electrical/mechanical room • In central hallway outside restrooms • In northwest corner of assay area • By east personnel door in southeast counting room • By east personnel door in middle east office area
	Audible fire alarms	Located throughout the building
External Communication System	Telephones	Office and lab areas
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in electrical/mechanical room • In central hallway outside restrooms • In northwest corner of assay area • By east personnel door in southeast counting room • By east personnel door in middle east office area
Fire Extinguishers	Portable (A-B-C)	• By north personnel door in electrical/mechanical room • In hallway between assay area and north office area • By northwest personnel door of assay area • By east personnel door in southeast counting room
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

PPE personal protective equipment
KAFB Kirtland Air Force Base

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6925

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Portable Eyewash	By personnel door near center of south wall
	Absorbent	By personnel door near center of south wall
	Miscellaneous PPE (protective suits, goggles, gloves)	By personnel door near center of south wall
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southwest corner of building • By personnel door near center of south wall
	Audible fire alarms	Located on east and west wall
External Communication System	Telephone	By personnel door in southwest corner of building
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southwest corner of building • By personnel door near center of south wall
Fire Extinguishers	Portable (A-B-C)	• By personnel door in northeast corner of building • By personnel door in southwest corner of building
	Portable (A-B-C)(D)	By personnel door near center of south wall
Fire Suppression	Automatic dry-pipe sprinkler system with heat-actuated sprinklers	Sprinklers located throughout building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

PPE personal protective equipment
KAFB Kirtland Air Force Base

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6926

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Eyewash Station/Shower	In southeast area of building
	Absorbent	In southeast area of building
	Miscellaneous PPE (protective suits, goggles, gloves)	In southeast area of building
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door on west wall of building • By personnel door on south wall of building
	Audible fire alarms	Located on east wall and west wall
External Communication System	Telephone	In southeast area of building
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door on west wall of building • By personnel door on south wall of building
Fire Extinguishers	Portable (A-B-C)	• By personnel door in northeast corner of building • By personnel door on west wall of building
	Portable (A-B-C)(D)	By personnel door on south wall of building
Fire Suppression	Automatic dry-pipe sprinkler system with heat-actuated sprinklers	Sprinklers located throughout building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

PPE personal protective equipment
KAFB Kirtland Air Force Base

Table 3 (Concluded)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Modular Storage Buildings

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Absorbent	Buildings 6920 and 6926
	Miscellaneous PPE (protective suits, goggles, gloves)	Buildings 6920 and 6926
Internal Communication and Alarm System	Voice command	
	Portable 2-way radio	Operating personnel typically carry radios
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)	Buildings 6920, 6921, 6925, and 6926
	Audible fire alarms	
External Communication System	Telephones	Buildings 6920 and 6926
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)	Buildings 6920, 6921, 6925, and 6926
Fire Suppression	Automatic dry chemical system	Coverage throughout the building

PPE personal protective equipment
KAFB Kirtland Air Force Base

Table 4
Radioactive and Mixed Waste Management Facility,
Emergency Coordinator List

April 16, 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Jeff Jarry Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3080 (office) (505) 561-1138 (pager)	(505) 452-3337
First Alternate	Mike Spoerner Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2813 (office) (505) 540-5296 (pager)	(505) 828-3441
Second Alternate	Phil Zelle Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2486 (office) (505) 540-7437 (pager)	(505) 292-5097
Third Alternate	Mary Ann Krauss Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-9997 (office) (505) 540-5228 (pager)	(505) 299-0793

One or more of these personnel are routinely available during operating hours (7:00 am to 5:30 pm, Monday through Thursday).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13] and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I [6-14-00]. General closure information applicable to all RCRA-regulated Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B. The site-wide Closure Plan includes a description of the SNL/NM facility; waste description; closure performance standards, closure methods; sampling and analysis plan; closure schedule; procedures for amendment of the Closure Plan, closure certification and report, survey plat, and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The Radioactive and Mixed Waste Management Facility (RMWMF) is located in the southeastern corner of TA-III at SNL/NM. It is used for treatment and storage of RCRA–regulated wastes. The RCRA-regulated WMAs at the RMWMF include Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence and north, east, and west of Building 6920).

- Building 6920 is a single-story concrete masonry unit (CMU) and steel building with approximately 5,000 square feet of space used for RCRA-regulated storage and treatment activities. Inside the building are two bays (north and south), separated by an interior airlock. The south bay includes four small rooms used for treatment and storage. The building also includes a control room, restrooms, and electrical and mechanical rooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored over a sump in the south bay or on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. Contents may also be treated by chemical deactivation, macroencapsulation, stabilization, thermal deactivation, or mechanical processing.

- Building 6921 is a single-story CMU building with approximately 1450 square feet of space used for RCRA-regulated storage and treatment activities. The building also includes office space and restrooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. Contents may also be treated by chemical deactivation, macroencapsulation, or stabilization.

- Buildings 6925 and 6926 are each 4000-square-foot prefabricated steel buildings on concrete foundations. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are segregated into different areas. The containers and contents may be repackaged into other containers for shipment to off-site facilities.

- Two modular, prefabricated safety storage structures located west of Building 6920 are used for the storage of reactive and ignitable wastes. Each structure is constructed of 10- and 12-gauge welded steel with supporting structural steel sections, and includes a welded steel containment pan covered by grating.

- The outdoor waste storage area consists of 48,500 square feet of asphalt-paved areas to the north, east, and west of Building 6920 within the RMWMF fence that may be used for storage of containers of RCRA-regulated wastes. Containers of RCRA-regulated wastes are typically stored inside enclosed transportainers. Containers with liquids are stored on portable spill containment pallets inside the transportainers

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total inventory of RCRA-regulated waste in storage and/or treatment at any time at the RMWMF is estimated at approximately 209,550 gallons of liquids and/or solids. The maximum total waste inventory is broken down as follows:

- Building 6920: 13,420 gallons
- Building 6921: 7,810 gallons
- Building 6925: 83,160 gallons
- Building 6926: 83,160 gallons
- Modular storage building: 1,100 gallons
- Modular storage building: 1,100 gallons
- Outdoor waste storage areas: 19,800 gallons

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 in Appendix F of the SNL/NM General Part B, closure activities specified in this plan assume the following conditions were met during the operational life of the RMWMF:

- RCRA-regulated waste handling and treatment activities involving the opening of waste containers were confined to the RMWMF RCRA-regulated WMAs. If contamination occurred, it would have been confined to those areas; and

- The interior walls and floors of WMAs were maintained to retain their integrity by following established maintenance and inspection procedures and breaches of protective coatings did not occur.

7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan in Appendix F provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an

estimated date of closure for the RMWMF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the RMWMF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan in Appendix F presents sample collection equipment and techniques applicable to all RCRA-regulated Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the RMWMF. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the RMWMF.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan in Appendix F presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the RMWMF.

8.0 TREATMENT PLAN

Treatment operations for RCRA-regulated wastes treated at the RMWMF are described in this section.

The following treatment technologies may be used to treat RCRA-regulated wastes at the RMWMF:

- Chemical deactivation,
- Macroencapsulation,
- Physical treatment,
- Stabilization, and
- Thermal deactivation.

Treatment at the RMWMF may occur in Buildings 6920, 6921, 6925, and 6926. Treatment will be conducted in containers; therefore, it is not subject to the miscellaneous unit and environmental performance standards in 20 NMAC 4.1.500/40 CFR 264, Subpart X [6-14-00]. Treatment effectiveness for each waste stream is discussed in Section 8.2.

8.1 Treatment Operations

Waste treatment is performed at the RMWMF to meet land disposal restrictions (LDRs); allow for the safe storage of the waste; or to meet treatment, storage, or disposal facility (TSDF) requirements. Each type of treatment will be performed on batches of 500 pounds of waste or less. Liquid wastes will be treated in batches of 60 gallons or less.

Waste treatment may generate secondary waste streams (treatment residues). RCRA-regulated treatment residues may undergo additional on-site treatment to meet LDRs and/or be sent to an appropriate off-site TSDF.

The waste treatment processes described in this section are effective in addressing RCRA-regulated characteristics in RCRA-regulated wastes, including the following:

- Solid items exhibiting the RCRA-regulated characteristics of ignitability or reactivity may be chemically or thermally deactivated to eliminate the characteristic.

- Debris containing RCRA-regulated constituents (excluding elemental and high mercury subcategories defined in 20 NMAC 4.1.800/40 CFR 268) may be macroencapsulated to reduce or eliminate the leaching potential.

- Liquid waste exhibiting the characteristics of ignitability, corrosivity, and/or reactivity may be chemically or thermally deactivated to remove the RCRA-regulated characteristic(s).

- Liquid waste containing toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) may be stabilized to reduce or eliminate the leaching potential.

- Reactive (explosive) wastes may be treated using thermal deactivation techniques.
- Elemental mercury may undergo amalgamation to reduce or eliminate the leaching potential.

In accordance with LDRs, the following are managed as RCRA-regulated waste: treatment residue derived from the treatment of listed RCRA-regulated wastes, treated waste containing listed RCRA-regulated waste, and treated waste which continues to exhibit RCRA-regulated waste characteristics and/or does not meet treatment standards for underlying hazardous constituents.

Each waste treatment technology or process listed above is described in the following sections.

8.1.1 Chemical Deactivation

Sandia/DOE perform chemical deactivation in containers at the RMWMF. Chemical deactivation refers to a number of chemical processes that can eliminate the RCRA-regulated waste characteristics of ignitability, corrosivity, and/or reactivity. Deactivation can be accomplished by several technologies (e.g., neutralization, chemical oxidation, or stabilization). However, the intent of this section is to identify and describe specific methods or treatment trains which may be used at the RMWMF to deactivate ignitable wastes defined in 20 NMAC 4.1.200/40 CFR 261.21(a)(2) and (4) [6-14-00], corrosive and reactive wastes defined in 20 NMAC 4.1.200/40 CFR 261.23 [6-14-00]. Deactivation may or may not result in a final waste form, depending on the process, and may be used as the first in a series of treatment steps.

Deactivation processes are conducted under carefully controlled conditions so that RCRA-regulated waste with the characteristic of reactivity is allowed to react in a slow, nonviolent manner. Allowing the reactive potential of the waste to be dissipated in this manner reduces or eliminates the reactive characteristic of the waste. Hydrides, deuterides, and tritides are deactivated by slow addition to an ice water bath. Deactivation of water reactive metals such as elemental sodium and lithium involves the slow and controlled addition of an appropriate alcohol/water solution. Alcohol/water addition is maintained until the water reactive potential of the waste has been eliminated. Deactivation of pyrophoric metal powders and particulates may be achieved by mixing waste in a portland cement matrix. Deactivation of reactive wastes is typically conducted in small batches under laboratory conditions such that process control can be easily maintained.

Chemical deactivation to remove the characteristic of corrosivity is the process of removing excess acidity or alkalinity from a liquid waste. Other uses may include pH adjustment to facilitate subsequent treatment; such pretreatment through deactivation may be necessary to prevent corrosive damage to equipment, deter undesirable reactions, and preclude the formation of unwanted byproducts.

Reagents added to achieve a desired pH are combined with liquid waste inside a mixing vessel or directly in the waste container. Common deactivating reagents include, but are not limited to, caustic soda, lime, phosphine, calcium or sodium carbonate, sodium hydroxide, and limestone for acid wastes; and hydrochloric, phosphoric, or nitric acids for alkaline wastes. The selection

of reagents is dependent on the quantity of reagent required, cost, availability, and the potential byproduct(s).

8.1.2 Macroencapsulation

Sandia/DOE perform macroencapsulation in containers at the RMWMF. Macroencapsulation is generally applicable to debris, whereas stabilization (see Section 8.1.4) is generally applicable to liquids, sludges, and particulate-type wastes. Macroencapsulation is the process of encasing waste within a polymer coating or concrete. The primary use of macroencapsulation is to immobilize wastes such as debris-type solids containing RCRA-regulated constituents by surrounding the waste material with a leach-resistant coating.

Performing macroencapsulation involves coating waste with polymer agents within a mold or encasing the waste in concrete. Polymers typically used for macroencapsulation include, but are not limited to, asphalt, polyethylene, thermosetting plastics, and resins that can be polymerized under ambient temperatures in the presence of a catalyst. Equipment used for macroencapsulation may include molds, polymer extrusion equipment, and resin mixing equipment. In-drum macroencapsulation may also be performed with the drum acting as the mold. Temperature control of polymer macroencapsulation processes is critical and carefully maintained to assure that adequate coating occurs.

8.1.3 Physical Treatment

Sandia/DOE perform physical treatment (volume reduction through separation) at the RMWMF. The treatment consists of reducing waste volume by using tools to separate items with RCRA-regulated constituents from larger items. In some cases, the RCRA-regulated waste item may undergo further treatment in containers. Physical treatment also includes puncturing aerosol cans within a container to allow recovery of the contents.

8.1.4 Stabilization

Sandia/DOE perform stabilization in containers at the RMWMF. Stabilization is a process of binding RCRA-regulated metals so that the metals become chemically part of the matrix or are physically bound within the matrix. The primary use of stabilization is to immobilize toxicity characteristic metals but many stabilization agents also eliminate free liquids. Typical waste forms suitable for stabilization include liquids, soils, and particulate-type wastes.

Process equipment for mixing waste and binder materials depends on the type of reagents used and the volume of waste to be treated. In-drum mixing is typically used for large volume waste streams. Once waste and binder have been thoroughly mixed and placed in a container, the mass is allowed to cure and/or set. Smaller batches may be mixed by hand and allowed to cure in smaller containers.

Development of appropriate formulas is waste specific. Stabilization agents for toxic metals may include portland cement, pozzolanic, thermoplastics, organic polymers, and clays. However, other waste forms may require proprietary reagents that are available for specific

applications. Additional reagents may be added to reduce contaminant leachability, reduce cure and/or set time, and increase strength.

Waste characteristics that are important to the success of the stabilization process for liquids may include volume percent of water, oil, solvents, or other organics; pH; and RCRA-regulated waste constituents. Waste characterization data are used to determine whether the waste is amenable to stabilization, any necessary pretreatment requirements, and the appropriate binding agent.

Once stabilization is selected, the binding agent is identified based on chemical compatibility with the waste form and contaminants present. Pretreatment may be required to assure compatibility between the waste and the binding agent (e.g., neutralization of liquid wastes to an acceptable pH range of 5.0 to 11.0). Once the proper binding agent(s) have been identified, bench-scale testing is performed to determine optimum amounts of each agent. In the case of low volume waste streams (e.g., less than approximately 0.26 gallons), bench-scale testing may not be practical and treatment is performed without bench-scale testing using the manufacturer's suggested quantities or by estimating binding agent quantities from previous experience. The stabilization process is performed by combining the predetermined quantities of binding agent(s) with the waste and thoroughly mixing, if appropriate. The resulting mixture is staged to allow an appropriate cure time.

8.1.5 Thermal Deactivation

Sandia/DOE perform thermal deactivation of static-sensitive explosive and explosive components in a Sandia-designed and tested portable deactivation device that meets the definition of a container in 20 NMAC 4.1.100/40 CFR 260.10. The device is a thick-walled stainless steel vacuum apparatus equipped with a heated plate and sensors to measure temperature and pressure. The explosive deactivation device was designed to contain a detonation of 25 grams TNT-equivalents of explosive waste.

Explosive waste is placed into the cold unit, the unit is sealed and filled with an inert atmosphere (e.g., nitrogen), and the temperature of the heated plate is slowly raised until reaching a temperature at which the explosive being treated decomposes. The unit is then cooled and decomposition gases are vented to a chemical fume hood with a high-efficiency particulate air filtration system.

8.1.6 Amalgamation

Sandia/DOE perform amalgamation of small quantities of elemental mercury in containers at the RMWMF. The amalgamation process for liquid elemental mercury involves mixing liquid mercury waste with a powdered base metal. The amalgamation process immobilizes elemental mercury into a solid leach-resistant form that has minimal potential for emission of mercury vapor.

The two important operating parameters for effective treatment are: (1) the ratio of base metal to mercury, and (2) the efficiency of mixing. Copper or zinc are typically used as base metals, but tin, nickel, gold, and sulfur may also be used. The base metal may be pretreated with acid to improve the effectiveness of the amalgamation reaction. For the small quantities of mercury

that will be treated at the RMWMF, hand mixing the mercury and base metal using a mortar and pestle is sufficient to create an amalgam with uniform properties.

8.1.7 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

RMWMF personnel employ the practices described in Section 8.2 of the General Part B to prevent releases to the atmosphere during treatment.

Subpart AA

The RMWMF treatment operations do not employ processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA.

Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service at the RMWMF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [6-14-00]. The equipment location will be noted in the RMWMF records. Equipment use will also be noted in the records.

Subpart CC

Unit personnel follow the practices described in Section 8.2 of the SNL/NM General Part B. Unit personnel do not perform any treatment subject to Container Level 3 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]).

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00].

8.2 Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

As required in 20 NMAC 4.1.900/40 CFR 270.23(d) [6-14-00], treatment effectiveness considerations and demonstrations are provided for the treatment technologies used or proposed for use at the RMWMF. Treatment effectiveness will be verified through evaluation of the treated waste in accordance with Appendix B (Section B.3.3.2) of the SNL/NM General Part B.

9.0 REFERENCES

DHHS, see US Department of Human Health Services

National Fire Protection Association (NFPA), 2001, "Standard for Water Spray Fixed Systems for Fire Protection", NFPA 15, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, “Standard for the Installation of Sprinkler Systems,” NFPA 13, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, “ Standard for Dry Chemical Extinguishing Systems,” NFPA 17, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems,” NFPA 25, National Fire Protection Association, Quincy, Massachusetts.

NFPA, see National Fire Protection Association

Sandia National Laboratories/New Mexico (SNL/NM), 2003, “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application,” Revision 5.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico.

U.S. Department of Health and Human Services (DHHS), 1994. “NIOSH Pocket Guide to Chemical Hazards”, National Institute for Occupational Safety and Health.

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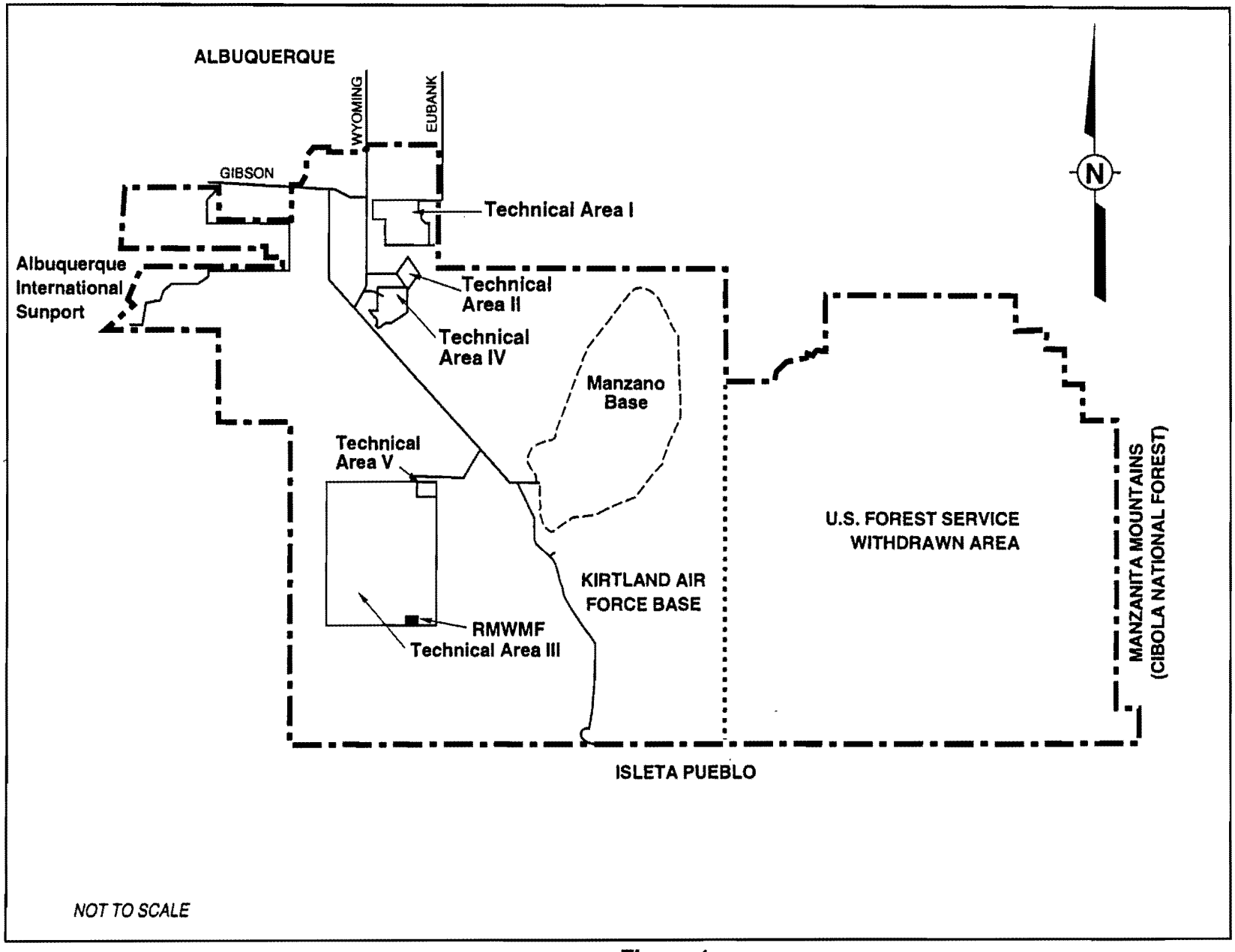

Figure 1
Location Map of the Radioactive and Mixed Waste Management Facility (RMWMF) at Sandia National Laboratories/New Mexico

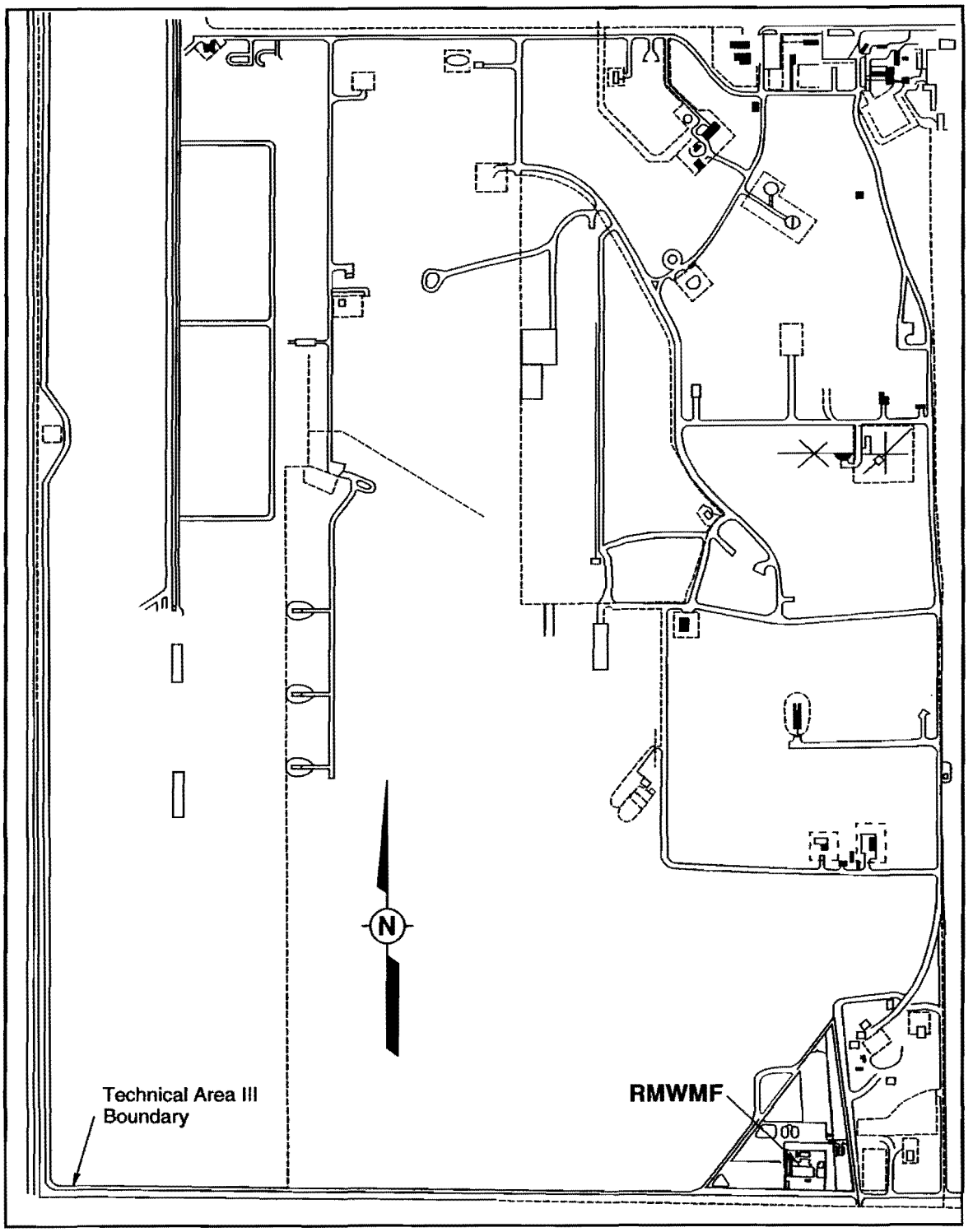

Figure 2
Location of the Radioactive and Mixed Waste Management Facility (RMWMF) in Technical Area III

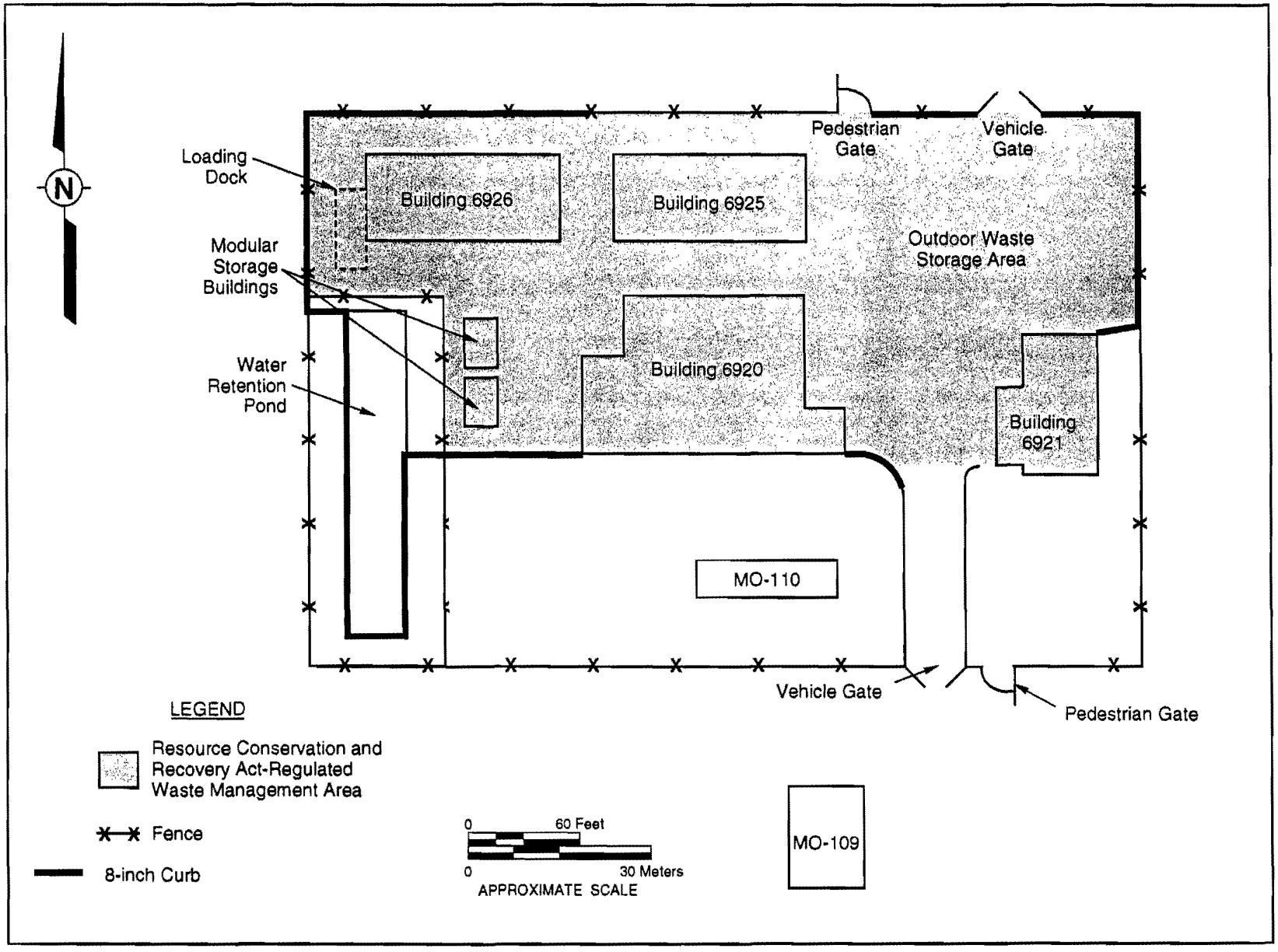

Figure 3
Radioactive and Mixed Waste Management Facility (RMWMF), Unit Layout

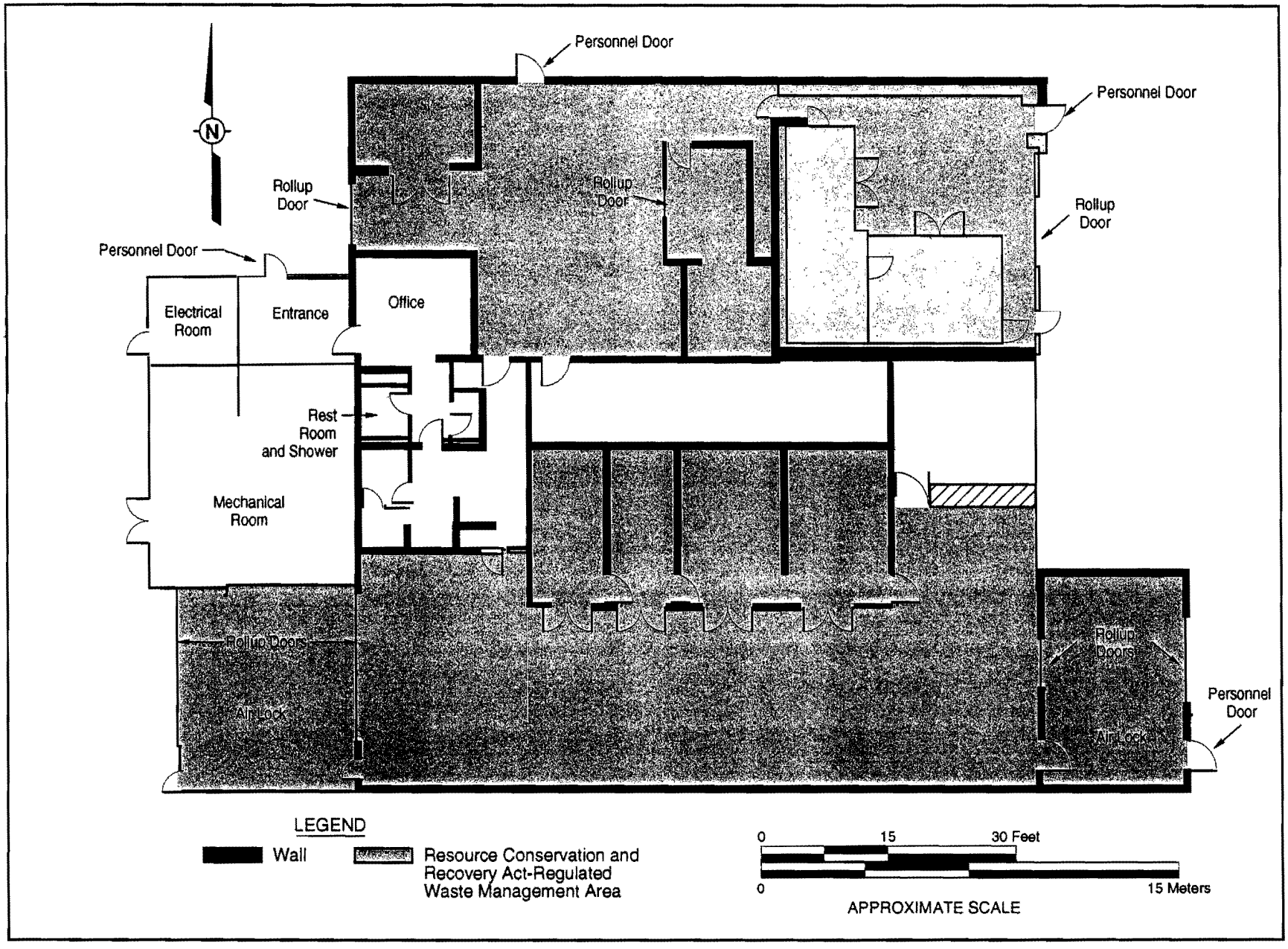

Figure 4
Radioactive and Mixed Waste Management Facility, Building 6920, Resource Conservation and Recovery Act-Regulated Waste Management Areas

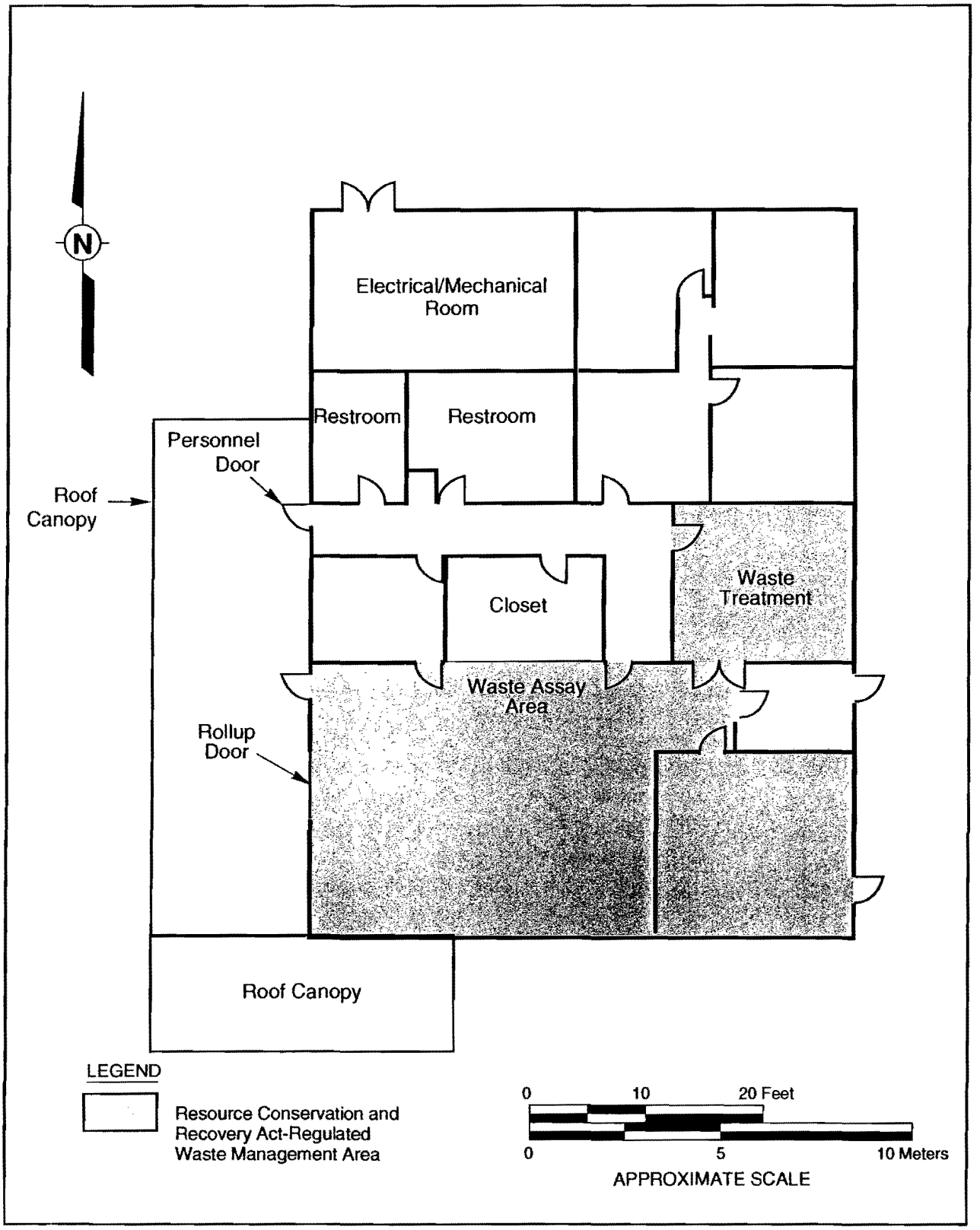

Figure 5
Radioactive and Mixed Waste Management Facility, Building 6921, Resource Conservation and Recovery Act-Regulated Waste Management Areas

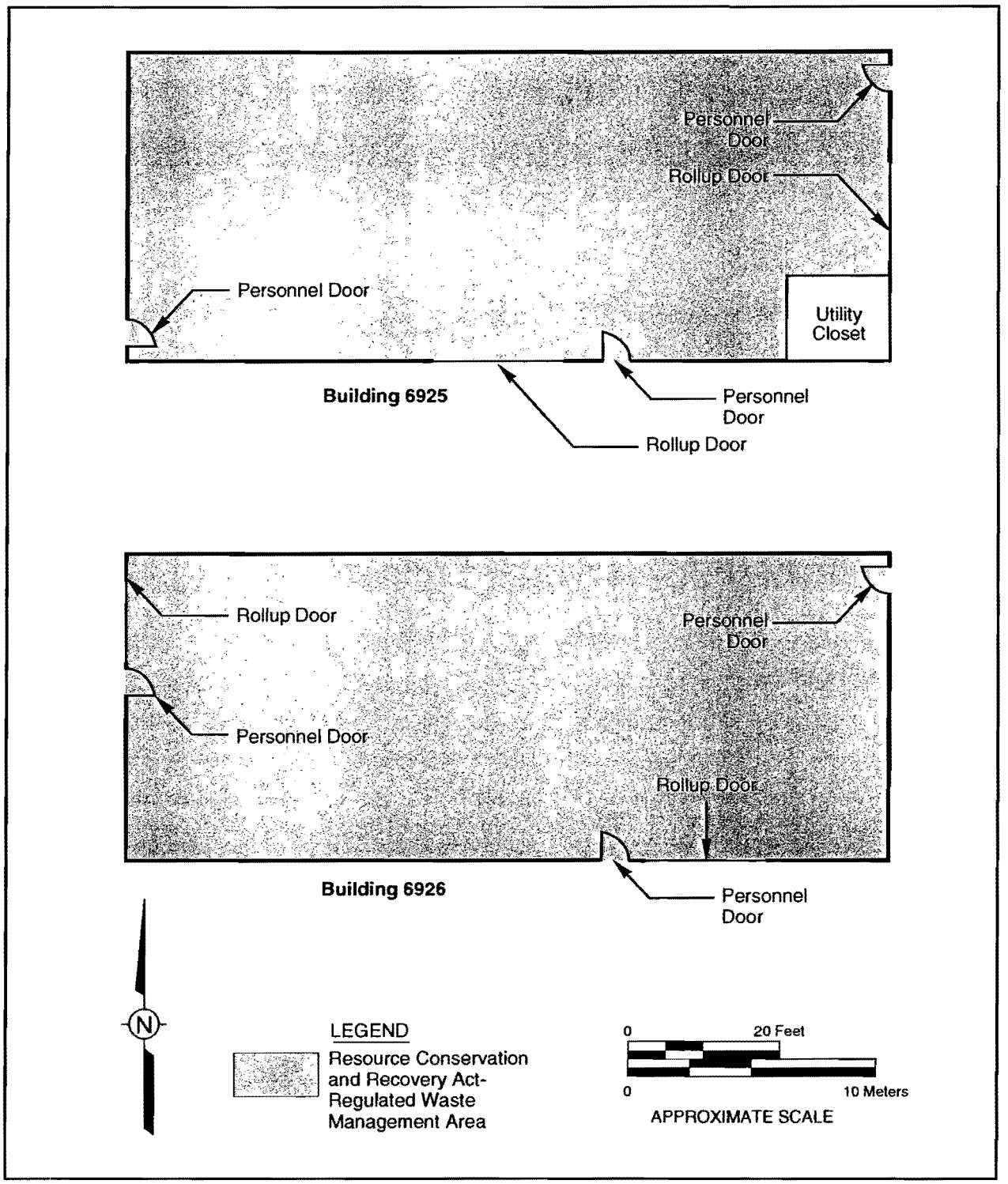

Figure 6

Radioactive and Mixed Waste Management Facility Compound, Buildings 6925 and 6926, Resource Conservation and Recovery Act-Regulated Waste Management Areas

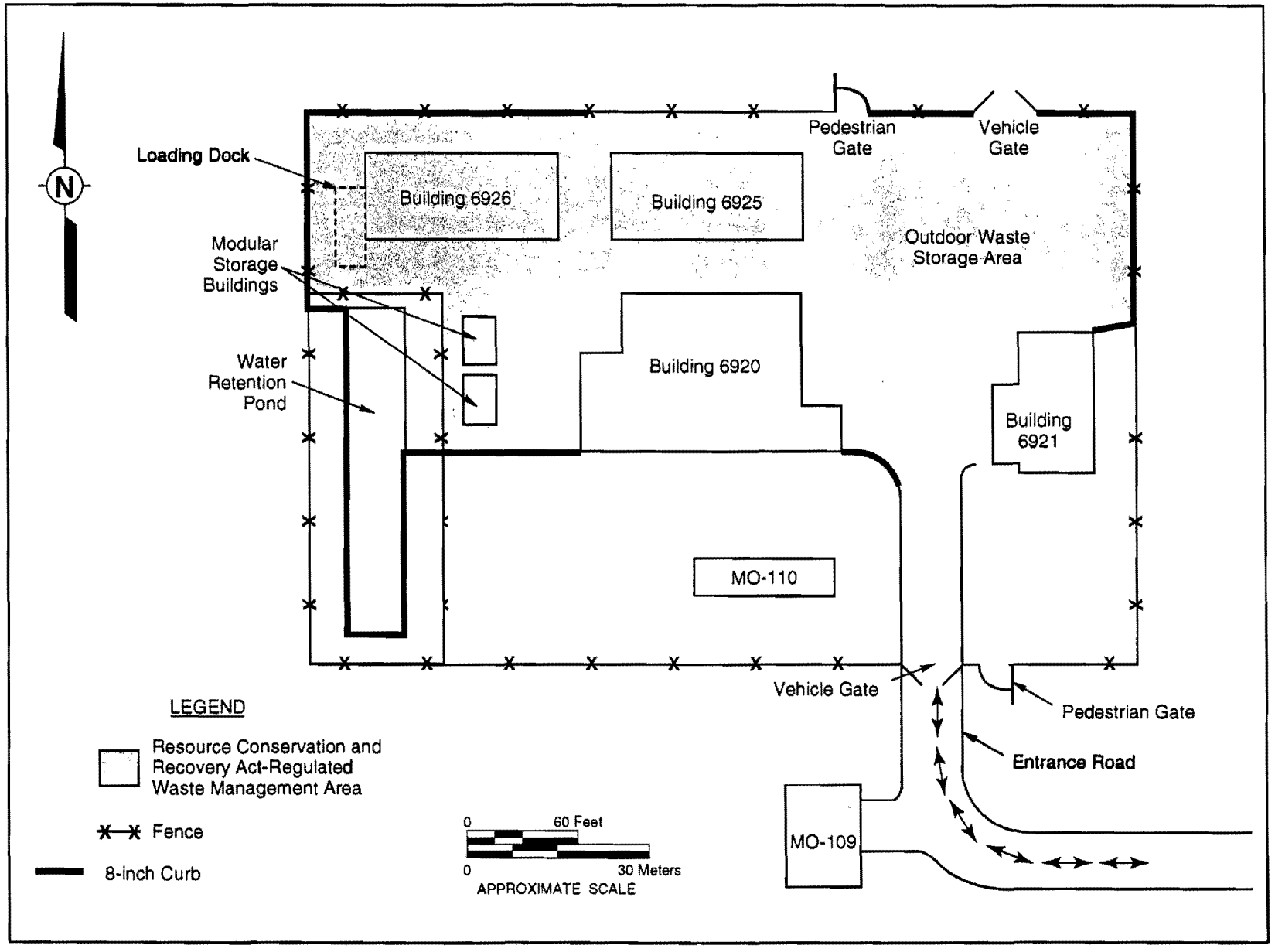

Figure 7

Radioactive and Mixed Waste Management Facility, Traffic Route and Controls

TO VIEW THE MAP/MAPS ASSOCIATED WITH THIS DOCUMENT PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

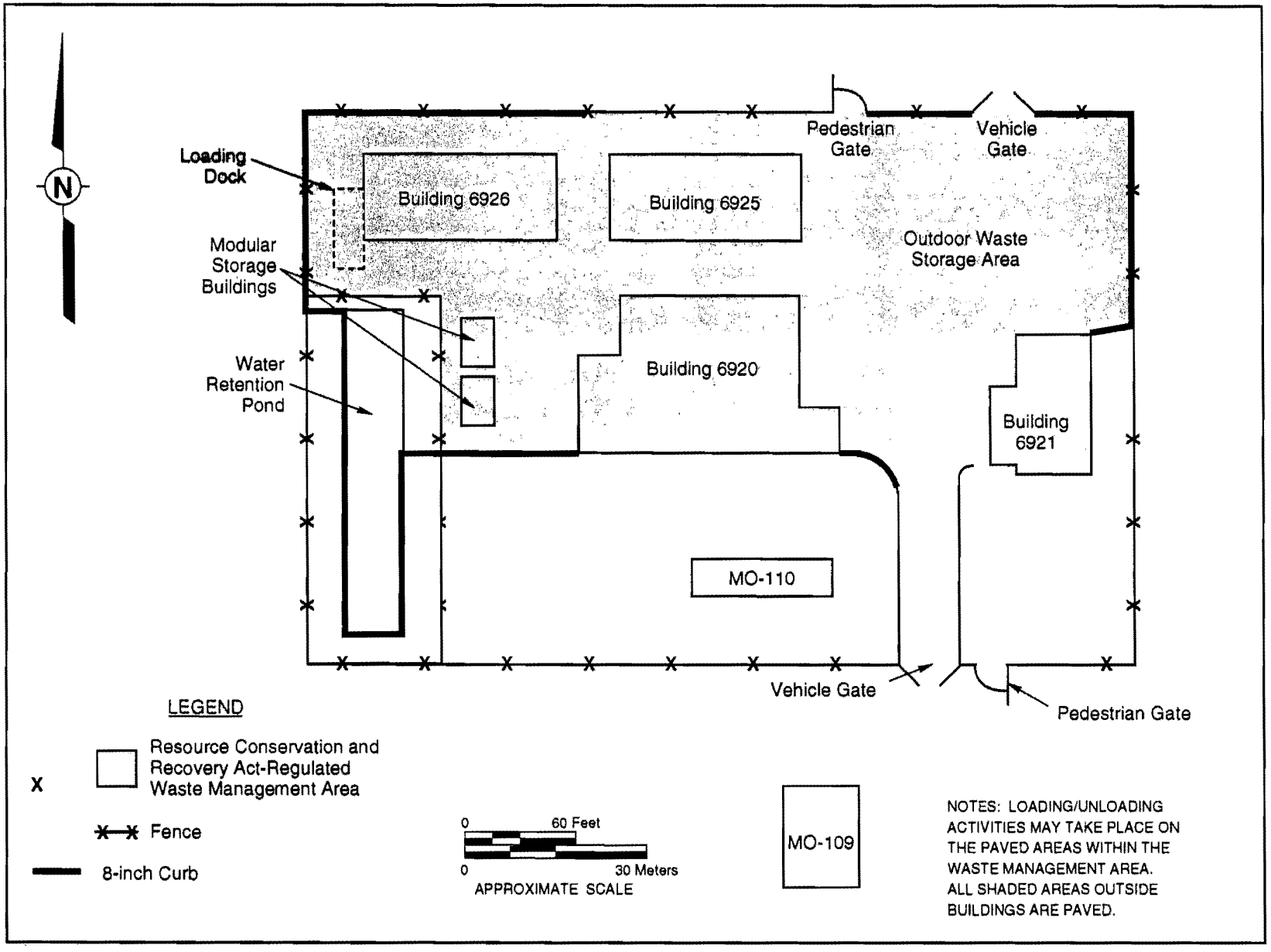

Figure 9

Radioactive and Mixed Waste Management Facility, Access Control Features

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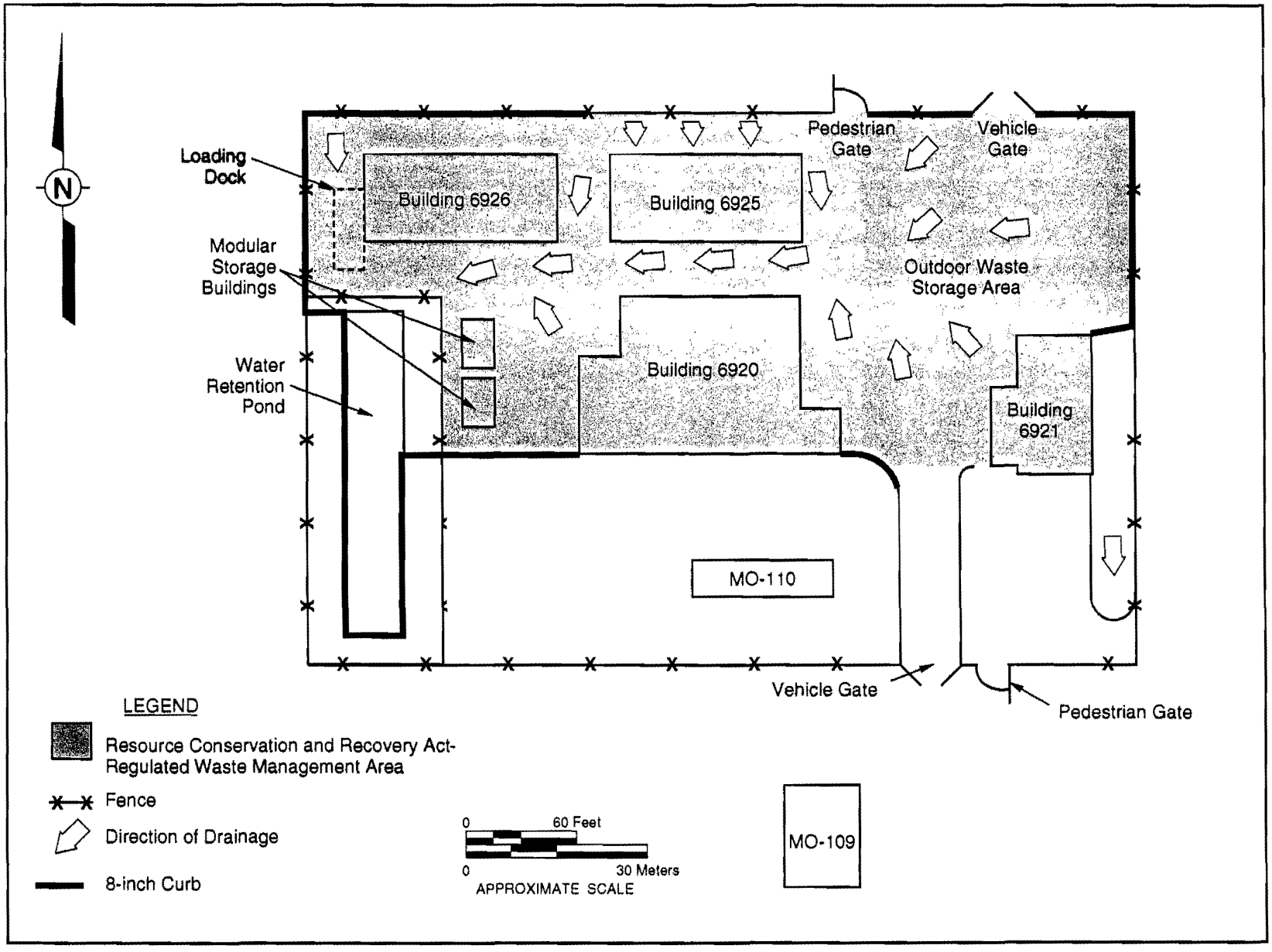

Figure 10

Radioactive and Mixed Waste Management Facility, Drainage Control Features

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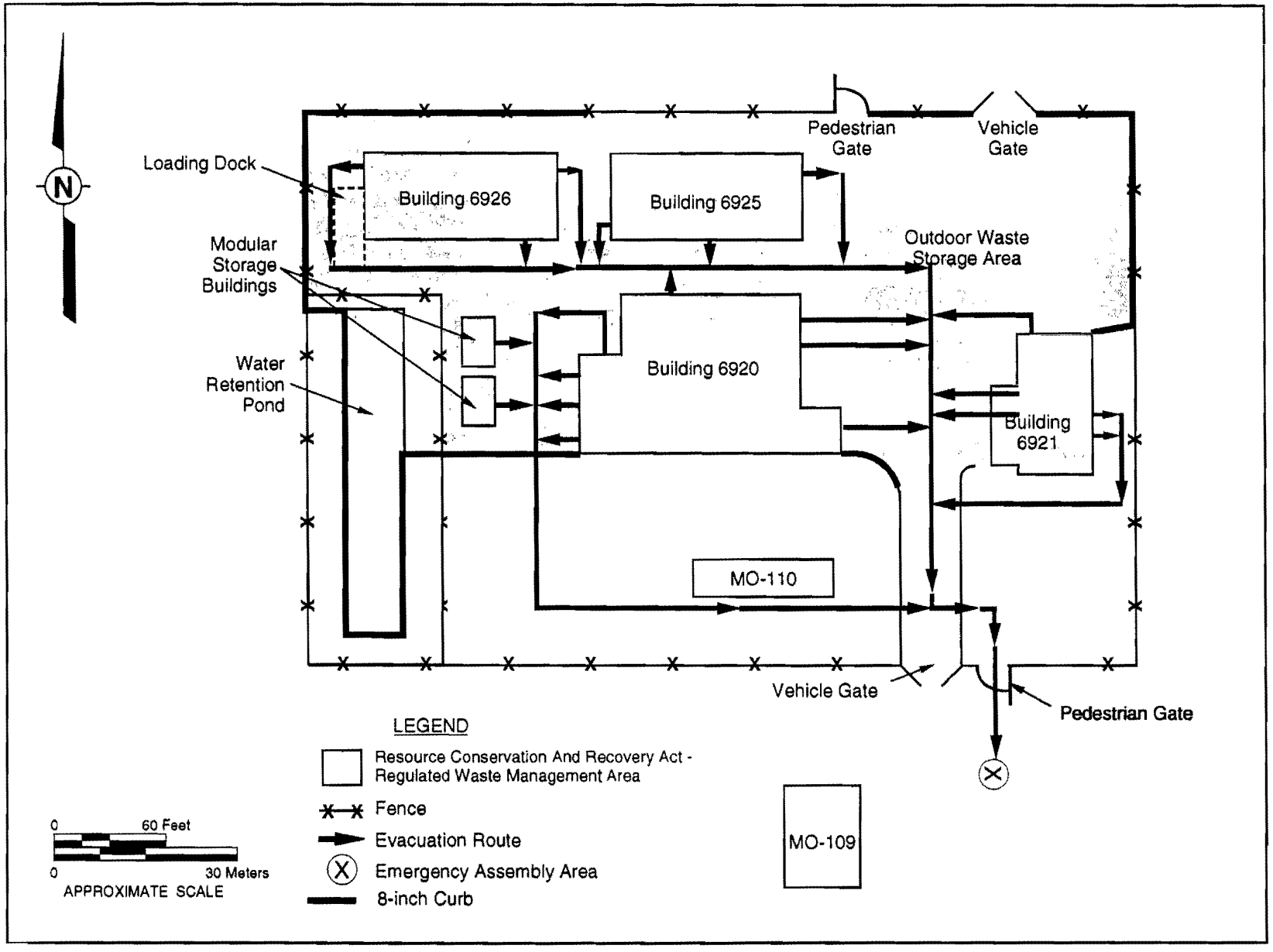

Figure 11

Radioactive and Mixed Waste Management Facility, Evacuation Routes

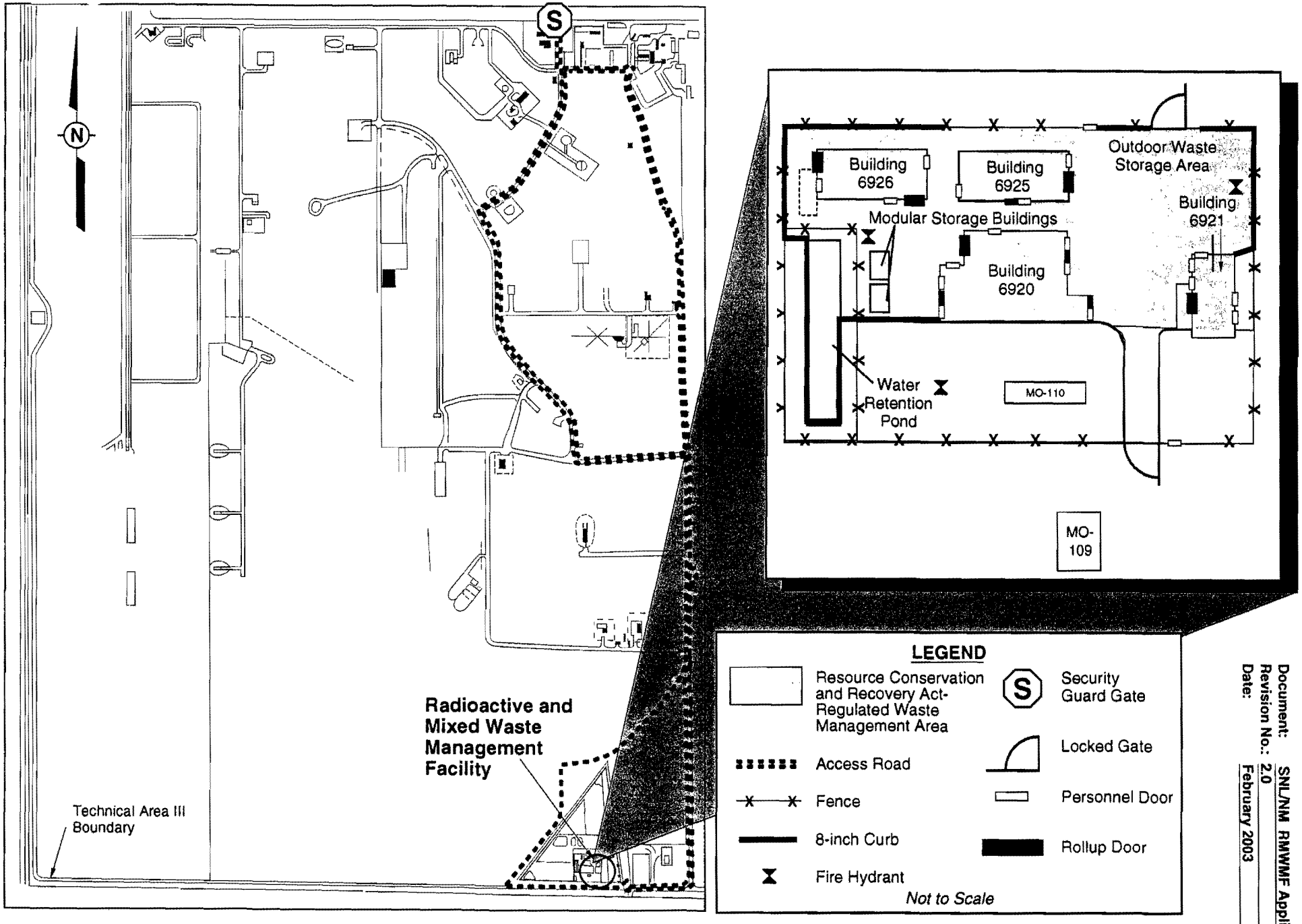

Figure 12

Radioactive and Mixed Waste Management Facility, Emergency Response and Access Information

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Sandia National Laboratories/New Mexico

Module IV
Reserved

April 2003

Prepared by
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Prepared for
The U.S. Department of Energy

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Sandia National Laboratories/New Mexico
Auxiliary Hot Cell Facility
Part B Permit Application

Module V

Revision 2.0

April 2003

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Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
AHCF	Auxiliary Hot Cell Facility
DOE	U.S. Department of Energy
ft	foot/feet
HEPA	high-efficiency particulate air
HSWA	Hazardous and Solid Waste Amendments
ID	inner diameter
in.	inch(es)
m^3	cubic meter
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	solid waste management unit
TA	technical area
TSDF	treatment, storage, and disposal facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SANDIA NATIONAL LABORATORIES/NEW MEXICO
AUXILIARY HOT CELL FACILITY
PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Auxiliary Hot Cell Facility (AHCF) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage and treatment operations at the AHCF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application", hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, in the SNL/NM General Part B, and in appendices to the General Part B meet the applicable requirements for the AHCF that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00] and 20 NMAC 4.1.900/ 40 CFR 270 [6-14-00].

Sandia/DOE also prepared a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" (SNL/NM, 2003), hereinafter referred to as the SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The SNL/NM General Part A serves as a companion document to the General Part B and Unit-specific Part B modules, including this AHCF Part B Permit Application.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Auxiliary Hot Cell Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The AHCF occupies 5578 square feet in Building 6597 in Technical Area (TA)-V. Operations include storage of RCRA-regulated wastes in containers, repackaging wastes, and treating the wastes as needed to render them more suitable for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A may be managed at the AHCF. Sandia/DOE currently operate the AHCF under interim status in accordance with the terms of the Part A approved by New Mexico Environment Department (NMED) (May 2002) and the most recent Part B permit request submitted to NMED (April 16, 2003).

1.0 GENERAL UNIT OPERATIONS

This section provides general descriptions of the AHCF waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B .

Specific information in this section regarding Unit operations includes containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage practices. Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/ 40 CFR 264, Subparts I, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [6-14-00].

1.1 Designated Waste Management Areas

The location of the AHCF at SNL/NM is shown on Figures 1 and 2. The location of the AHCF within TA-V is shown on Figure 2. The AHCF will have five designated WMAs: the hot cell; the work area around the hot cell; the fume hood; the storage silos; and container storage in the High Bay (Figure 3). The following sections provide descriptions of the storage structure, location, and capacity of each WMA.

1.1.1 Hot Cell

Outside overall dimensions of the hot cell are 16 feet (ft), 8 inches (in.) square and 16 ft, 2 in. high. Inside space dimensions are 100 square feet with a height of 13-ft, 10-in. The inside surfaces are lined with stainless steel. An 18-in. thick concrete foundation mat supports the hot cell. The hot cell walls are constructed of inner and outer precast concrete panels that are held apart by threaded rods. The space between the panels is filled with sand. The roof sections are also constructed of reinforced concrete panels with sand between them. Each individual roof panel is designed to structurally support one 5,000-pound point load. Each roof section supports a roof port and roof plug.

1.1.2 Work Area

The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. From time to time, a temporary tent-like room may be erected in the work area north of the hot cell and east of the permanent shield wall to accommodate large RCRA-regulated waste items and containers. If the RCRA-regulated item or container must be handled remotely, the temporary room will be built directly against the permanent shield wall to allow the use of the manipulators. Each time the temporary room is erected, package-specific considerations will determine details of the design; however, basic construction will consist of

polyvinyl chloride or metal framing, clear or translucent plastic roof and walls, and plastic doors. The temporary room will operate at a slight negative pressure.

1.1.3 Fume Hood

The 6-ft-wide walk-in fume hood, located north and east of the hot cell, can accommodate two 55-gallon drums placed side by side.

1.1.4 Storage Silos

Four 10-in. inside diameter (ID), 15-ft deep floor silos and two 30-in. ID, 15-ft deep floor silos are located in the work area north of the hot cell and east of the permanent shield wall (Figure 3). These silos have removable locking-type shield plugs. The tops of the silos are raised slightly above the general floor level to reduce the possibility for the entry of water into the silo.

Two additional storage silos are located within the hot cell. Each silo is 10-in. ID. One silo is 15-ft deep and the other is 11-ft, 8-in. deep.

The maximum waste storage capacity of the silos is 1,456 gallons.

1.1.5 Container Storage (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/ 40 CFR, Subpart I)

Containers of RCRA-regulated waste will be stored in the High Bay. Containers holding RCRA-regulated liquid wastes will be stored on portable spill pallets and pans covered with grating. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives and other liquids. The containers of liquids (typically 5- to 30-gallon capacity) will be stored on the grating. Any liquids released from the containers will drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [6-14-00] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3) [6-14-00].

Each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are not stacked on each other on the pallets. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

The containers are stored indoors and are protected from precipitation by the building, and by the slope of the asphalt pavement and gravel-covered soil surface outside the building that directs storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/ 40 CFR 264.175(b)(4).

The High Bay is also equipped with a system of floor trenches covered with grating. These trenches are not used to provide secondary containment.

The waste storage capacity is 2,200 gallons.

1.2 Unit Operations

The AHCF WMAs will be used to store and/or treat any of the wastes bearing U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers listed in the SNL/NM General Part A.

Information regarding operation of all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the SNL/NM General Part B. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.500/40 CFR 270.14[b][8][ii] and 270.15[a] and [b]; 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Liquid wastes released from individual containers will accumulate in the spill pallets. Unit personnel will begin taking action to evaluate and remove accumulated liquids in the spill pallets upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

The floor trenches are not used for secondary containment, and Sandia/DOE do not anticipate that liquid RCRA-regulated wastes would enter the trenches. RCRA-regulated waste liquids would only be released from containers of stored liquid wastes, and the largest single container would contain 122 gallons. The liquid would be contained in the trench, and would be handled as described above upon discovery.

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177; 20 NMAC 4.1.900/ 40 CFR 270.14[b][9] and 270.15[c] and [d])

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the AHCF. Unit personnel employ the practices described in Section 1.1.2 of the SNL/NM General Part B. Additional AHCF-specific features, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes. Water-reactive wastes are not routinely stored in the Unit.

- Forklifts are not used for waste movement near treatment operations involving ignitable or reactive wastes to minimize potential sources of ignition while containers are or may be open.

- Wastes are mixed together on a very limited basis during the treatment and repackaging operations at the Unit. Ignitable and reactive wastes are treated or mixed on a case-by-case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences. Personnel use waste characterization data and/or published chemical information (e.g., “NIOSH Pocket Guide to Chemical Hazards”

[DHHS, 1994], or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions. Treatment operations are described in Section 8.0 of this module.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas; each row or area containing only compatible wastes.

1.2.3 Preparedness and Prevention (20NMAC 4.1.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the AHCF.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

Information about fire hydrants is provided in Section 1.1.3.1 of the General Part B. The fire hydrants closest to the AHCF are shown in Figure 11.

The high bay of Building 6597 is equipped with an automatic fire suppression system; summarized below.

Table 1
Fire Suppression System at the Auxiliary Hot Cell Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
6597	13	Storage	Automatic sprinkler, wet pipe	GB/FS

[a] National Fire Protection Association (NFPA), 2002
[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.

Information on other required equipment located at the AHCF is provided in Section 6.0 and Table 3 of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the AHCF is provided in Appendix C of the SNL/NM General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the AHCF is provided in Section 1.1.3.3 of the SNL/NM General Part B and in Section 6.0 of this module.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the AHCF to prevent hazards. Additional information applicable to the AHCF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

AHCF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B to prevent hazards in unloading. Unit personnel will typically perform loading and unloading activities just outside the rollup door on the north side of the WMA (Figure 6). The pavement is level and in good condition, and there is sufficient room for operating vehicles and equipment.

Drums and other containers of RCRA-regulated waste will typically be strapped together on a pallet before being loaded onto vehicles. Containers will typically be transported within the Unit with drum dollies or pallet jacks.

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

The land surrounding the AHCF slopes gently toward the west. Sheet-flow runon of surface water from surrounding areas outside the TA is prevented from entering the TA by a diversion berm east of TA-V that diverts storm water to the north and south.

The floor of the high bay in Building 6597 is slightly higher than the surrounding ground, serving to direct storm water away from the building. The asphalt and concrete pavement around the AHCF slopes toward a storm drain that directs stormwater toward the west.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the AHCF will affect water supplies, as described in Section 1.1.4.3 of the SNL/NM General Part B.

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B.

The AHCF is equipped with a minimum of 90 minutes of general emergency lighting along the paths of egress. With respect to RCRA-regulated waste management operations, backup power to the chain hoist will be required only during the short periods that the bridge crane is being used for an in-air transfer of RCRA-regulated waste. The bridge crane locks in place and is inoperable during a power outage. Portable generators can provide backup power to the chain hoist whenever the bridge crane is in use. The chain hoist, and tethers if necessary, will be used to lower any suspended packages to a safe configuration until power is restored. No other AHCF systems require redundant power supplies.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

AHCF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B to prevent undue exposure. In addition, a negative pressure ventilation system is provided for the waste management area. The ventilation air flow from these areas passes through a two-stage high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

AHCF personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B to prevent releases to the atmosphere during storage.

Subpart AA

AHCF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service at the AHCF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [6-14-00]. The equipment list will be maintained in the AHCF records. Equipment use will also be noted in the records.

Subpart CC

Unit personnel follow the practices described in Section 1.1.4.6 of the SNL/NM General Part B and maintain compliance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00].

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264 Subpart I)

Container storage practices applicable to the AHCF are presented in the following sections.

1.3.1 Container Types and Labeling

RCRA-regulated waste containers stored at the AHCF are most often strong, tight containers such as steel drums, steel boxes, wooden crates, plastic containers, casks, and cylinders.

1.3.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

AHCF personnel employ the container handling practices described in Section 1.2.1 of the General Part B.

1.3.2.1 *Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)*

The condition of containers at the AHCF is maintained as indicated in Section 1.2.2.1 of the SNL/NM General Part B.

1.3.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

AHCF personnel employ the aisle space and storage configuration as described in Section 1.2.2.2 of the SNL/NM General Part B. Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than three pallets high. Box-shaped containers may be stacked three high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are not stacked.

1.3.2.3 Compatibility of Waste with Containers (20 NMAC 4.1.500/40 CFR 264.172)

AHCF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the SNL/NM General Part B.

1.3.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

AHCF personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the SNL/NM General Part B before storing containers in areas that are not equipped with secondary containment.

1.4 Treatment Operations

Treatment practices applicable to the AHCF are presented in Section 8.0 of this module.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.5 and .900/40 CFR 264 270 [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of the SNL/NM General Part B.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the AHCF.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The doors to Building 6597 are kept closed and locked. As noted in Appendix A of the General Part B, Sandia security personnel periodically monitor the SNL/NM Technical Area gates during non-operational hours.

Unit personnel have Sandia-issued badges. Individuals who do not have Sandia-issued badges are escorted. These procedures limit access to the AHCF RCRA-regulated WMAs in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The AHCF is located in TA-V (Figures 1 and 2). TA-V is enclosed by an 8-ft-high chain-link fence topped with barbed wire. Regular entries into and exits from TA-V are through Building 6577, the Perimeter Access Building, or through the adjoining vehicle gate. TA-V access

control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-V.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

Building 6597 and the entrance to the AHCF are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish are legible from a distance of 25 ft, and can be seen from any approach to the part of Building 6597 that houses the AHCF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes to the AHCF include Wyoming Boulevard, Hardin Boulevard (formerly O Street), P Street, and Pennsylvania Avenue. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved road to TA-V turns southwestward off Pennsylvania Avenue at a point just over 5 miles south of the Wyoming Entrance gate.

Waste transport vehicles travel along a 2-lane asphalt-paved drive to enter TA-V from the two-lane paved road as shown on Figures A-4 and A-6 in Appendix A of the SNL/NM General Part B. Vehicles must stop at a gate prior to entering or leaving TA-V. Within TA-V, waste is transported on asphalt- or concrete-paved surfaces (Figure 4).

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard, Hardin Boulevard, and P Street are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Fewer than 5 vehicles typically travel to the AHCF per week. These include flatbed trucks and trailers carrying supplies and containers of RCRA-regulated waste to and from the AHCF.

2.2.3 Traffic Control Signals

Within TA-V, there are no traffic control signals or signs. Vehicles must stop at the vehicle gate prior to entering or leaving TA-V. Vehicle presence within TA-V is limited to waste transport and other work vehicles. Therefore, signals or signs are not necessary to control traffic within TA-V.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i and ii]; 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMAs at the AHCF are not located within 3,000 ft of any faults with Holocene displacements (see Section A.4.2 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the AHCF are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided on Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).

- Surface waters, including intermittent streams, near the AHCF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [6-14-00]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [6-14-00]). The area surrounding the AHCF is occupied by other Sandia-controlled operations (industrial land use).

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).

- Legal boundaries of SNL/NM (including the AHCF) is provided as Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [6-14-00]).

- Access control features at the AHCF (e.g., fences, gates) are shown on Figures 5 and 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the AHCF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).

- The location of the AHCF and associated WMA structures, loading and unloading areas, roads, and sanitary sewers at the AHCF are shown on Figures 5 and 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [6-14-00]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00].

- Locations of the AHCF and AHCF WMAs are shown on Figures 3 and 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the AHCF. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to the New Mexico Environment Department at these scales and contour intervals due to the size of the AHCF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of the Sandia/DOE comprehensive Part B permit request. The AHCF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the AHCF likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

In accordance with 20 NMAC 4.1.900/ 40 CFR 270.14[b][2] and 20 NMAC 4.1.500/40 CFR 264.13, “General Waste Analysis” [6-14-00], waste analysis requirements applicable to all Units, including the AHCF, are addressed in Appendix B of the SNL/NM General Part B.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] require that waste management areas (WMAs) and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the “Site-Wide Inspection Plan”, provided as Appendix C of the SNL/NM General Part B. AHCF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 2, with the inspection criteria and frequency. The items listed in the table are inspected in each AHCF WMA.

Automatic fire suppression systems are included in Table 2. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems in accordance with the requirements of NFPA 25 “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems” (NFPA, 2002) as described in Section 1.1.3.2 of the General Part B.

Performing inspections of all areas at the AHCF where RCRA-regulated wastes are handled may expose Unit personnel to unnecessary radiation. In order to maintain the radiation exposure to levels as low as reasonably achievable (ALARA), Sandia/DOE will conduct alternative inspections of the storage silos. Instead of inspecting the silos directly, Unit personnel will visually inspect RCRA-regulated waste containers or packages before they are placed in the silos and when they are removed from the silos. If Unit personnel do not observe any indications of damage to or release from the RCRA-regulated waste items as they are removed from the silos, that will be considered sufficient to determine that there have not been releases of RCRA-regulated wastes. The visual inspection may be conducted from a remote area to maintain ALARA conditions for the Unit personnel.

Table 2
Auxiliary Hot Cell Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Eye wash / safety shower	Operational and in good condition	Monthly
Spill control equipment	Present, quantities per inventory, and in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when wastes are managed. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when wastes are managed. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when wastes are managed. Monthly otherwise.
Treatment area	Good condition, clean, uncluttered, no spills	Prior to treatment. Monthly otherwise.
Treatment equipment	Good condition (i.e., no releases or deterioration); fume hood, drum, and room ventilation flows within established parameters	Prior to treatment. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly

Table 2 (Concluded)
Auxiliary Hot Cell Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
STORED CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Daily for individual containers that were handled.* Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Daily for individual containers that were handled.* Weekly otherwise.
Labeling	Correct information, correct location, legible	Daily for individual containers that were handled.* Weekly otherwise.
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Daily for individual containers that were handled.* Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Daily for individual containers that were handled.* Weekly otherwise.
Location	Correct aisle space, correct stacking (3 maximum)	Daily for individual containers that were handled. Weekly otherwise.

* Containers will be inspected prior to placement into and immediately following removal from a storage silo.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained in Building 6597 or in the TA-V electronic facility documentation system. Inspection records for previous calendar years are maintained in department offices of AHCF personnel or the SNL/NM Records Center.

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/ 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [6-14-00] "Personnel Training." The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the AHCF.

AHCF personnel receive training in accordance with the "Site-Wide Personnel Training Plan" provided as Appendix D of the SNL/NM General Part B.

Only the following job descriptions identified in Appendix D, Table D-2 are applicable at the AHCF: Training Director, Project Leader, Emergency Coordinator, Chemist, Field Technician, Special Projects Staff, Inspector, and Unit Operations Support Staff.

Training records for AHCF personnel are maintained in the department offices of AHCF personnel.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia /DOE Site-Wide Contingency Plan is included as Appendix E of the SNL/NM General Part B. Supplemental AHCF-specific information is included in this section, in Figures 8, 9, and 10, and in Tables 3 and 4 of this module. Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained in department offices of AHCF personnel, in the TA-V emergency control room, and at the SNL/NM Emergency Operations Center.

The AHCF is located in the northeast (high bay) part of Building 6597 in TA-V at SNL/NM and is used to repackage, store, and treat RCRA-regulated wastes. Building 6597 is a concrete masonry unit building with a roof height of 35 feet. The AHCF includes five WMAs:

- The hot cell is constructed of precast concrete with a stainless steel lining. A permanent shield wall extends north of the cell. The cell is used for repackaging and treatment.
- The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Waste management activities in the work area include storage and treatment and may require the use of a temporary room.
- A 6-ft-wide walk-in fume hood, located north and east of the hot cell, can be used for storage and treatment.
- Eight floor silos (six in the work area and two in the cell) can be used for storage.
- Containers of RCRA-regulated waste may also be stored in the high bay.

RCRA-regulated wastes bearing the U.S. EPA Hazardous Waste Numbers listed in the General Part A may be stored and/or treated at the AHCF WMAs. Wastes will be segregated according to compatibility groups.

During an emergency, Unit personnel will evacuate the unit as described in Section E.5.2 of the Site-wide Contingency Plan. In addition, Unit personnel may choose to implement a coordinated evacuation of all of TA-V. To notify all TA-V personnel, Unit personnel would activate the TA-V alarm located on the north wall of the high bay area of the building.

During an emergency, Sandia security officers provide unimpeded access to the AHCF forauthorized personnel as directed by the IC. Security officers also provide additional emergency assistance as required by the IC. Personnel who are authorized to enter TA-V in case of emergencies are members of the SNL/NM Emergency Response Organization, including medical personnel, the KAFB fire department, and KAFB security police.

Figure 8 presents the evacuation routes for the AHCF. Figures 9 and 10 present emergency response and access information for the AHCF. Table 3 lists the emergency equipment typically available at the AHCF. Table 4 lists the emergency coordinators for the AHCF.

Table 3
Auxiliary Hot Cell Facility, Emergency Equipment and Locations

Building 6597

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower/eyewash	Near north entrance
	Absorbent	Near north entrance
	Personal protective equipment	Near north entrance
Internal Communication and Alarm System	Voice communication	
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One near each exit door in Building 6597
	Audible fire alarms	
External Communication System	Telephones	Near north entrance
	Emergency public address system	
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One near each exit door
Fire Extinguishers	Portable (A-B-C)	By personnel doors on the east, south, and west walls
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the high-bay in Building 6597
	Manually-operated fire suppression system (Halon replacement)	Hot Cell
	Sprinkler head	Under fume hood
	Branch line from the Building 6597 sprinkler system	Temporary Room
	Water supplied by fire hydrant	One hydrant, location shown on Figure 9

KAFB Kirtland Air Force Base

Table 4
Auxiliary Hot Cell Facility, Emergency Coordinator List

April 16, 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	John Garcia Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-3538 (office) (505) 540-5194 (pager)	(505) 243-5914
First Alternate	Jim Andazola Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 845-3107 (office) (505) 540-8271 (pager)	(505) 892-5120

One or more of these personnel are routinely available during normal work hours (8:00 am to 4:30 pm, Monday through Friday).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13], and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, [6-14-00]. General closure information applicable to all RCRA-regulated Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B. The site-wide Closure Plan includes a description of the SNL/NM facility; waste description; closure performance standards; closure methods; sampling and analysis plan closure schedule; procedures for amendment of the Closure Plan; closure certification and report; and survey plat and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The Auxiliary Hot Cell Facility (AHCF) is located in the northeast (high bay) part of Building 6597 in TA-V at SNL/NM and is used to repackage, store, and treat RCRA-regulated wastes. Building 6597 is a concrete masonry unit building. The AHCF includes five WMAs:

- The hot cell is constructed of precast concrete with a stainless steel lining. A permanent shield wall extends north of the cell. The cell is used for repackaging and treatment.
- The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Waste management activities in the work area include storage and treatment and may require the use of a temporary room.
- A 6-ft-wide walk-in fume hood, located north and east of the hot cell, can be used for storage and treatment.
- Eight floor silos (six in the work area and two in the cell) can be used for storage.
- Containers of RCRA-regulated waste may also be stored in the high bay.

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total inventory of RCRA-regulated waste in storage at any time at the AHCF is estimated at 3,646 gallons of liquids and/or solids. The maximum total waste inventory is broken down as follows:

Building 6597 container storage areas:	2,200 gallons
Building 6597 storage silos:	1,456 gallons

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 in Appendix F of the SNL/NM General Part B, closure activities specified in this plan assume the following conditions were met during the operational life of the AHCF:

- RCRA-regulated waste handling and treatment activities involving the opening of waste containers were confined to the interior of the AHCF WMAs. If contamination occurred, it would have been confined to those areas.

- The interior walls and floors of WMAs were maintained to retain their integrity by following established maintenance and inspection procedures and breaches of protective coatings did not occur.

7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan in Appendix F provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the AHCF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the AHCF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan in Appendix F presents sample collection equipment and techniques applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the AHCF. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the AHCF.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan in Appendix F presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the AHCF.

8.0 TREATMENT PLAN

Treatment operations for RCRA-regulated wastes treated at the AHCF are described in this section

The following treatment technologies may be used to treat RCRA-regulated wastes at the AHCF:

- Chemical deactivation,
- Macroencapsulation,
- Physical treatment, and
- Stabilization.

The waste management areas at the AHCF that are used for the treatment of RCRA-regulated wastes include the Hot Cell, the Fume Hood, and the Work Area.

Because treatment at the AHCF will be conducted in containers, it is not subject to the miscellaneous unit and environmental performance standards in 20 NMAC 4.1.500/40 CFR 264, Subpart X [6-14-00]. Treatment effectiveness for each waste stream is discussed in Section 8.2.

8.1 Treatment Operations

Waste treatment is performed at the AHCF to meet land disposal restrictions (LDRs); allow for the safe storage of the waste; or to meet treatment, storage, or disposal facility (TSDF) requirements. All of the treatment at the AHCF will be batch treatment performed on single packages of waste (each package is one drum or less, or a package that can be placed in one of the silos). Each type of treatment will be performed on batches of 500 pounds of waste or less. Liquid wastes will be treated in batches of 60 gallons or less.

Waste treatment may generate secondary waste streams (treatment residues). RCRA-regulated treatment residues may undergo additional on-site treatment to meet LDRs and/or be sent to an appropriate off-site TSDF.

The waste treatment processes described in this section are effective in addressing RCRA-regulated characteristics in RCRA-regulated wastes, including the following:

- Solid items exhibiting the RCRA-regulated characteristics of ignitability or reactivity may be chemically deactivated to eliminate the characteristic.

- Debris containing RCRA-regulated constituents (excluding elemental and high mercury subcategories defined in 20 NMAC 4.1.800/40 CFR 268) may be macroencapsulated to reduce or eliminate the leaching potential.

- Liquid waste exhibiting the characteristics of ignitability, corrosivity, and/or reactivity may be chemically deactivated to remove the RCRA-regulated characteristic(s).

- Liquid waste containing toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) may be stabilized to reduce or eliminate the leaching potential.

In accordance with LDRs, the following are managed as RCRA-regulated waste: treatment residue derived from the treatment of listed RCRA-regulated wastes, treated waste containing listed RCRA-regulated waste, and treated waste which continues to exhibit RCRA-regulated waste characteristics and/or does not meet treatment standards for underlying hazardous constituents.

Each waste treatment technology or process listed above is described in the following sections.

8.1.1 Chemical Deactivation

Sandia/DOE perform chemical deactivation in containers at the AHCF. Chemical deactivation refers to a number of chemical processes that can eliminate the RCRA-regulated waste characteristics of ignitability, corrosivity, and/or reactivity. Deactivation can be accomplished by several technologies (e.g., neutralization, chemical oxidation, or stabilization). However, the intent of this section is to identify and describe specific methods or treatment trains which may be used at the AHCF to deactivate ignitable wastes defined in 20 NMAC 4.1.200/40 CFR 261.21(a)(2) and (4) [6-14-00], corrosive and reactive wastes defined in 20 NMAC 4.1.200/40 CFR 261.23 [6-14-00]. Deactivation may or may not result in a final waste form, depending on the process, and may be used as the first in a series of treatment steps.

Deactivation processes are conducted under carefully controlled conditions so that RCRA-regulated waste with the characteristic of reactivity is allowed to react in a slow, nonviolent manner. Allowing the reactive potential of the waste to be dissipated in this manner reduces or eliminates the reactive characteristic of the waste. Hydrides, deuterides, and tritides are deactivated by slow addition to an ice water bath. Deactivation of water reactive metals such as elemental sodium and lithium involves the slow and controlled addition of an appropriate alcohol/water solution. Alcohol/water addition is maintained until the water reactive potential of the waste has been eliminated. Deactivation of pyrophoric metal powders and particulates may be achieved by mixing waste in a portland cement matrix. Deactivation of reactive wastes is typically conducted in small batches under laboratory conditions such that process control can be easily maintained.

Chemical deactivation to remove the characteristic of corrosivity is the process of removing excess acidity or alkalinity from a liquid waste. Other uses may include pH adjustment to facilitate subsequent treatment; such pretreatment through deactivation may be necessary to prevent corrosive damage to equipment, deter undesirable reactions, and preclude the formation of unwanted byproducts.

Reagents added to achieve a desired pH are combined with liquid waste inside a mixing vessel or directly in the waste container. Common deactivating reagents include, but are not limited to, caustic soda, lime, phosphine, calcium or sodium carbonate, sodium hydroxide, and limestone for acid wastes; and hydrochloric, phosphoric, or nitric acids for alkaline wastes. The selection of reagents is dependent on the quantity of reagent required, cost, availability, and the potential byproduct(s).

8.1.2 Macroencapsulation

Sandia/DOE perform macroencapsulation in containers at the AHCF. Macroencapsulation is generally applicable to debris, whereas stabilization (see Section 8.1.4) is generally applicable to liquids, sludges, and particulate-type wastes. Macroencapsulation is the process of encasing waste within a polymer coating or concrete. The primary use of macroencapsulation is to immobilize wastes such as debris-type solids containing RCRA-regulated constituents by surrounding the waste material with a leach-resistant coating.

Performing macroencapsulation involves coating waste with polymer agents within a mold or encasing the waste in concrete. Polymers typically used for macroencapsulation include, but are not limited to, asphalt, polyethylene, thermosetting plastics, and resins that can be polymerized under ambient temperatures in the presence of a catalyst. Equipment used for macroencapsulation may include molds, polymer extrusion equipment, and resin mixing equipment. In-drum macroencapsulation may also be performed with the drum acting as the mold. Temperature control of polymer macroencapsulation processes is critical and carefully maintained to assure that adequate coating occurs.

8.1.3 Physical Treatment

Sandia/DOE perform physical treatment (volume reduction through separation) at the AHCF. The treatment consists of reducing waste volume by using tools to separate items with RCRA-regulated constituents from larger items. In some cases, the RCRA-regulated waste item may undergo further treatment in containers.

8.1.4 Stabilization

Sandia/DOE perform stabilization in containers at the AHCF. Stabilization is a process of binding RCRA-regulated metals so that the metals become chemically part of the matrix or are physically bound within the matrix. The primary use of stabilization is to immobilize toxicity characteristic metals but many stabilization agents also eliminate free liquids. Typical waste forms suitable for stabilization include liquids, soils, and particulate-type wastes.

Process equipment for mixing waste and binder materials depends on the type of reagents used and the volume of waste to be treated. In-drum mixing is typically used for large volume waste streams. Once waste and binder have been thoroughly mixed and placed in a container, the mass is allowed to cure and/or set. Smaller batches may be mixed by hand and allowed to cure in smaller containers.

Development of appropriate formulas is waste specific. Stabilization agents for toxic metals may include portland cement, pozzolanic, thermoplastics, organic polymers, and clays. However, other waste forms may require proprietary reagents that are available for specific applications. Additional reagents may be added to reduce contaminant leachability, reduce cure and/or set time, and increase strength.

Waste characteristics that are important to the success of the stabilization process for liquids may includevolume percent of water, oil, solvents, or other organics; pH; and RCRA-regulated waste constituents. Waste characterization data are used to determine whether the waste is

amenable to stabilization, any necessary pretreatment requirements, and the appropriate binding agent.

Once stabilization is selected, the binding agent is identified based on chemical compatibility with the waste form and contaminants present. Pretreatment may be required to assure compatibility between the waste and the binding agent (e.g., neutralization of liquid wastes to an acceptable pH range of 5.0 to 11.0). Once the proper binding agent(s) have been identified, bench-scale testing is performed to determine optimum amounts of each agent. In the case of low volume waste streams (e.g., less than approximately 0.26 gallons), bench-scale testing may not be practical and treatment is performed without bench-scale testing using the manufacturer's suggested quantities or by estimating binding agent quantities from previous experience. The stabilization process is performed by combining the predetermined quantities of binding agent(s) with the waste and thoroughly mixing, if appropriate. The resulting mixture is staged to allow an appropriate cure time.

8.1.5 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

AHCF personnel employ the practices described in Section 8.2 of the General Part B to prevent releases to the atmosphere during treatment.

Subpart AA

The AHCF treatment operations do not employ processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA.

Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart BB [6-14-00]. Equipment used in such service at the AHCF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [6-14-00] as noted in 20 NMAC 4.1.500/ 40 CFR 264.1050(f) [6-14-00]. The equipment location will be noted in the AHCF records. Equipment use will also be noted in the records.

Subpart CC

Unit personnel follow the practices described in Section 8.2 of the SNL/NM General Part B. Unit personnel do not perform any treatment subject to Container Level 3 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]).

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [6-14-00].

8.2 Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

As required in 20 NMAC 4.1.900/40 CFR 270.23(d) [6-14-00], treatment effectiveness considerations and demonstrations are provided for the treatment technologies used or proposed for use at the AHCF. Treatment effectiveness will be verified through evaluation of the treated waste in accordance with Appendix B (Section B.3.3.2) of the SNL/NM General Part B.

9.0 REFERENCES

DHHS, see US Department of Health and Human Services

National Fire Protection Association (NFPA), 2002, "Standard for the Installation of Sprinkler Systems," NFPA 13, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," NFPA 25, National Fire Protection Association, Quincy, Massachusetts.

NFPA, see National Fire Protection Association

Sandia National Laboratories/New Mexico (SNL/NM), 2003, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 5.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico.

U.S. Department of Health and Human Services (DHHS), 1994. "NIOSH Pocket Guide to Chemical Hazards", National Institute for Occupational Safety and Health.

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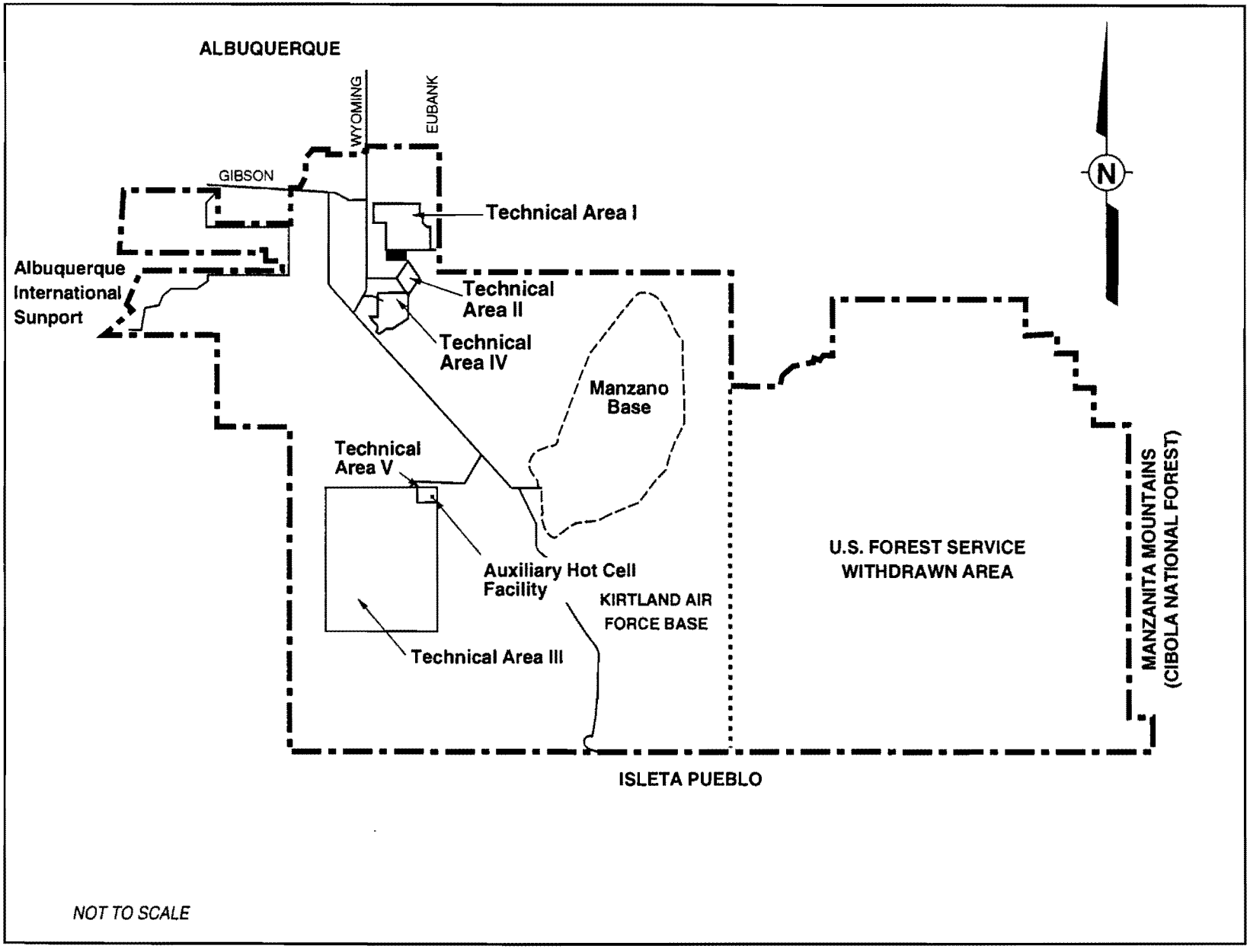


Figure 1
Location Map of the Auxiliary Hot Cell Facility at Sandia National Laboratories/New Mexico

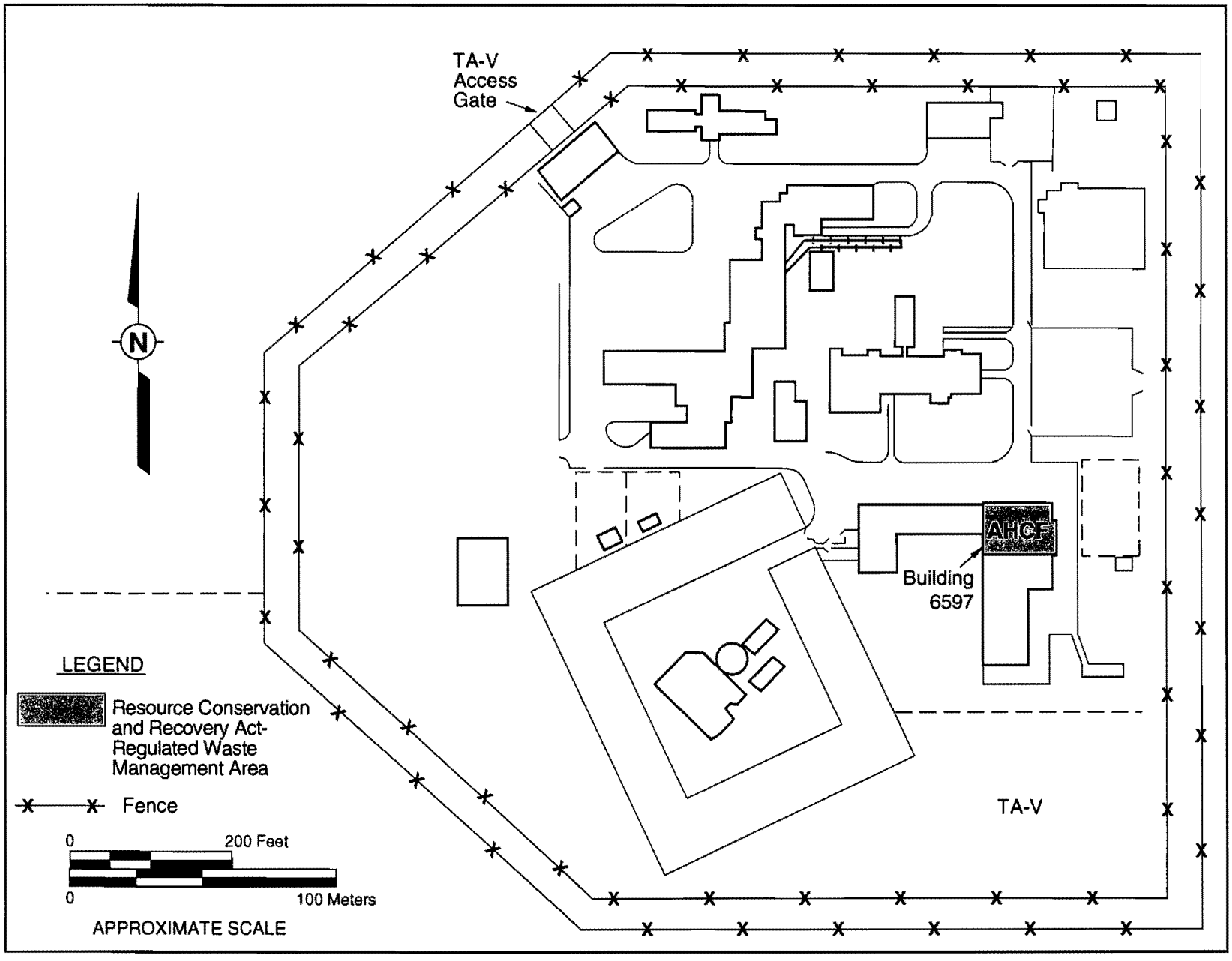
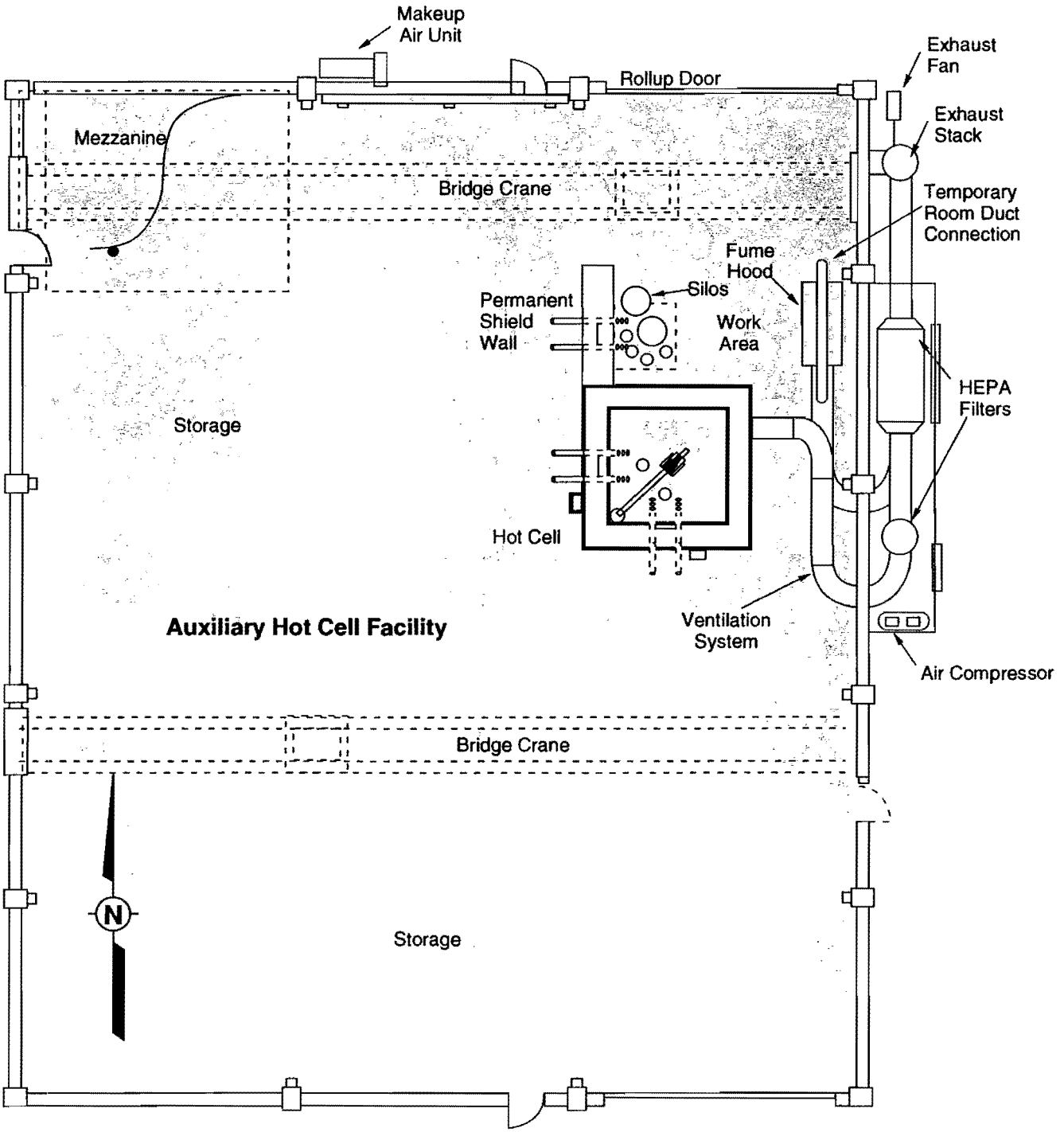


Figure 2
Location of the Auxiliary Hot Cell Facility (AHCF) in Technical Area (TA) V



LEGEND

Resource Conservation and Recovery Act-Regulated Waste Management Area

Figure 3
Auxiliary Hot Cell Facility,
Resource Conservation and Recovery Act-Regulated Waste Management Areas

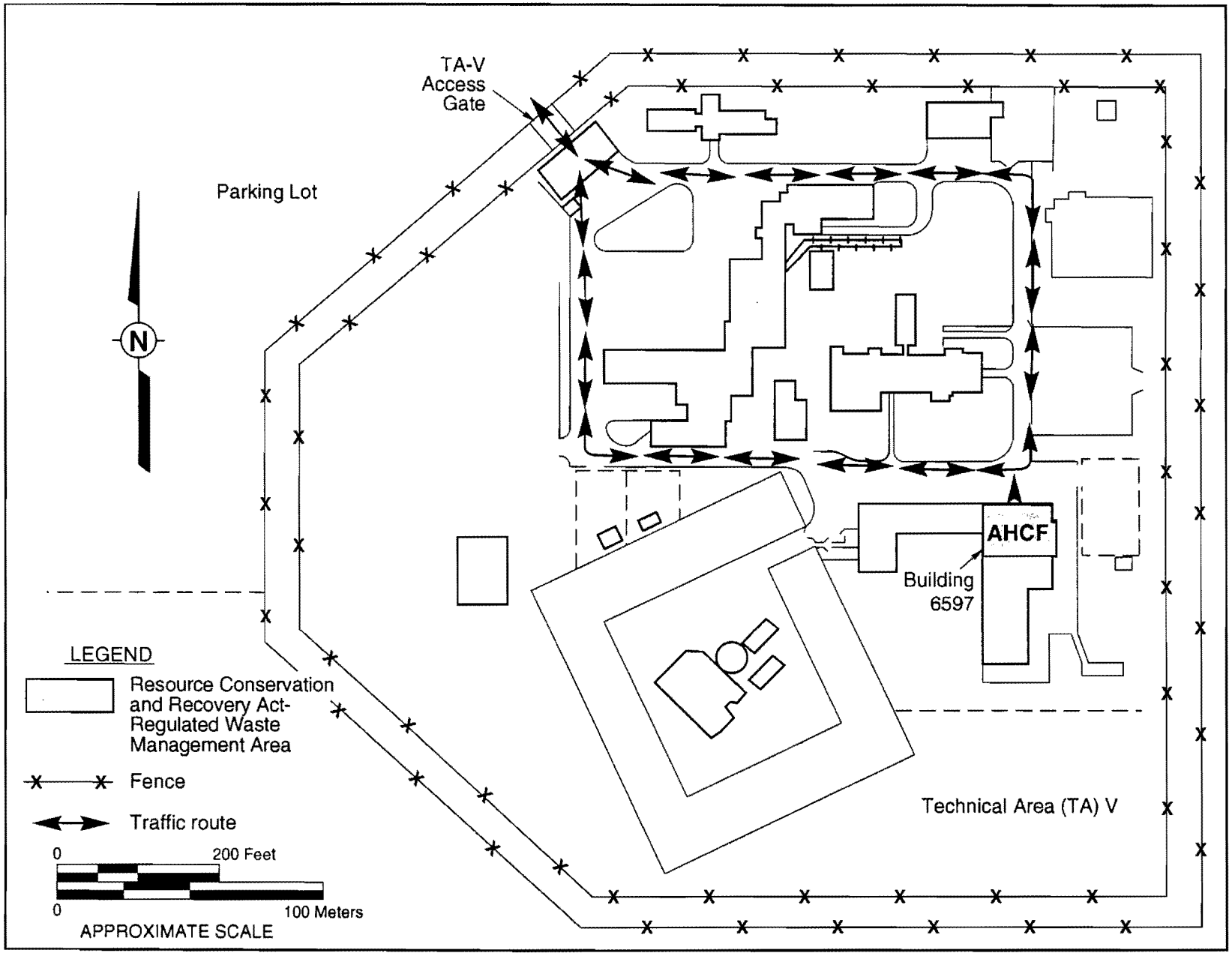


Figure 4
Auxiliary Hot Cell Facility (AHCF), Traffic Routes and Controls

TO VIEW THE MAP/MAPS ASSOCIATED WITH THIS DOCUMENT PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

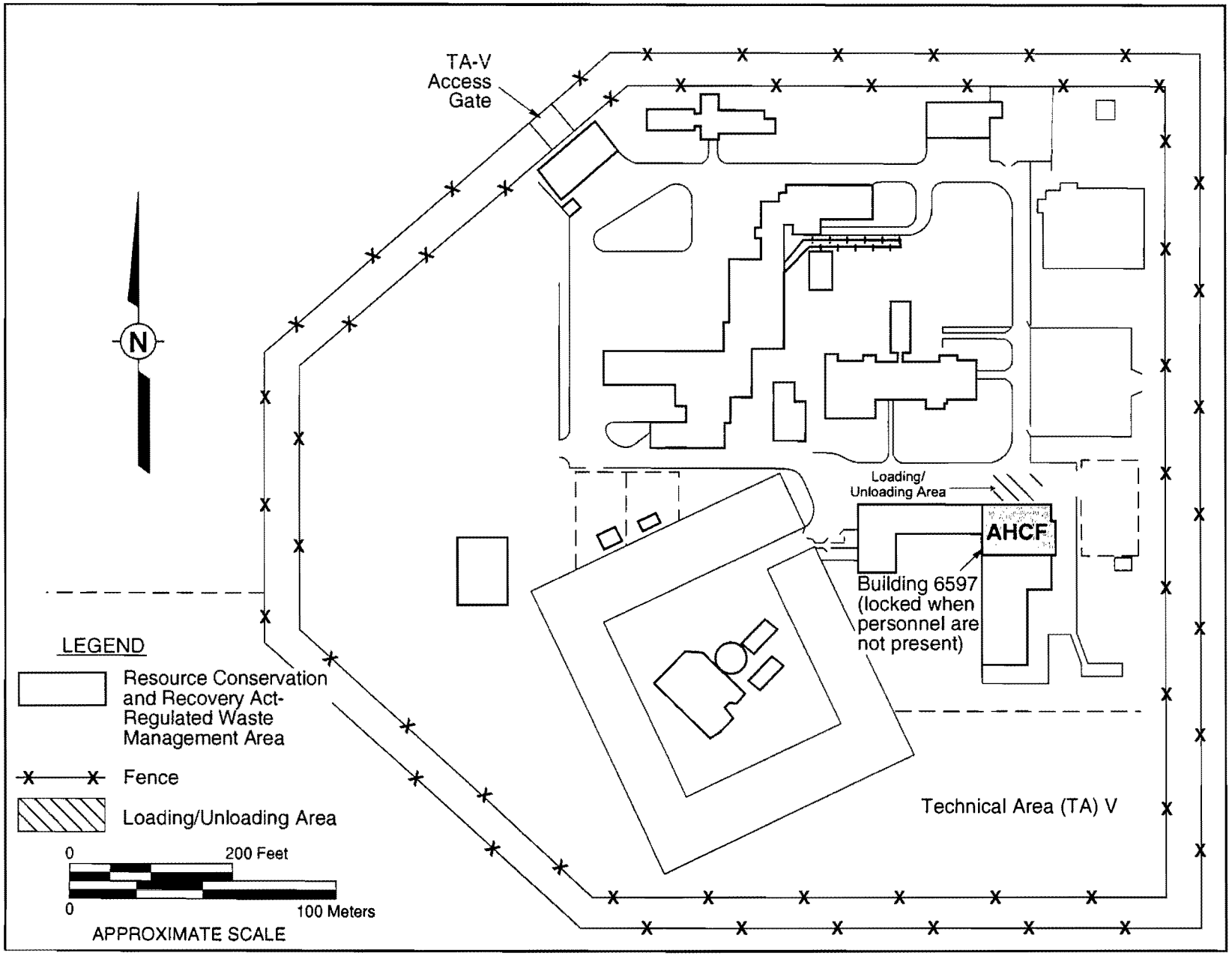


Figure 6
Auxiliary Hot Cell Facility (AHCF), Access Control Features

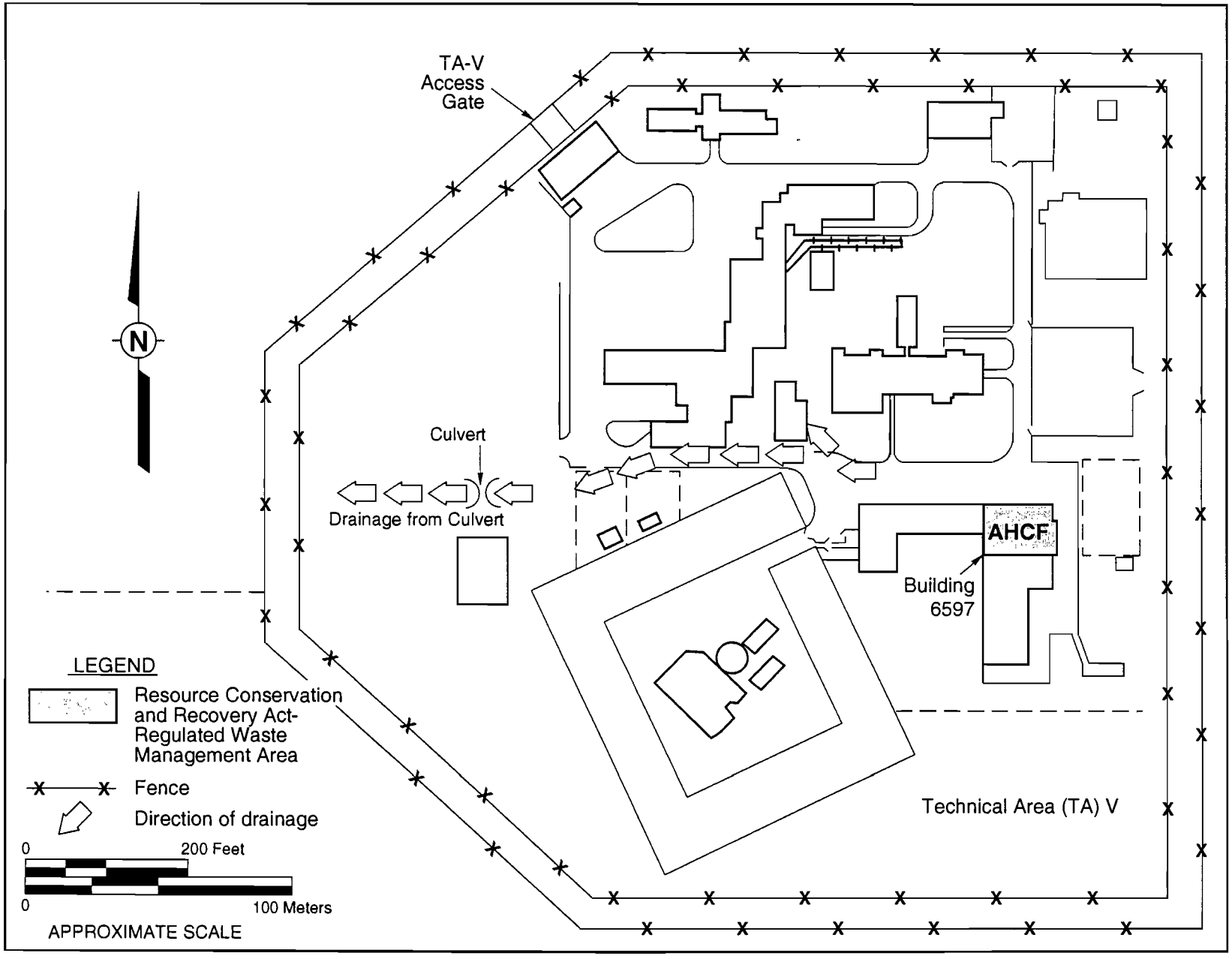


Figure 7
Auxiliary Hot Cell Facility (AHCF), Drainage Control Features

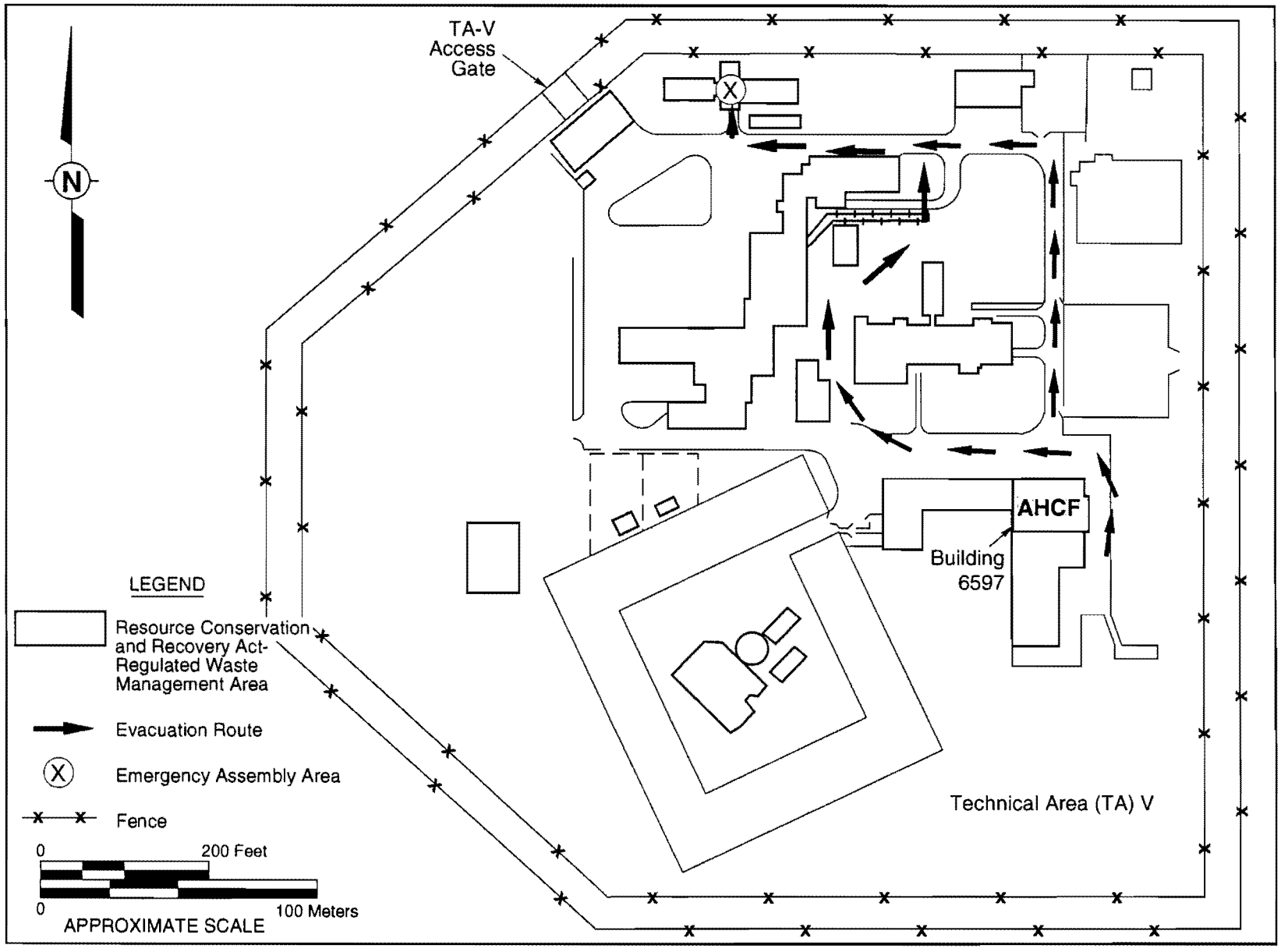


Figure 8
Auxiliary Hot Cell Facility (AHCF), Evacuation Routes

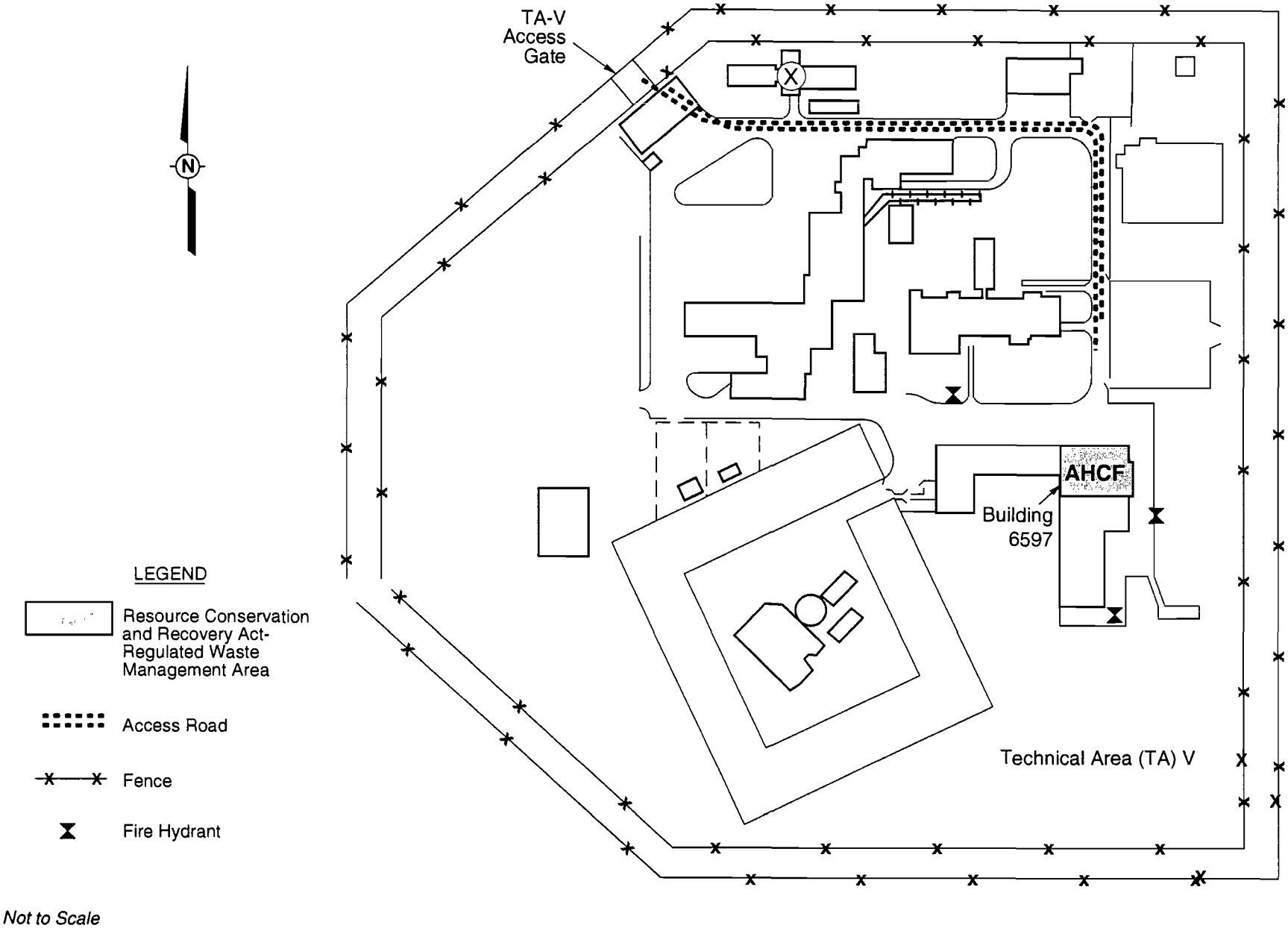
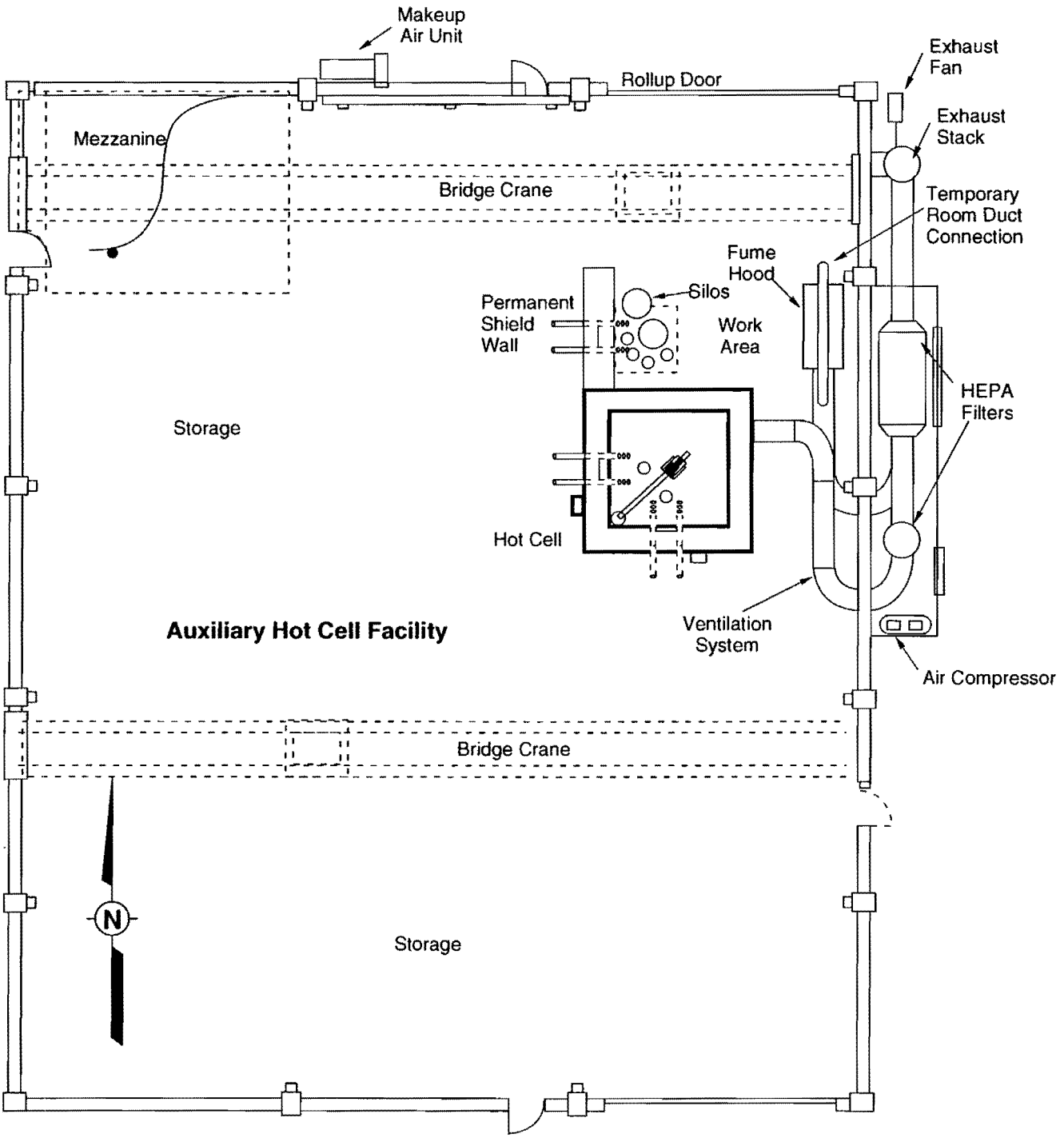


Figure 9
Auxiliary Hot Cell Facility (AHCF), Emergency Response and Access Information



LEGEND

Resource Conservation and Recovery Act-Regulated Waste Management Area

Figure 10
Auxiliary Hot Cell Facility, Emergency Response and Access Information (Detail)

Sandia National Laboratories/New Mexico
Manzano Storage Bunkers
Part B Permit Application

Module VI

Revision 2.0

April 2003

Prepared by
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185

Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ft	foot/feet
ft^2	square foot/feet
HSWA	Hazardous and Solid Waste Amendments
in.	inch(es)
MSB	Manzano Storage Bunkers
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	solid waste management unit
TA	Technical Area
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SANDIA NATIONAL LABORATORIES/NEW MEXICO
MANZANO STORAGE BUNKERS
PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Manzano Storage Bunkers (MSB) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised June 14, 2000 [6-14-00], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage operations at the MSB. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), as co-operators of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application", hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, in the SNL/NM General Part B, and in the appendices to the General Part B meet the applicable requirements for the MSB that are specified in 20 NMAC 4.1.500/40 CFR 264 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270 [6-14-00].

Sandia/DOE also prepared a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 5.0" (SNL/NM, 2003), hereinafter referred to as the SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the SNL/NM General Part B and Unit-specific Part B modules, including this MSB Part B Permit Application.

In the General Part A, the General Part B, its appendices. and this module, a Unit to be permitted may sometimes be referred to as a "facility." The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [6-14-00], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The MSB are a set of five units, each with approximately 1600 to 2100 square feet of space. They are located in the Manzano Area on Kirtland Air Force Base (KAFB) and are used for storage of RCRA-regulated wastes in containers. The MSB are owned by KAFB and leased to the DOE. All of the RCRA-regulated wastes listed in the General Part A may be managed at the MSB. Sandia/DOE currently operate the MSB under interim status in accordance with the terms of the Part A approved by the New Mexico Environment Department (NMED) (May 2002) and the most recent Part B permit request submitted to NMED (April 16, 2003).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the MSB waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B.

Specific information in this section regarding Unit operations includes containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage of RCRA-regulated wastes.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B, address the applicable RCRA-regulated waste management facility requirements of 20 NMAC 4.1.500/ 40 CFR 264, Subparts I, AA, BB, and CC [6-14-00], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [6-14-00].

1.1 Designated Waste Management Areas

The location of the MSB at SNL/NM is shown on Figures 1 and 2. The MSB include five Units: Bunkers 37034, 37045, 37055, 37057, and 37118 (Figure 2). There are 5 designated waste management areas (one in each bunker) as shown in Figures 3, 4, and 5.

In each MSB bunker, containers holding RCRA-regulated liquid wastes are stored on portable spill pallets and pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives and other liquids. The containers of liquids (typically 5- to 30-gallon capacity) are stored on the grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [6-14-00] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3).

The pallets come in various sizes and capacities; each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are not stacked on each other on the pallets. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

The containers are stored indoors and are protected from precipitation by the bunkers, and by the slope of the concrete paved surface outside the door that directs storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(4).

The MSB are constructed of concrete (walls, roof, and floor) and are covered by earthen materials. The walls and roof of each bunker are rounded. There are three types of bunkers: Type B (37034); Type C (37118); and Type D (37045, 37055, and 37057). The following sections provide descriptions of specific bunker storage structures, locations, and capacities.

1.1.1 Type B Bunker (37034)

Type B bunkers consist of an access tunnel leading to a main chamber that is used for storage of RCRA-regulated wastes. Figure 3 provides a typical floor plan for a Type B bunker. The Type B access tunnel is approximately 20 feet (ft) long, 12 ft wide, and 12.5 ft high. The main chamber is approximately 81 ft long, 26.5 ft wide, and 12.8 ft high. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick roof of waterproofed concrete. The soil surface above and around each bunker is sloped so water drains away from the bunker. Access to the WMA of each bunker is through two sets of double doors that are 9 ft high and 9 ft wide. One set is at the entrance to the access tunnel, and the other set is at the entrance to the main chamber.

Based on the available floor space (2,100 square feet [ft^2]) in Bunker 37034, it can hold a maximum of 25,080 gallons of RCRA-regulated wastes.

1.1.2 Type C Bunker (37118)

Type C bunkers do not have an access tunnel and consist entirely of a main chamber used for storage of RCRA-regulated wastes. Figure 4 is a typical floor plan of a Type C bunker. The main chamber is approximately 80 ft long, 27 ft wide, and 12.8 ft high. A 6-in. drain tile is located outside the bunker perimeter. Access to the main chamber is through a set of double doors 8 ft wide and 9.5 ft high. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick roof of waterproofed concrete. The soil surface over and around each bunker is sloped so water drains away from the bunker.

Based on the available floor space (approximately 2,100 ft^2) in Bunker 37118, it can hold a maximum of 25,080 gallons of RCRA-regulated wastes.

1.1.3 Type D Bunkers (37045, 37055, and 37057)

Type D bunkers consist of an access tunnel leading to a main chamber. Only the main chamber is used for storage of RCRA-regulated wastes. Figure 5 is a typical floor plan of a Type D bunker. Type D access tunnels vary in length from 76 feet to 110 feet and are 9 ft wide and 11 to 12 ft high. The main chamber in each bunker is approximately 61 ft long, 26.5 ft wide, and 12.5 ft high. Access to the WMA of each bunker is through two sets of double doors that are 9 ft high and 9 ft wide. One set is at the entrance to the access tunnel, and the other set is at the entrance to the main chamber. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick roof of waterproofed concrete. The soil surface over and around each bunker is sloped so water drains away from each bunker.

Based on the available floor space (1,600 ft^2) in each of the Type D bunkers, each bunker can hold a maximum of 18,480 gallons of RCRA-regulated wastes.

1.2 Unit Operations

The MSB WMAs are used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers listed in the SNL/NM General Part A.

The MSB are not continuously occupied. All personnel sign in on a log upon entering each bunker and sign out when they leave. Waste handling personnel work in pairs and maintain contact with each other. All personnel are trained to check that everyone has signed out and exited the bunker before turning off the lights and closing and locking the doors.

Information regarding operation of all RCRA-regulated Units at SNL/NM is included addressed in Section 1.1 of the SNL/NM General Part B. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.500/40 CFR 264.175[b][5]; 20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.15[a] and [b])

Unit personnel begin taking action to evaluate and remove accumulated liquids in the spill pallets upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.500/40 CFR 264.17, 264.176, and 264.177; 20 NMAC 4.1.900/ 40 CFR 270.14[b][9] and 270.15[c] and [d])

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the MSB. Unit personnel employ the practices described in Section 1.1.2 of the SNL/NM General Part B. Additional Unit-specific features, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes. Water-reactive wastes are not routinely stored in the bunkers.

- Containers are not routinely opened during storage at the bunkers, and RCRA-regulated wastes are not repackaged.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas, each row or area containing only compatible wastes.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the MSB.

1.2.3.1 Required Equipment (20 NMAC 4.1.500/40 CFR 264.32)

The MSB are not equipped with automatic fire suppression systems. As noted in Table 2, fire-fighting services are provided by the KAFB fire department tanker trucks. Information on other required equipment located at the MSB is provided in Section 6.0 and Table 2 of this module.

1.2.3.2 Testing and Maintenance of Equipment (20 NMAC 4.1.500/40 CFR 264.33)

Information on equipment testing and maintenance at the MSB is provided in Appendix C of the SNL/NM General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the MSB is provided in Section 1.1.3.3 of the SNL/NM General Part B and in Section 6.0 of this module. Personnel at the Unit typically maintain contact with the emergency coordinator and other Radioactive and Mixed Waste Management Facility (RMWMF) personnel through 2-way radios or cellular phones.

1.2.4 Hazards Prevention (20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address the procedures, equipment, and structures used at the MSB to prevent hazards. Additional information applicable to the MSB and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B.

1.2.4.1 Preventing Hazards in Unloading (20 NMAC 4.1.900/40 CFR 270.14[b][8][i])

MSB personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B to prevent hazards in unloading. Loading and unloading activities take place on the paved areas immediately outside the bunkers. The surface is sloped gently away from the door, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Containers are typically strapped together or tied down on a pallet before being moved. Containers are moved with a forklift from the storage areas through the access tunnels to the loading areas at each bunker. Containers may be moved with a drum dolly or hand truck within each bunker.

Waste handling personnel work in pairs at the Unit, and maintain contact with one another. Because the Unit is not routinely occupied, personnel are trained to be particularly aware of weather conditions and other operations that could affect waste movement, and to exercise caution in operating equipment such as forklifts.

1.2.4.2 Preventing Runoff or Flooding (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii])

Sheet-flow run-on of surface water from surrounding areas and runoff from the MSB are prevented from entering/leaving the WMAs by the design and construction of the bunkers. The MSB are constructed of concrete and covered by earthen materials. The slope of the earthen materials covering the bunkers prevents run-on of storm water or snow melt. The interior roof and side walls of each bunker are protected by a waterproof membrane. In Type B and Type C bunkers, a 6-ft drain tile is located on the exterior perimeter, so any water that percolates through the earthen fill is drained away from the bunkers. The drive at the front of each bunker is level or sloped slightly away from the bunker doors.

1.2.4.3 Preventing Contamination of Water Supplies (20 NMAC 4.1.900/40 CFR 270.14[b][8][iii])

Sandia/DOE do not anticipate that RCRA-regulated waste management activities at the MSB will affect water supplies, as described in this section and in Section 1.1.4.3 of the SNL/NM General Part B.

1.2.4.4 Mitigating Effects of Equipment Failure or Power Outages (20 NMAC 4.1.900/ 40 CFR 270.14[b][8][iv])

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B. RCRA-regulated waste management activities at the MSB will be suspended in response to equipment failures of power outages affecting those WMAs.

Electrical power is not required for the safe operation of the MSB WMAs. Equipment and/or power failures will not result in a loss of RCRA-regulated waste containment.

1.2.4.5 Preventing Undue Exposure (20 NMAC 4.1.900/40 CFR 270.14[b][8][v])

MSB personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B to prevent undue exposure.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC)

MSB personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B to prevent releases to the atmosphere during storage.

<u>Subpart AA</u>

MSB storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities at the MSB, Sandia/DOE do not manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [6-14-00].

Subpart CC

MSB personnel employ the practices described in Section 1.1.4.6 of the SNL/NM General Part B to prevent releases to the atmosphere in accordance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the bunker WMAs.

Section B.5.3 of Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [6-14-00].

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264 Subpart I)

Container storage practices applicable to the MSB are presented in the following sections.

1.3.1 Container Types and Labeling

MSB personnel use the containers types and labeling practices described in Section 1.2.1 of the SNL/NM General Part B.

1.3.2 Container Handling (20 NMAC 4.1.500/40 CFR 264.173)

MSB personnel employ the container handling practices described in Section 1.2.2 of the SNL/NM General Part B.

1.3.2.1 Condition of Containers (20 NMAC 4.1.500/40 CFR 264.171)

The condition of containers at the MSB is maintained as indicated in Section 1.2.2.1 of the SNL/NM General Part B.

1.3.2.2 Aisle Space and Storage Configuration (20 NMAC 4.1.500/40 CFR 264.35)

MSB personnel employ the aisle space and storage configuration as described in Section 1.2.2.2 of the SNL/NM General Part B. Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection

equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than two or three pallets high. Smaller containers may be stacked on a single pallet. Box-shaped containers may be stacked two high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are not stacked.

1.3.2.3 Capability of Waste with containers (20 NMAC 4.1.500/40 CFR 264.172)

MSB personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the SNL/NM General Part B.

1.3.2.4 Presence of Liquids in Containers (20 NMAC 4.1.900/40 CFR 270.15[b][1] and 20 NMAC 4.1.500/40 CFR 264.175[c])

MSB personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the SNL/NM General Part B before storing containers in areas that are not equipped with secondary containment.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of the 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [6-14-00]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.14 [6-14-00]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [6-14-00]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [6-14-00], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [6-14-00]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [6-14-00]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [6-14-00]; 20 NMAC 4.1.500/40 CFR 264.90[a] [6-14-00]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of SNL/NM General Part B.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the MSB.

2.1.1 Barriers and Means to Control Entry (20 NMAC 4.1.500/40 CFR 264.14[b][2][i] and [ii])

The doors of the individual bunkers are locked except when personnel are present. As noted in Appendix A of the General Part B, Sandia security personnel periodically monitor the SNL/NM RCRA-regulated Units during non-operational hours.

Unit personnel have Sandia-issued badges. Individuals who do not have Sandia-issued badges are escorted. These procedures limit access to the MSB WMAs in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [6-14-00].

The MSB are located within the Manzano Base area. The Manzano Base is surrounded by an 8-ft chain-link fence (Figures 1, 2, and 8). Entrance to the Manzano Base area, whether by personnel or vehicles, is through one controlled gate. Manzano Base access control

procedures are designed to assure that only properly authorized persons, vehicles, and property are allowed access to the bunkers.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The entrance to each bunker is posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, are legible from a distance of 25 ft, and can be seen from the paved access road approach to each bunker. Additional signs are not necessary because employees and visitors do not approach the bunkers from any other direction.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes to the MSB include Wyoming Boulevard, and Pennsylvania Avenue as shown on Figure A-4 in Appendix A of the SNL/NM General Part B. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. The MSB are located approximately 1 mile east of the exit road leading to the entrance of TA-III and TA-V and at the end of Pennsylvania Avenue. Within Manzano Base, waste is transported to each bunker on 2-lane asphalt-paved roads (Figure 6).

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard, and Eubank Boulevard are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Fewer than 10 vehicles typically travel to the MSB per week. These include flatbed trucks and trailers carrying supplies and containers of RCRA-regulated waste to and from the MSB.

2.2.3 Traffic Control Signals

A stop sign is located approximately 50 ft west of the Manzano Base entrance gate. Traffic control signals within Manzano Base include stop signs, yield signs, and posted speed limits. Traffic routes and controls at Manzano Base are shown on Figure 6.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

2.3.1 Seismic Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][i and ii] and 20 NMAC 4.1.500/40 CFR 264.18[a])

The WMAs at the MSB are not located within 3,000 ft of any faults with Holocene displacements (see Section A.4.2 in Appendix A [SNL/NM, 2002c] of the SNL/NM General Part B).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the MSB are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B [SNL/NM, 2003b]).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [6-14-00]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [6-14-00]).
- Surface waters, including intermittent streams, near the MSB are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [6-14-00]).
- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [6-14-00]). The area surrounding the MSB is occupied by test facilities.
- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [6-14-00]).
- Legal boundaries of SNL/NM (including the MSB) are shown on Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [6-14-00]).
- Access control features at the MSB (e.g., fences, gates) are shown on Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [6-14-00]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the MSB are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [6-14-00]).

- Locations of Manzano Base and the MSB WMAs, access roads, and loading and unloading areas are shown on Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [6-14-00]). There are no sanitary sewers in the vicinity of the MSB.

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 9 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [6-14-00]).

- Locations of Manzano Base and MSB WMAs are shown on Figure7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [6-14-00]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the MSB. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [6-14-00], SNL/NM has submitted the maps to the NMED at these scales and contour intervals due to the size of the MSB, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c] and 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of this comprehensive Part B permit request. The MSB is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor are the MSB likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

In accordance with 40 CFR 270.14[b][2] and 20 NMAC 4.1.500/40 CFR 264.13, “General Waste Analysis” [6-14-00], waste analysis requirements applicable to all Units, including the MSB, are addressed in Appendix B of the SNL/NM General Part B.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [6-14-00] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [6-14-00] required that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of RCRA-regulated waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to RCRA-regulated waste management activities to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the “Site-Wide Inspection Plan”, provided as Appendix C of the SNL/NM General Part B. Unit personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 1, with the inspection criteria and frequency.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B. The inspection plan (Appendix C and this section) is maintained at the RMWMF. Inspection records for the current calendar year are maintained at each bunker. Inspection records for previous calendar years are maintained at the RMWMF or the SNL/NM Records Center.

Table 1
Manzano Storage Bunker Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT		
Portable eye wash	Operational, accessible, in good condition	Monthly
Spill control equipment	Present, quantities per inventory, accessible, in good condition	Monthly
Smoke alarm	Present	Monthly
Fire extinguisher	Present, charged, accessible, and in good condition	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Bunker floor	Clean, no spills or excessive wear	Weekly when wastes are managed. Monthly otherwise.
Bunker walls	Not leaking or spalling, in good condition	Weekly when wastes are managed. Monthly otherwise.
Bunker ceiling	Not leaking or spalling, and in good condition	Weekly when wastes are managed. Monthly otherwise.
Bunker lights	Operational and in good condition	Weekly when wastes are managed. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, no spills	Daily when wastes are managed. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when wastes are managed. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
STORED CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Daily for individual containers that were handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Daily for individual containers that were handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Daily for individual containers that were handled. Weekly otherwise.
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Daily for individual containers that were handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Daily for individual containers that were handled. Weekly otherwise.
Location	Correct aisle space, correct stacking (2 maximum)	Daily for individual containers that were handled. Weekly otherwise.

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900, 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16 [6-14-00], "Personnel Training." The Sandia/DOE training program is designed and implemented to prepare personnel to operate and safely maintain those areas used for managing RCRA-regulated waste at the MSB.

All job descriptions identified in Appendix D, Table D-2 of the SNL/NM General Part B are applicable at the MSB. MSB personnel receive training in accordance with the "Site-Wide Personnel Training Plan" provided in Appendix D of the SNL/NM General Part B.

Training records for MSB personnel are maintained at the Radioactive and Mixed Waste Management Facility at SNL/NM.

6.0 CONTINGENCY PLAN

Emergency response requirements for RCRA-regulated units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [6-14-00], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [6-14-00]. The Sandia/DOE Site-Wide Contingency Plan is included as Appendix E of the SNL/NM General Part B. Supplemental MSB-specific information is included in this section, Figures 10-12, and in Tables 2 and 3 of this module. Current copies of the Site-Wide Contingency Plan and this supplemental information are maintained at each bunker, at the RMWMF and at the SNL/NM Emergency Operations Center.

The U.S. Department of Energy and Sandia Corporation use the five bunkers of the MSB to store containers of RCRA-regulated waste. The MSB are located approximately 1 mile east of the road leading to the entrance of TA-III and -V at the end of Pennsylvania Avenue. The WMAs at the MSB include: a Type B bunker (37034); a Type C bunker (37118); and three Type D bunkers (37045, 37055, and 37057). Bunkers are constructed of concrete (walls, roof, and floor) and are covered by earthen materials.

RCRA-regulated wastes bearing the U.S. EPA listed in the General Part A Permit may be stored at the MSB WMAs. Waste is segregated based on compatibility groups within each bunker.

Figure 10 presents evacuation routes for the MSB. Figures 11 and 12 present emergency response and access information for the MSB. Table 2 lists the emergency equipment typically available at the MSB. Table 3 lists the emergency coordinators for the MSB.

The emergency coordinators are informed of planned work activities at the beginning of each work day; this includes activities at Units that are not routinely staffed (such as the MSB).

Table 2
Manzano Storage Bunkers,
Emergency Equipment and Locations

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Portable Eyewash	By inner door inside each bunker
	Absorbents	By inner door inside each bunker
Internal Communication and Alarm System	Voice command Portable 2-way radio	Operating personnel typically carry radios.
	Smoke Alarms	• Smoke detectors and alarms inside each bunker • Strobe light on front outside each bunker
External Communication System	Mobile Telephone or Portable Radio	Taken to bunkers by personnel
Fire Extinguishers	Portable (A-B-C)	By entrance door outside each bunker
Fire Suppression	Water to Extinguish Fires	KAFB tanker truck at the KAFB fire station in the Manzano administrative area

KAFB Kirtland Air Force Base

Table 3
Manzano Storage Bunkers,
Facility Emergency Coordinator List

April 16, 2003

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Jeff Jarry Sandia National Laboratories P. O. Box 5800 Albuquerque, NM 87185	(505) 284-3080 (office) (505) 561-1138 (pager)	(505) 452-3337
First Alternate	Mike Spoerner Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2813 (office) (505) 540-5296 (pager)	(505) 828-3441
Second Alternate	Phil Zelle Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2486 (office) (505) 540-7437 (pager)	(505) 292-5097
Third Alternate	Mary Ann Krauss Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-9997 (office) (505) 540-5228 (pager)	(505) 299-0793

One or more of the listed personnel are routinely available at the Radioactive and Mixed Waste Management Facility during normal work hours (7:00 am to 5:30 pm, Monday through Thursday) and can be contacted by radio or telephone during those hours.

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13], and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I [6-14-00]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in Appendix F of the SNL/NM General Part B. The site-wide Closure Plan includes a description of the SNL/NM facility; waste description; closure performance standards, closure methods; sampling and analysis plan; closure schedule; procedures for amendment of the Closure Plan, closure certification and report, survey plat, and post-closure requirements. Unit-specific information is included in this section.

7.1 Unit Description

The U.S. Department of Energy and Sandia Corporation use the five bunkers of the Manzano Storage Bunkers (MSB) to store containers of RCRA-regulated waste. The MSB are located approximately 1 mile east of the road leading to the entrance of TA-III and -V at the end of Pennsylvania Avenue. The WMAs at the MSB include: a Type B bunker (37034); a Type C bunker (37118); and three Type D bunkers (37045, 37055, and 37057). Bunkers are constructed of concrete (walls, roof, and floor) and are covered by earthen materials.

7.2 Estimate of Maximum Waste in Storage

The maximum total inventory of RCRA-regulated waste in storage at any time in the MSB is approximately 105,600 gallons of liquids and/or solids. WMAs are located at the bunkers shown in Figure 2. The maximum total waste inventory is broken down as follows:

- Type B Bunker (37034): 25,080 gallons
- Type C Bunker (37118): 25,080 gallons
- Type D Bunkers (37045, 37055, and 37057): 55,440 gallons

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 in Appendix F of the SNL/NM General Part B, closure activities specified in this plan assume the following conditions were met during the operational life of the MSB:

- RCRA-regulated waste handling activities involving the opening of waste containers at the MSB were confined to the interiors of the bunkers. If contamination occurred, it would have been confined to those areas; and

- The interior walls and floors of RCRA-regulated waste management areas were maintained to retain their integrity by following established maintenance and inspection procedures and breaches of protective coatings did not occur.

7.4 Closure Schedule

Section F.7 of the site-wide Closure Plan provides a timeline for closure activities applicable to all RCRA-regulated Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the bunkers, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the MSB.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide Closure Plan presents sample collection equipment and techniques applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated to address specific details (e.g., the number and location of samples, required analytical constituents, QA/QC procedures, etc.) regarding closure of the bunkers. This Unit-specific sampling and analysis plan (SAP) will be submitted to NMED for approval prior to initiation of closure activities at the MSB.

7.6 Decontamination Procedures

Section F.5.3 of the site-wide Closure Plan presents decontamination procedures applicable to all RCRA-regulated waste management Units at the SNL/NM facility. Prior to closure, this Unit-specific Closure Plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific Closure Plan will be submitted to NMED for approval prior to initiation of closure activities at the MSB.

8.0 TREATMENT PLAN

Sandia/DOE do not perform treatment of RCRA-regulated wastes requiring a permit at the MSB.

9.0 REFERENCES

Sandia National Laboratories/New Mexico (SNL/NM), 2003, “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application,” Revision 5.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico.

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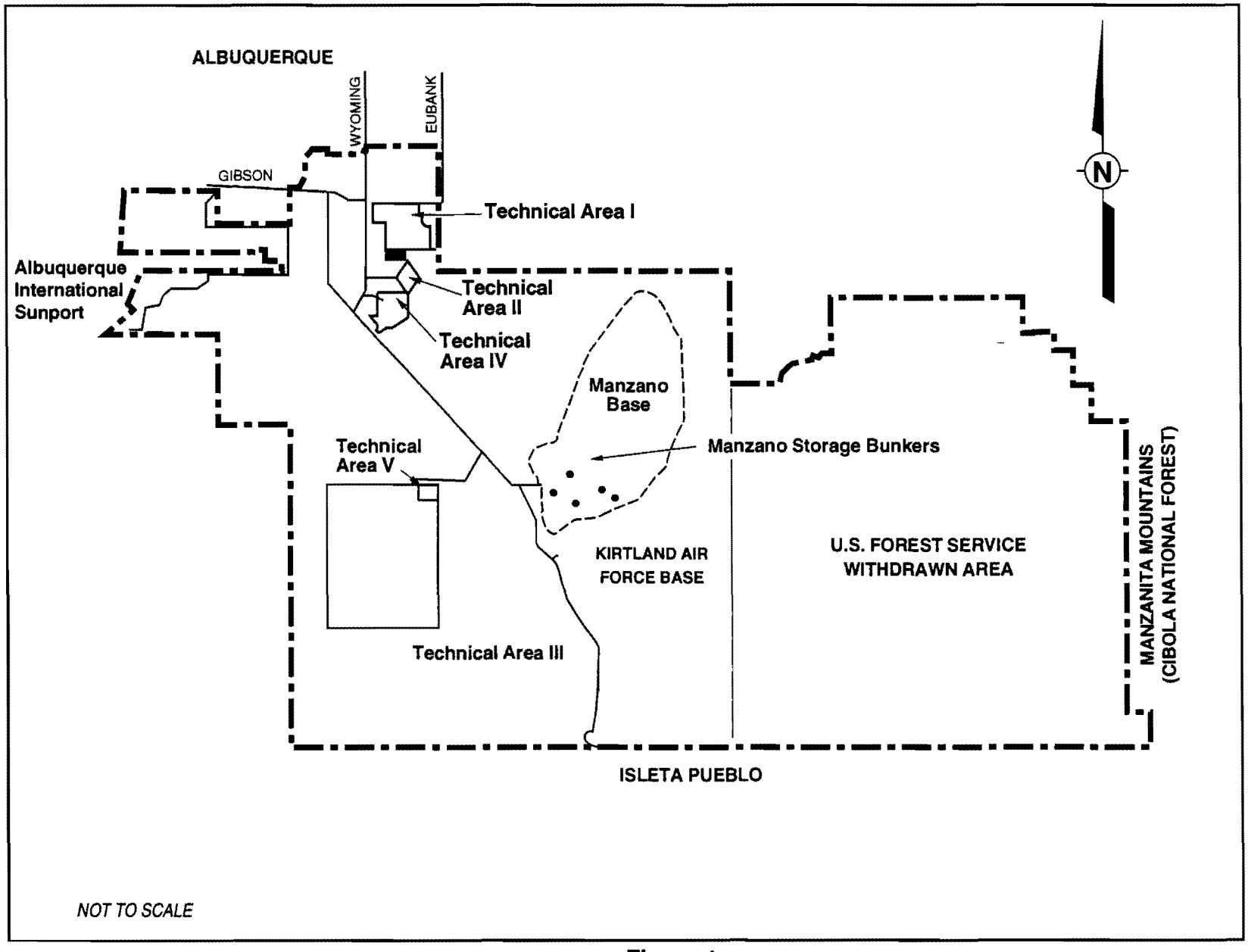

Figure 1
Location Map of the Manzano Storage Bunkers at Sandia National Laboratories/New Mexico

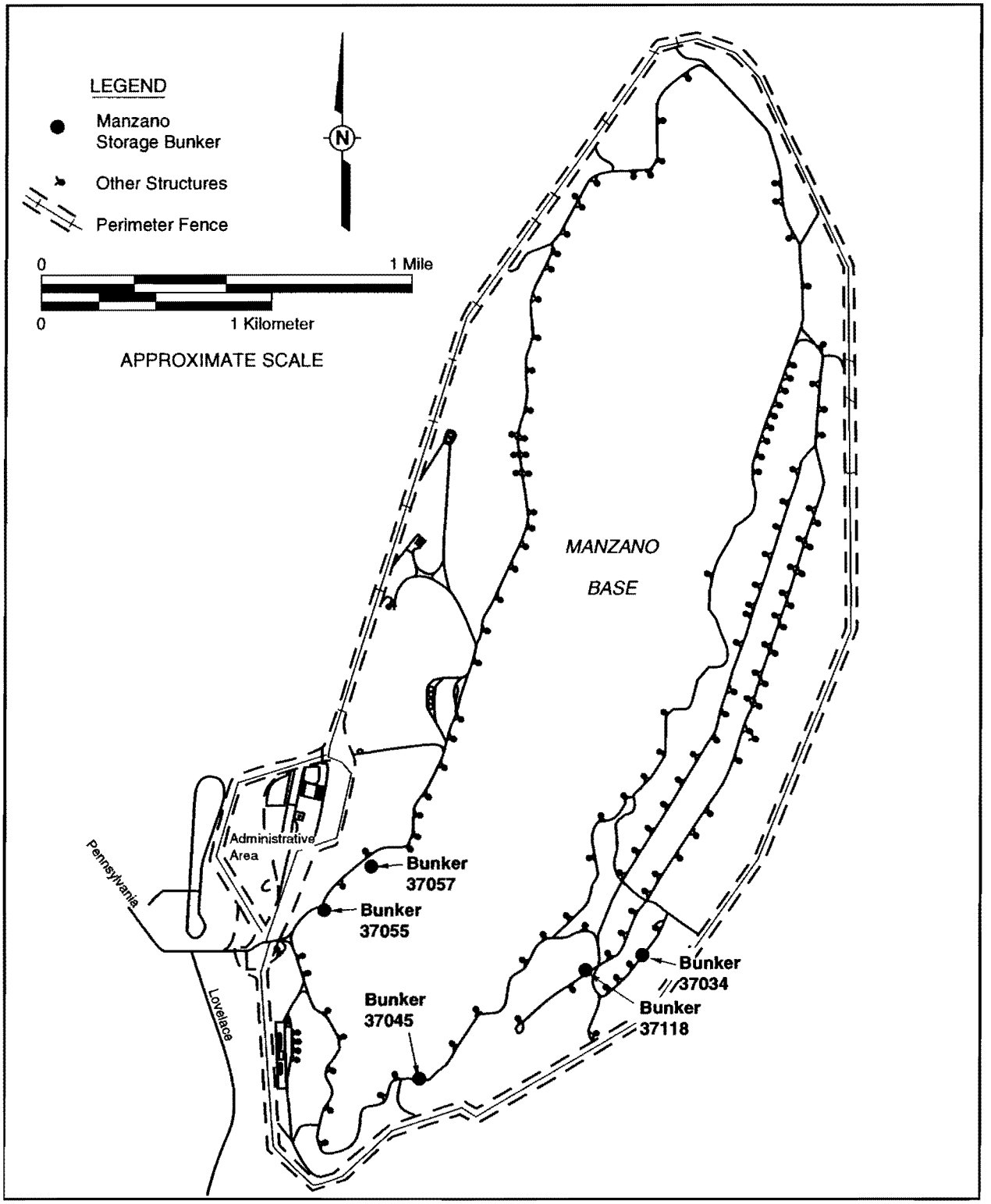

Figure 2
Location of the Manzano Storage Bunkers at Manzano Base

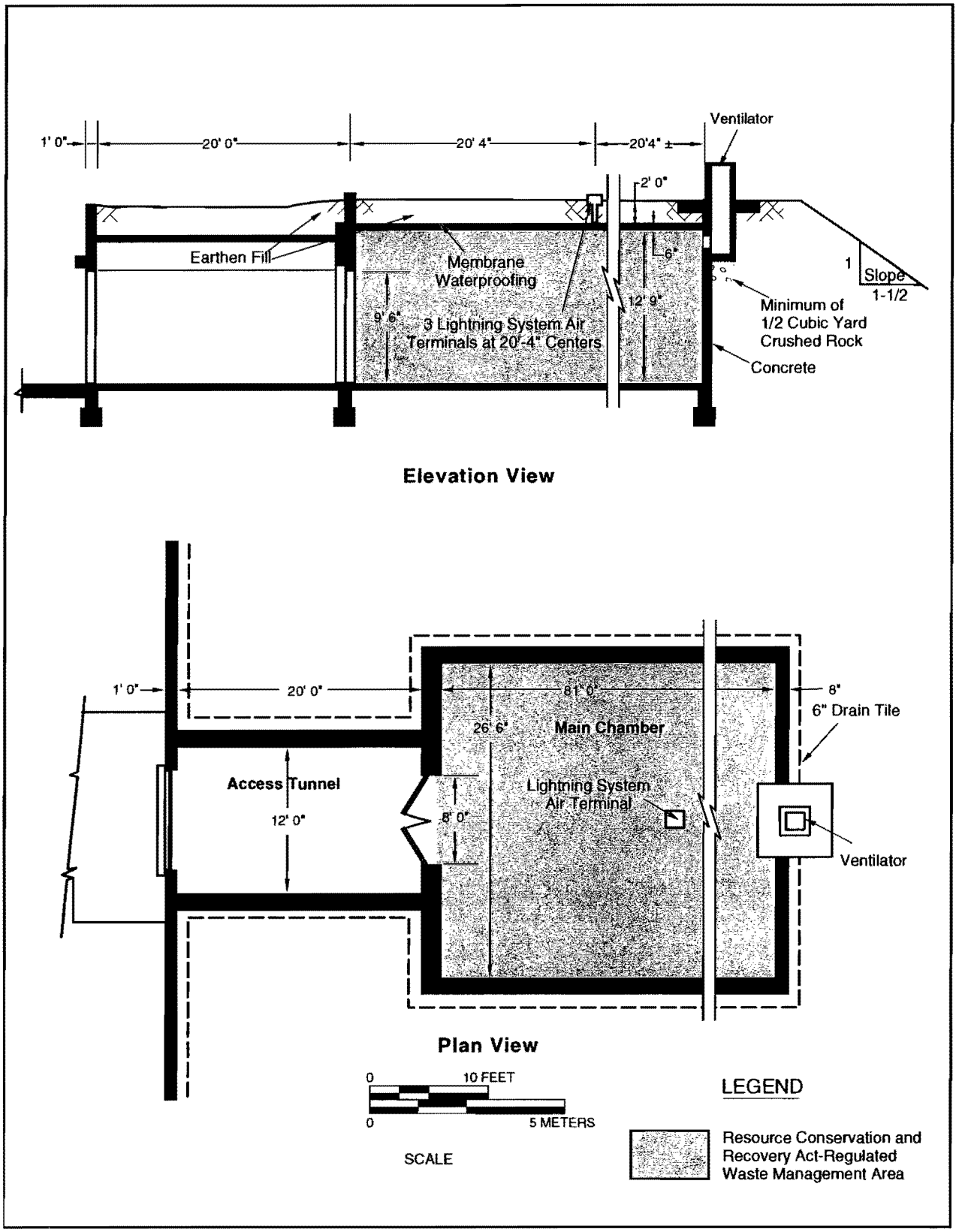

Figure 3
Manzano Storage Bunker, Type B, Bunker 37034

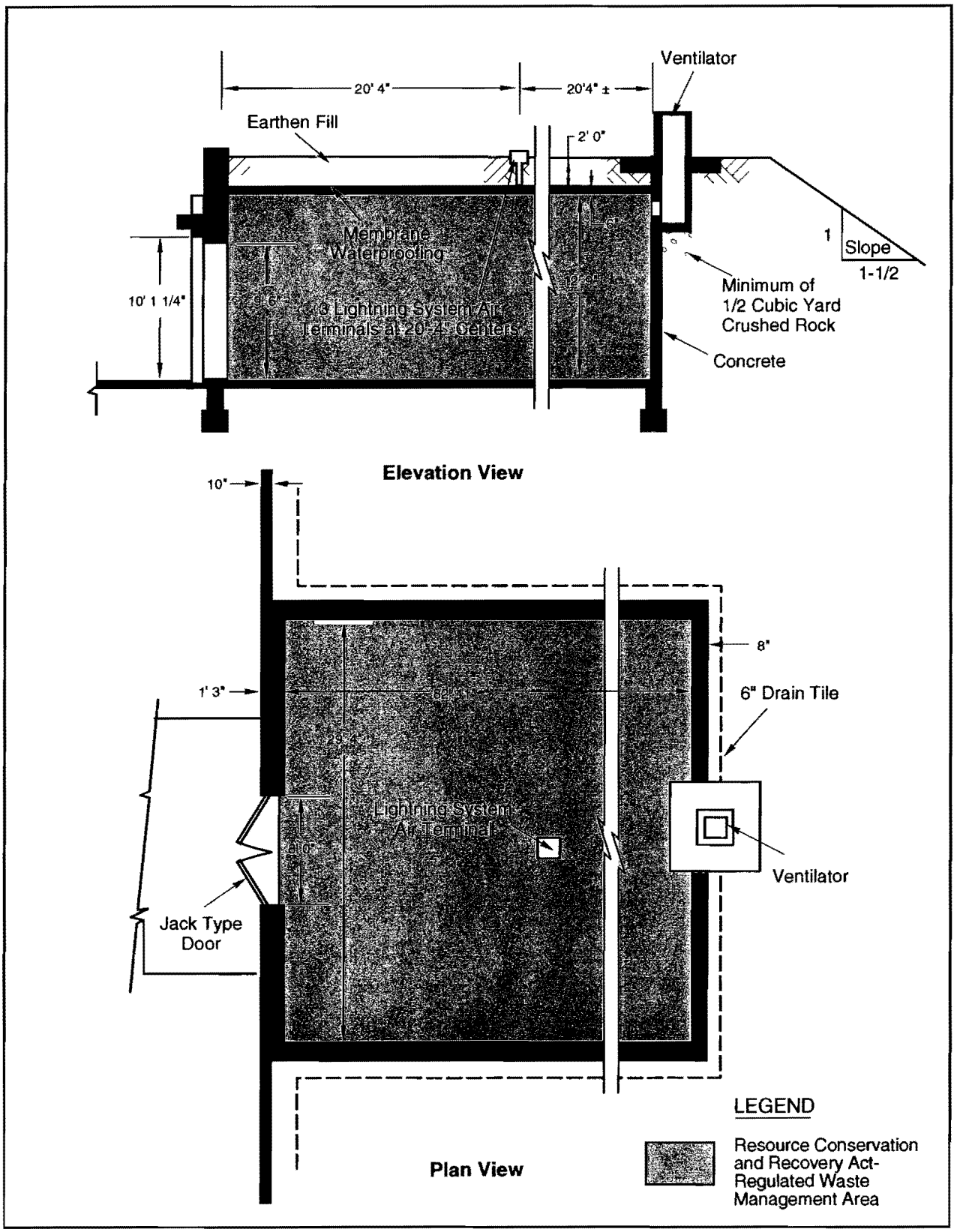

Figure 4
Manzano Storage Bunker, Type C, Bunker 37118

TO VIEW THE MAP/MAPS ASSOCIATED WITH THIS DOCUMENT PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

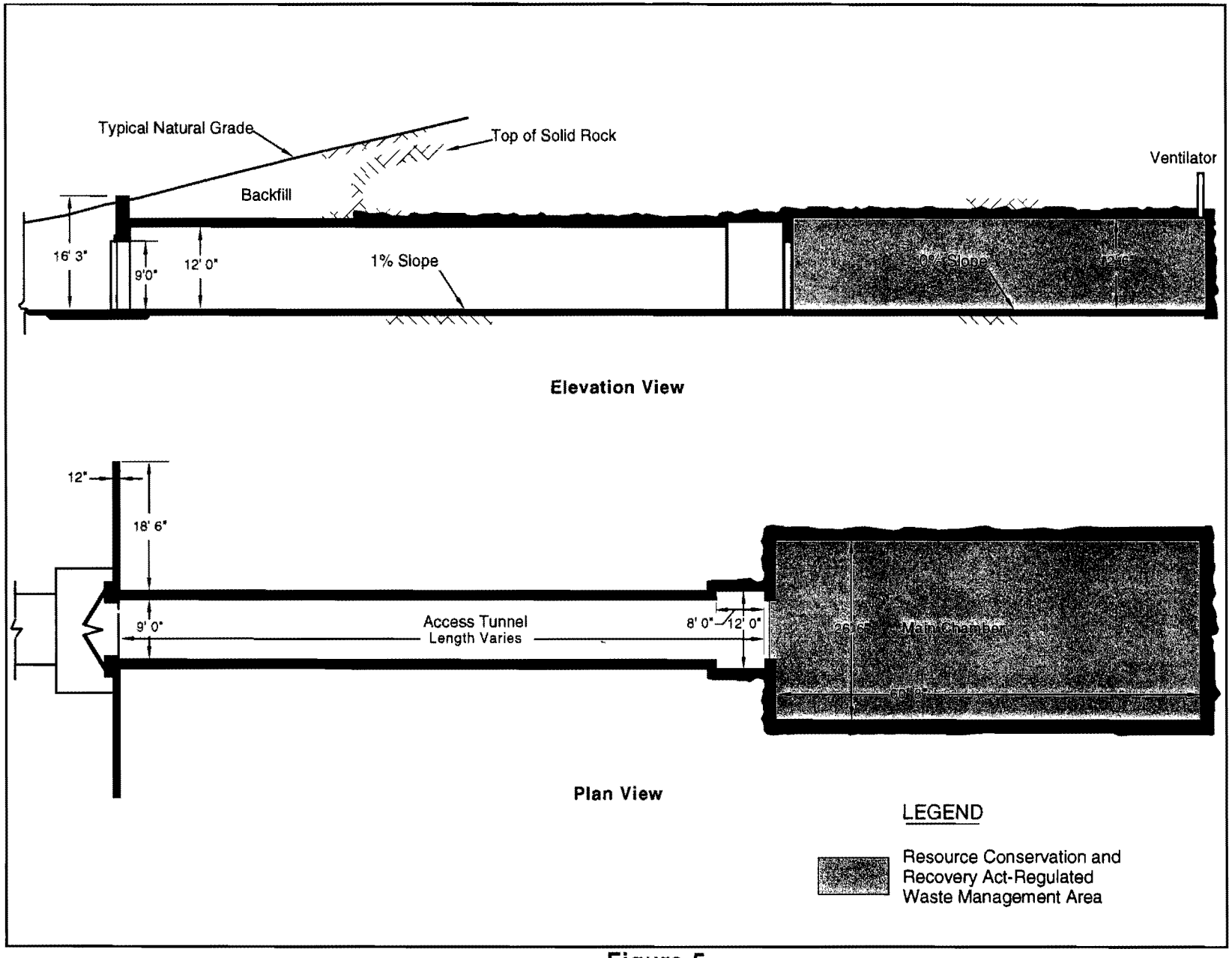

Figure 5
Manzano Storage Bunkers, Type D
Bunkers 37045, 37055, and 37057

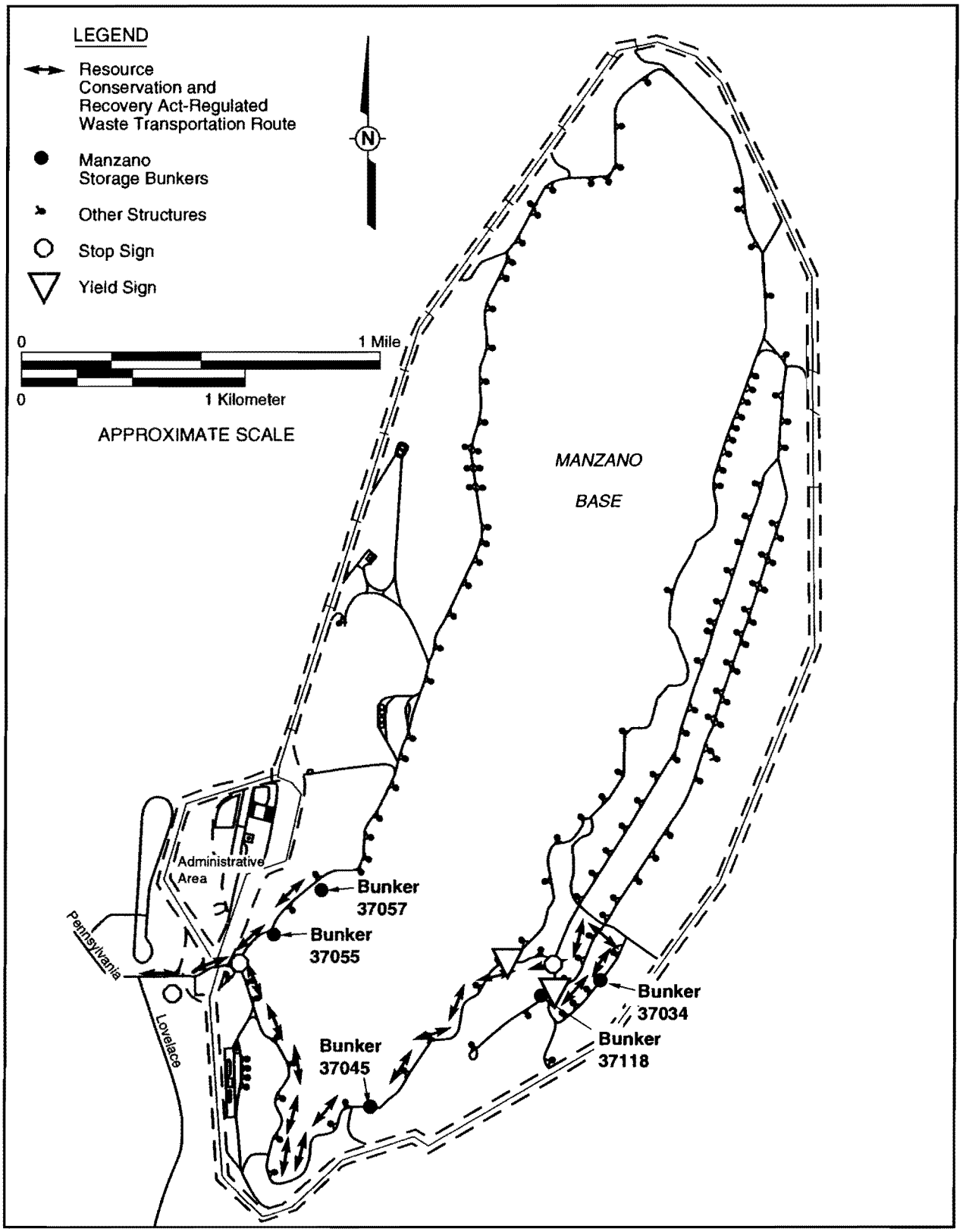

Figure 6

Manzano Storage Bunkers, Traffic Routes and Controls

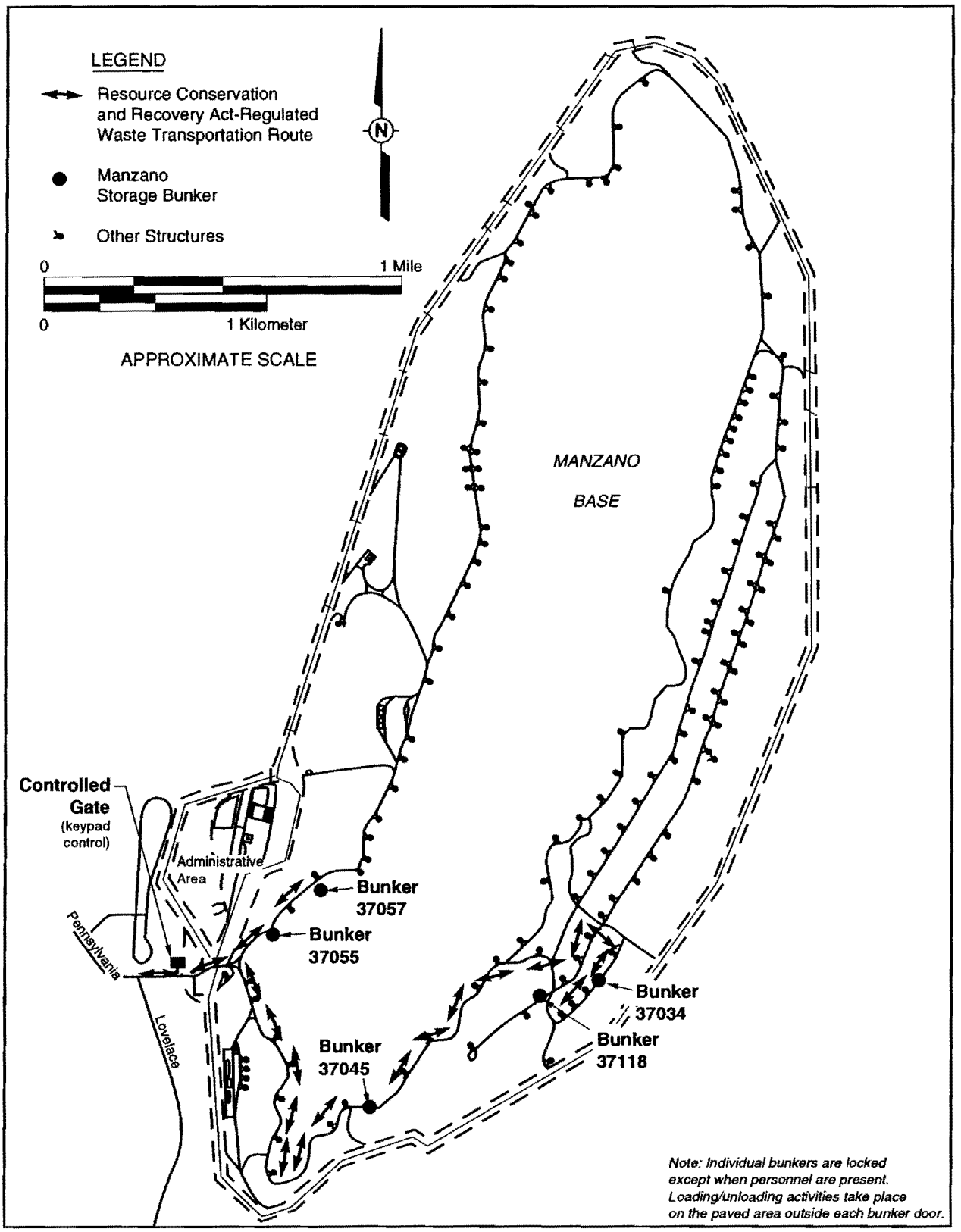

Figure 8

Manzano Storage Bunkers, Access Control Features

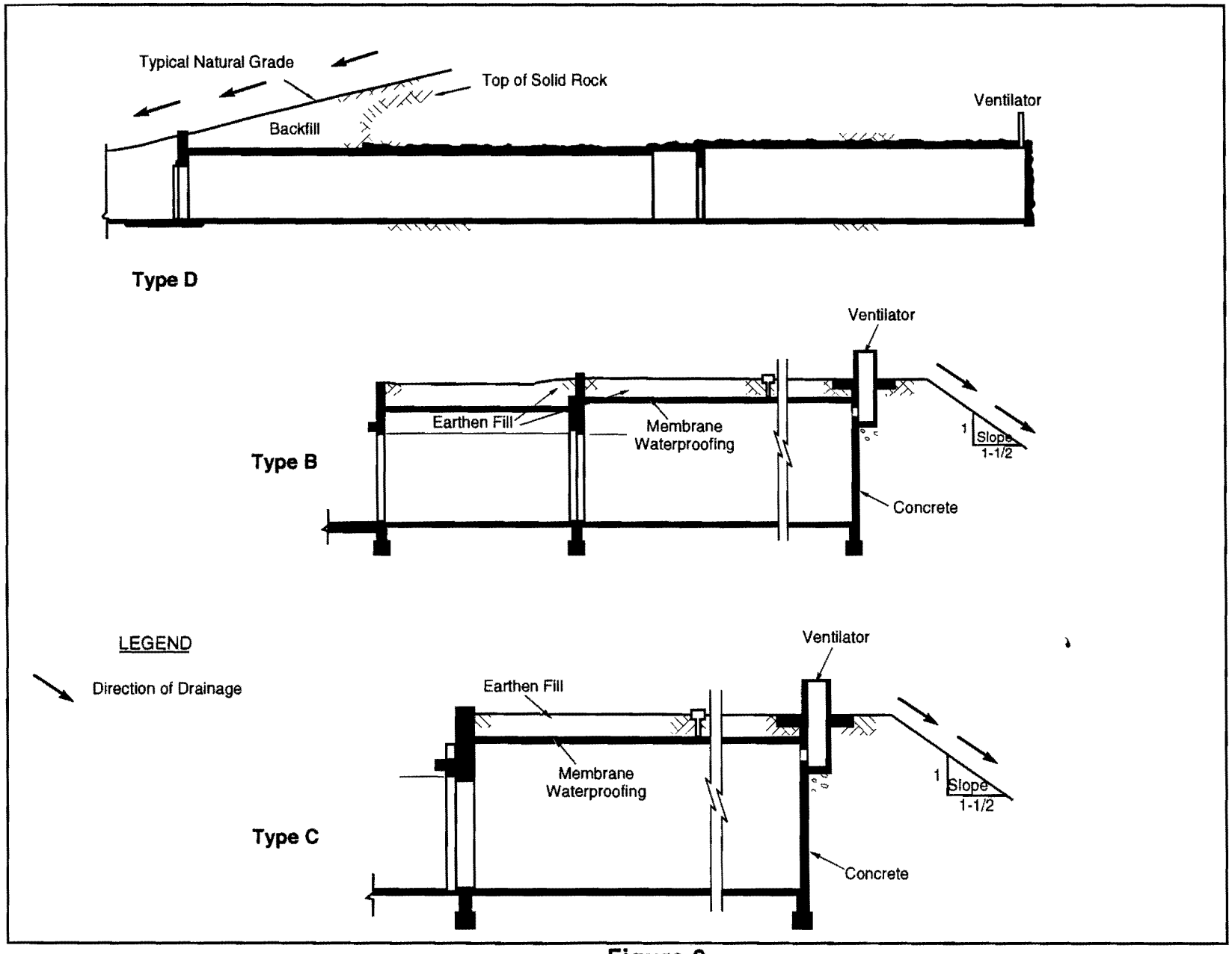

Figure 9
Manzano Storage Bunkers, Drainage Control Features

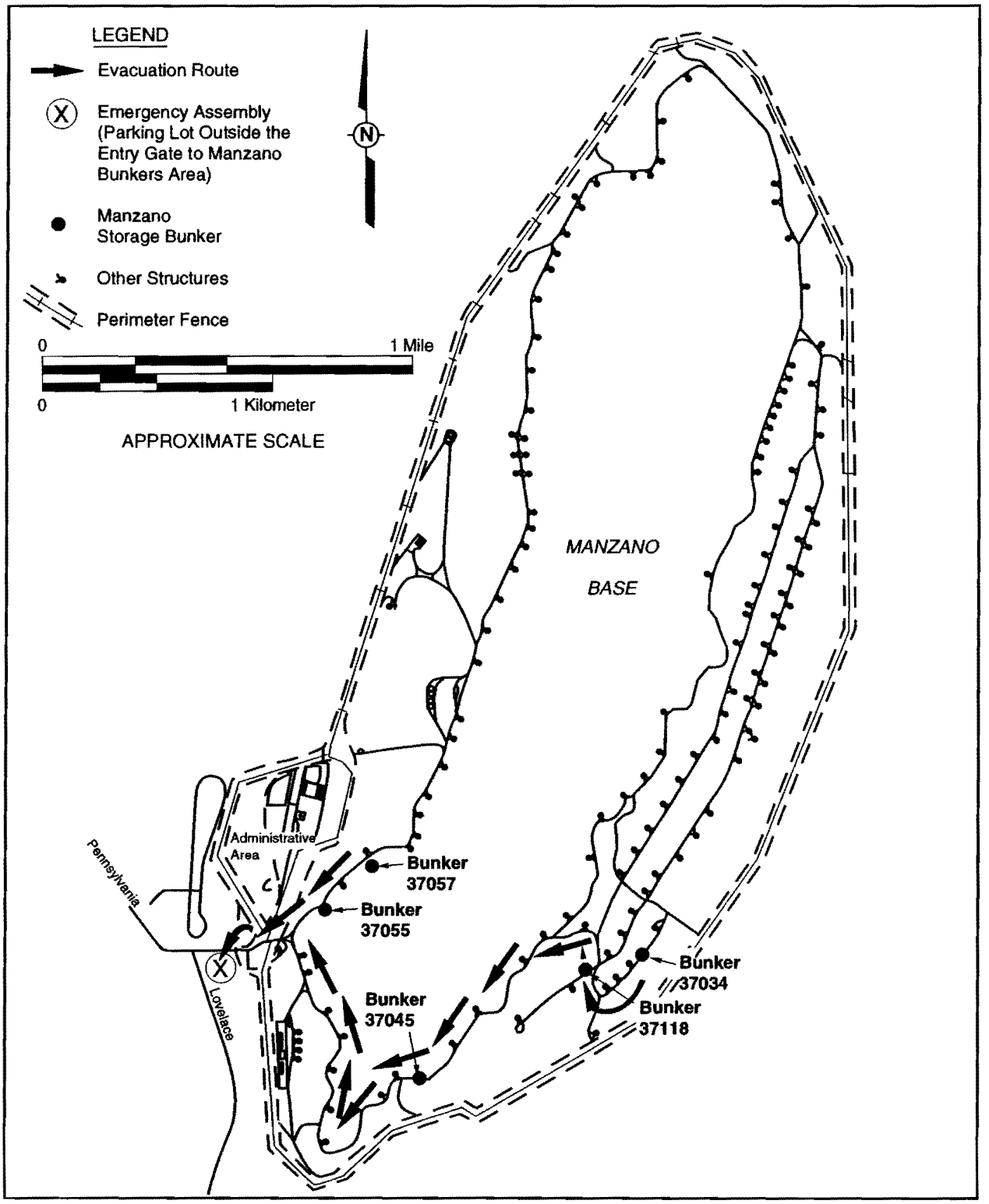

Figure 10
Manzano Storage Bunkers, Evacuation Routes

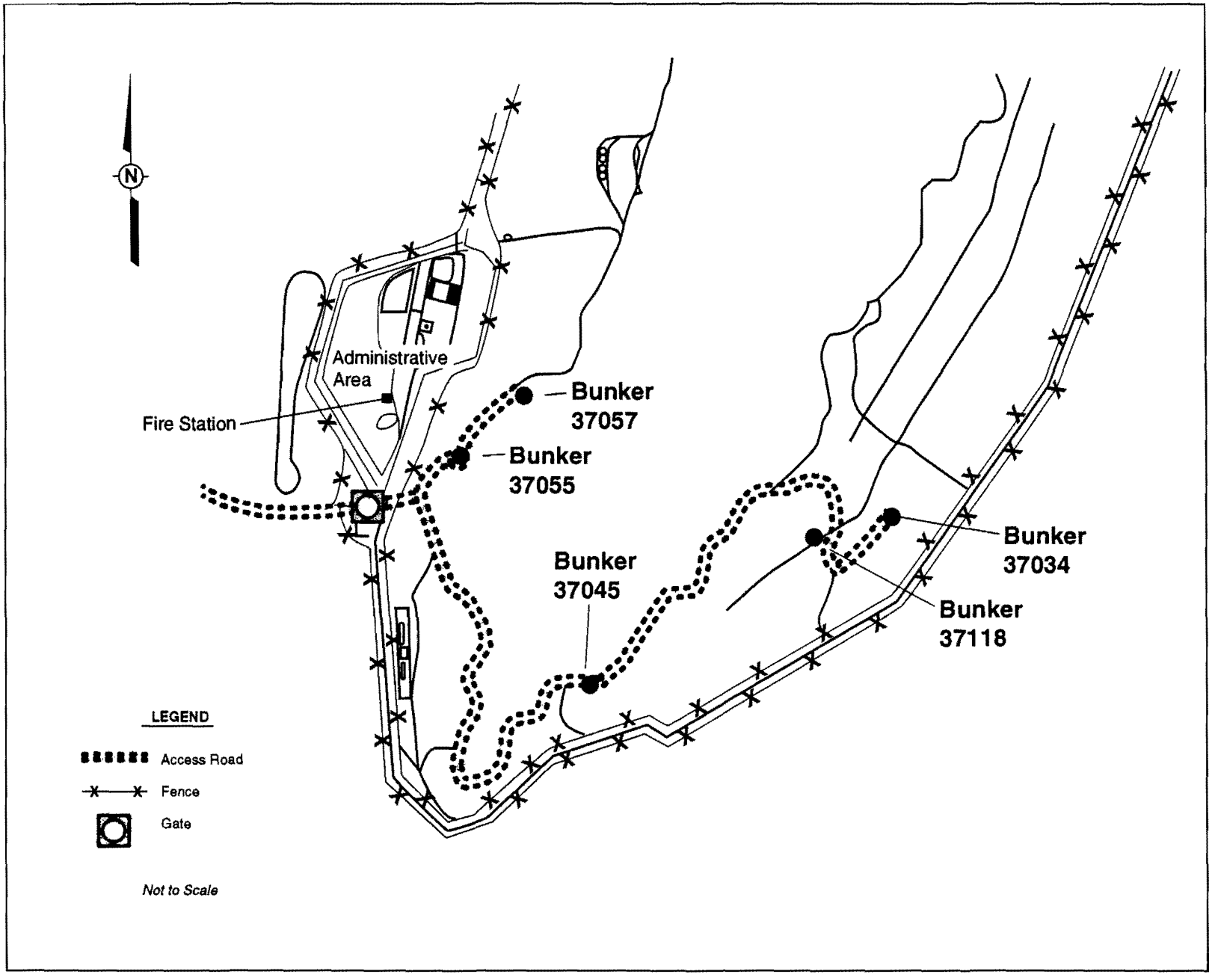

Figure 11

Emergency Response and Access Information in the Vicinity of the Manzano Storage Bunkers

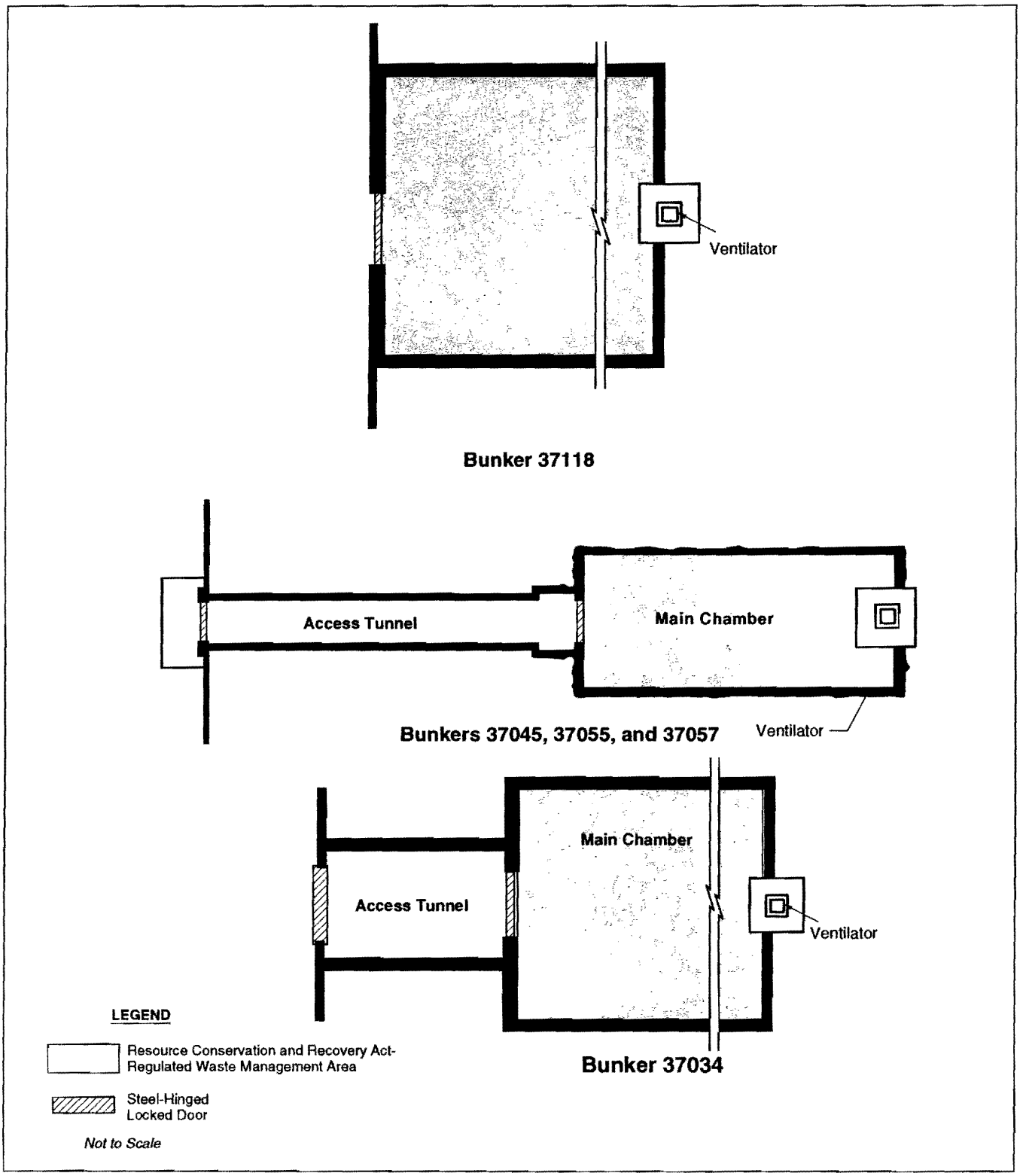

Figure 12

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Figure1 Location of Solid Waste Management Units, Sites Qualified to be on the Permit, and the Chemical Waste Landfill at SNL New Mexico

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PART 3

ADDITIONAL INFORMATION REQUIREMENTS
PROTECTION OF GROUNDWATER

This part addresses information required by 20 NMAC 4.1.900/40 CFR 270.14(c), "Additional information requirements." This provision requires additional information related to protection of groundwater for facilities containing a regulated unit. A regulated unit, defined in 20 NMAC 4.1.500/40 CFR 264.90(a)(2), is a surface impoundment, waste pile, and land treatment unit or landfill that received hazardous waste after July 26, 1982.

Using this definition, the Chemical Waste Landfill (CWL) qualifies as a regulated unit. The CWL is an inactive landfill located in the southeastern corner of Technical Area (TA) III at Sandia National Laboratories in New Mexico (SNL/NM).

The CWL qualified for interim status under 20 NMAC 4.1.900/40 CFR 270.70 and is now closing under interim status. The closure process is governed by the CWL Final Closure Plan and Post-Closure Permit Application (SNL/NM, December 1992), fulfilling the requirements of 20 NMAC 4.1.600/40 CFR 265 Subpart G. The approved CWL Closure Plan contains the details of the groundwater monitoring program.

REFERENCE

Sandia National Laboratories/New Mexico (SNL/NM), December 1992. The Chemical Waste Landfill Closure Plan and Post-Closure Permit Application, Sandia National Laboratories, Albuquerque, New Mexico.

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PART 4

INFORMATION REQUIREMENTS
SOLID WASTE MANAGEMENT UNITS

1.0 INTRODUCTION

This part addresses 20 NMAC 4.1.900, 40 CFR 270.14(d), *Information Requirements for Solid Waste Management Units*. This provision requires the following information for each solid waste management unit (SWMU) at the facility:

- The location of each unit on a topographic map,
- Designation of the type of unit,
- General dimensions and structural description,
- When the unit was operated,
- Specification of wastes that have been managed at the unit, to the extent available,
- Available information pertaining to any release of hazardous waste or hazardous constituents, and
- Results of sampling and analysis of groundwater, land surface, and subsurface strata, surface water, or air.

The required information is provided for each SWMU and for each area of concern (AOC) which the New Mexico Environment Department (NMED) has determined qualifies to be on the permit. The information is provided in the form of Environmental Restoration Site Summary Sheets, a database containing current information on each SWMU/AOC. Figure 1 shows the location of each SWMU/AOC. The Site Summary Sheets and Figure 1 are presented in Section 2.0.

Within 30 days of discovery of a newly-identified SWMU, DOE and Sandia will submit a notification to the NMED, as required by Section IV.G of the current RCRA permit. If an area is suspected of being a SWMU, historical information is gathered and sampling may be conducted to determine if the area qualifies as a SWMU, as defined in Section IV.A of the current RCRA permit. ("SWMU means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.") The information is presented and evaluated in the notification to the NMED. Additional information (for example, the results of sampling) will be compiled and presented in a SWMU Assessment Report, including an assessment of whether releases of hazardous waste including hazardous constituents have occurred, are occurring, or are likely to occur from the unit. The NMED may determine that the SWMU should be included in the HSWA Module, based on a finding that releases of hazardous waste including hazardous

constituents have occurred, are occurring, or are likely to occur from the unit. If a SWMU is added to the HSWA Module, the NMED may require further investigations or corrective measures at that site. The current permit conditions include provisions for RCRA facility investigations and corrective measures, including voluntary corrective measures.

Section 3.0 of this Part contains supplemental information for Canyons Groundwater, Technical Area III/V Groundwater, and Tijeras Arroyo Groundwater.

2.0 SITE SUMMARY SHEETS

SNL/NM SWMU information is provided in the form of Environmental Restoration Site Summary Sheets, a database containing current information on each SWMU/AOC. Figure 1 shows the location of each SWMU/AOC. The remainder of this section contains the Site Summary Sheets.

OU-1289
MIXED WASTE LANDFILL

ER Site No. 76: Mixed Waste Landfill

ADS: 1289
Operable Unit: Mixed Waste Landfill

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Jerry Peace;Tim Goering
Office Phone: 284-2472; 284-2563

Site History

The Mixed Waste Landfill (MWL) is located approximately 5 miles southeast of Albuquerque International Sunport, and 4 miles south of Technical Area (TA) 1. The site covers 2.6 acres in the north-central portion of TA 3.

The MWL was established in 1959 as a disposal area for radioactive and mixed wastes generated at SNL research facilities. The landfill accepted low-level radioactive waste and minor amounts of mixed waste from March 1959 through December 1988. Approximately 100,000 cubic feet of radioactive wastes containing approximately 6300 Ci of activity (at the time of disposal) were disposed of at the MWL.

The MWL consists of two distinct disposal areas. The classified area, occupying 0.6 acres, and the unclassified area, occupying 2.0 acres. Wastes known to have been disposed of in the classified area include solidified acids, organic compounds, and oils; DU; lead shielding; activation products; beryllium; sodium; lithium; neutron generator tubes; and empty liquid scintillation vials. These wastes were disposed in 36 pits up to 25 feet deep. Wastes known to have been disposed of in the unclassified area include assorted contaminated equipment; decontamination materials; lead shielding; construction debris; contaminated soils; and miscellaneous solid wastes. These wastes were disposed of in seven trenches, typically 15 ft deep, 20 ft wide, and up to 180 ft long. The exact depth of each trench is unknown.

In 1967, approximately 204,000 gal of coolant waste water from the Sandia Engineering Reactor

Facility was disposed of in Trench D. Approximately 1 Ci of total radioactivity, mainly short-lived radionuclides, was discharged into the trench with the cooling water. Because the disposal occurred in 1967, the short half-lived activation products have decayed to below detectable levels.

Tritium is the contaminant of primary concern at the MWL. Tritium exists in surface soils and to depths of 110 feet below ground surface. Tritium has migrated beyond the fenced boundary of the landfill. The tritium in soils at the MWL do not pose a threat to human health or the environment.

Constituents of Concern

Tritium is the contaminant of primary concern at the MWL. Tritium has been detected above background levels in soils to depths of 110 ft. No elevated levels of tritium, or any other contaminants, have been detected in groundwater, which is approximately 500 ft below ground surface. Tritium has been a consistent finding at the MWL since 1969. Tritium exists in surface soils and to depths of 110 feet below ground surface. Tritium has migrated beyond the fenced boundary of the landfill. The tritium in soils at the MWL do not pose a threat to human health or the environment.

Current Hazards

All waste at the MWL is below surface. Geophysical surveys are available that delineate trench boundaries. The only contaminant identified in surface and sub-surface soils is tritium. Tritium levels range from 1100 pCi/g in surface soils to 206 pCi/g in subsurface soils. The highest tritium levels are found within 30 feet of the surface in soils adjacent to and directly below classified area disposal pits. Because of tritium's short half-life, radioactive decay will eliminate tritium's threat to groundwater. Tritium also occurs as a diffuse air emission from the landfill releasing 0.294 Ci/yr to the atmosphere. The effective dose equivalent exposure to receptors from air emission of tritium from the MWL is 10^{-6} mrem/yr.

Current Status of Work

A Phase 1 RFI was conducted in 1989 and 1990 to begin characterizing the MWL and the nature and extent of contamination. This investigation included walkover surveys for radiation and VOCs; surface soil sampling; air sampling; and the drilling of 18 boreholes to depths of up to 150 ft around the landfill perimeter. Soil samples from the boreholes were analyzed for metals, radionuclides, VOCs and SVOCs. This investigation identified tritium as the contaminant of primary concern.

In March 1993, SNL submitted a Phase 2 RFI Work Plan to the EPA. The EPA responded with comments and a Notice of Deficiency (NOD) to SNL in September 1994. SNL submitted responses to the EPA NOD in November 1994. EPA approved the Phase 2 RFI Work Plan in May 1995.

A monitoring well network consisting of seven wells has been installed at the MWL. The network includes one background well, five downgradient wells, and one angled well beneath Trench D in the northern half of the unclassified area. All wells are sampled annually in April for radionuclides, metals, VOCs, and major ion chemistry.

Long-term air monitoring has been conducted at the MWL for particulate radionuclides as part of SNL/NM's NESHAP monitoring program. State and federal air quality standards have not been exceeded at the landfill. Air-monitoring has been discontinued due to negative findings of radionuclides.

Completed Work:
The Phase 2 RFI Work Plan characterization activities were completed in December 1995. Field characterization activities included determining background levels of metals and radionuclides in soils near the MWL; delineating pit and trench boundaries with surface geophysics; conducting passive and active soil gas surveys for VOCs; surface soils sampling for tritium and radionuclides; drilling 15 angled boreholes around the landfill perimeter; subsurface soil sampling for radionuclides, metals, and organic compounds; measuring soil hydraulic and physical parameters in the field and laboratory; and conducting a baseline risk assessment.

The Phase 2 RFI Report was submitted to the New Mexico Environment Department (NMED) and the EPA in September 1996. The MWL was proposed for No Further Action, continued groundwater monitoring, and institutional controls. The NMED responded to the Phase 2 RFI Report by issuing a "Denial" in September 1997. The NMED requested a formal RCRA Closure Plan, a Post-Closure Permit Plan Application, a RCRA Subtitle "C" Cap for the landfill, and responses to 85 technical comments.

The NMED technical comments were addressed in June 1998 and January 1999. The Closure Plan was addressed in September 1999 with the submittal of the MWL alternative cover design. The Post-closure Plan will be written in collaboration with the NMED once the Closure Plan is accepted. The MWL is currently undergoing a corrective measures study (CMS). The DOE and SNL/NM were directed to conduct a CMS by the NMED in October 2001. The CMS will consist of a CMS Plan, a CMS Report, and a CM Implementation Plan. The CMS Plan was submitted to the NMED on December 19, 2002 and approved on October 10, 2002. The CMS Report is scheduled to be submitted to the NMED on February 28, 2003. The entire CMS process will require approximately 2 years to complete.

Future Work Planned

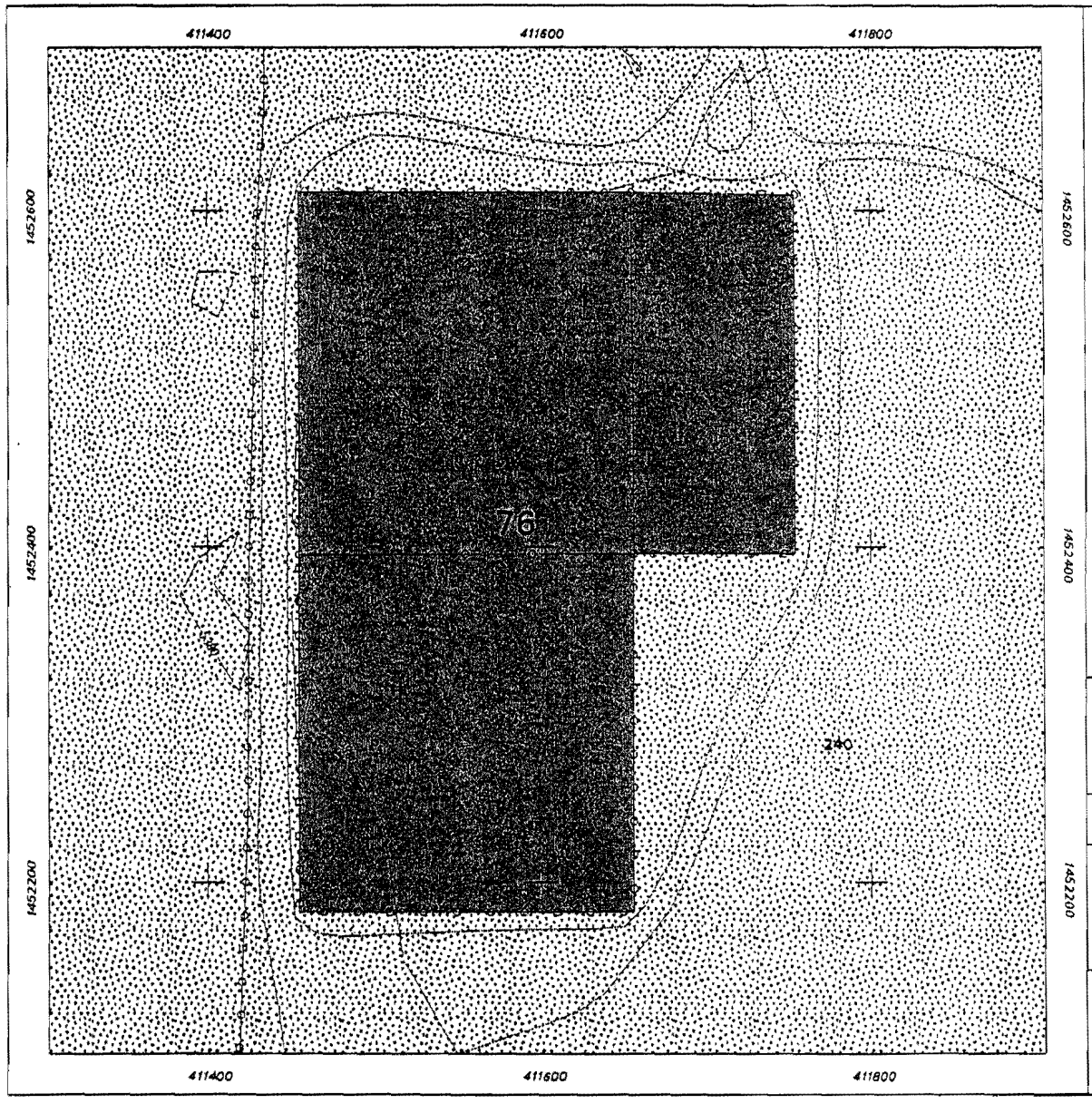
The MWL technical staff has recommended to SNL management and the DOE that if the landfill is to be "covered", the most viable option is a vegetated soil cover. A soil cover would be an inexpensive alternative to the RCRA Subtitle "C" cap requested by NMED in the September 11, 1997 "Denial". The DOE and, more importantly, the NMED must approve of the alternative cover technology. The MWL technical staff has embarked on a strategy to prepare the landfill for a vegetated soil cover. This strategy includes DOE and NMED approval of the soil cover. FY 1998 and FY 1999 saw all the necessary preparations and documentation for cover acceptance and deployment. The NMED issued a Request for Supplemental Information (RSI) in April 2000. The RSI was addressed in June 2000. Actual construction of the cover will commence upon NMEDs approval pending the CMS process. Following deployment the MWL vegetated soil cover will be monitored for infiltration and subsidence for a minimum of 30 years.

Groundwater monitoring at the MWL will continue on at least an annual basis for the foreseeable future.

Waste Volume Estimated/Generated

To date, three 55-gallon drums of hazardous waste (soils contaminated by diesel fuel or hydraulic fluid) and forty-eight 55-gallon drums of radioactive waste (soils contaminated by low levels of tritium) have been generated at the Mixed Waste Landfill. These wastes were generated from drilling and sampling activities.

Information for ER Site 76 was last updated Jan 7, 2003.



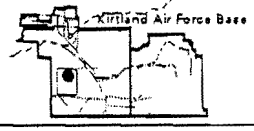
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 76
- Other SWMUs

Center of Site:
X = 411604
Y = 1452397

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 76
Mixed Waste Landfill

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
cletenop-ac.aml	MAPID = 010843

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OU-1295
SEPTIC TANKS AND DRAINFIELDS

ER Site No. 49: Building 9820 Drains

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 49 includes the area immediately surrounding the outfall from Building 9820 and the former location of a trailer used as a darkroom for photo processing. Building 9820, located in Coyote Canyon about 3.6 km (1.5 mi) from the Sol se Mete Aerial Cable Site, was constructed in 1958 for explosive compounds synthesis. The facility also was used for some animal experiments in 1958 and 1959, but little is known about these activities. A machine shop was opened in the mid-1960s and may have discharged organic compounds to the floor drains. Washing of nickel-cadmium batteries with dilute acetic acid in the past may have discharged up to 4 L (1 gal.) of the acid into the drains or sinks. Some photoprocessing was performed in the past. There is currently no activity in the building. The site is adjacent to an Air Force training range. Spent cartridges and debris from flares, smoke bombs, and other devices used in training are often found at the site.

Building 9820 has no toilet facilities. There are five floor drains in the building and one hand sink located in a former woodworking shop. The sink discharges into a 4-in. asbestos-cement drain line, which drains east from the building to a surface outfall near the bottom of a small arroyo. This arroyo is a tributary of Coyote Canyon. The floor drains, which are now sealed, discharged through the same line. The drain system is no longer in use. The discharge point is vegetated with a type of cane often used in landscaping that dies back in cold weather or during dry periods and shows regrowth with rain. A thick mat of dead vegetation has built up around the discharge point.

Non-potable water was trucked in periodically to fill a 3800-L (1000-gal.) storage tank at the

facility. No estimates of the volume of water used exist. The site is between 15 - 45 meters (50 - 150 feet) above the regional water table, although no depth-to-groundwater data is available for the area in which this site is located.

Constituents of Concern

Constituents of concern include explosives residue, organic compounds [methanol, trichloroethylene (TCE), toluene, BTEX], residues from photoprocessing chemicals (cadmium, hexavalent chromium, cyanide, and silver), and barium.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

A surface radiation survey did not detect any anomalies above background at the site. Screening performed by SNL/NM Radiation Protection Operations near the outfall did not detect any anomalies.

Soil sampling was conducted in the fall of 1994 and in 1995.

A confirmatory sampling No Further Action (NFA) proposal for this site was submitted to New Mexico Environment Department/Hazardous Radioactive Materials Bureau (NMED/HRMB) in June 1996. NMED issued a Request for Supplemental Information (RSI) in June 1998. SNL/NM responded to the RSI in November 1998. NMED issued another RSI in June 2000 and has required that a monitoring well be installed at this site.

In August 2001 a groundwater monitoring well (well CYN-MW5) was installed approximately one-half mile north of and downstream of the site, at the confluence of the minor tributary in which ER Site 49 is located, and Lurance Canyon.

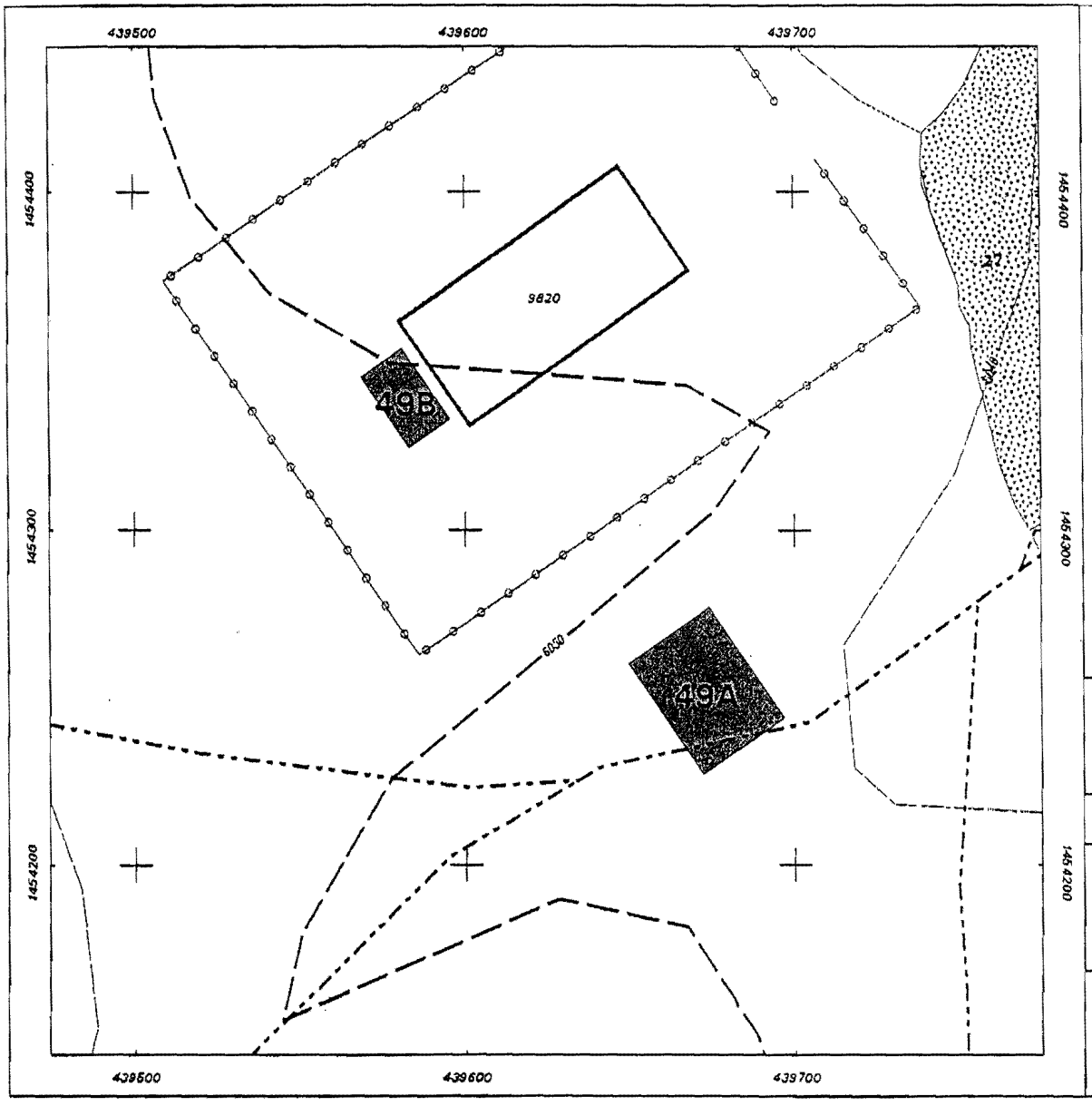
Future Work Planned

Groundwater samples will be collected from well CYN-MW5 for four quarters, or one year. These samples will be analyzed for volatile and semi-volatile organic compounds (VOCs and SVOCs), high explosive (HE) compounds, metals, hexavalent chromium, and gross alpha and gross beta. The analyical results for these samples will be reviewed by NMED and SNL/NM personnel and the site will either be approved for NFA, or additional characterization work will be completed.

Waste Volume Estimated/Generated

Two drums of non-regulated asbestos pipe were generated.

Information for ER Site 49 was last updated Dec 11, 2001.



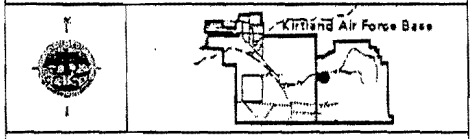
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 49
- Other SWMUs

Center of Site:
X = 439624
Y = 1454294

0 25 50
Scale in Feet

Traverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 49
Building 9820 Drains

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

cistenop-ac.aml MAPID = 010537

ER Site No. 101: Explosive Contaminated Sumps, Drains (Bldg 9926)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 101 includes an industrial wastewater seepage pit connected to Bldg. 9926A, a septic tank with two seepage pits associated with Bldg. 9926, and a small drywell connected to Bldg. 9921. Bldg. 9926, the Explosive Research Laboratory, is located in Coyote Test Field outside Technical Area III about 1.05 km (0.65 mi) east of Bldg. 6630. The original wing of Bldg. 9926 was constructed in 1958 and was expanded in 1967 with the addition of the Shock Wave Studies Laboratory and the semi-attached explosives room, designated Bldg. 9926A. The original wing of Building 9926 contained a darkroom and a chemical laboratory. The darkroom had a floor drain and sink that may have received photoprocessing solutions. The laboratory had a fume hood sink, which may have discharged organic compounds such as methanol, trichloroethylene (TCE), and toluene to the septic system. Other cleaning fluids were used in small quantities, probably less than 1.9 L (0.5 gal) per year per substance, and include hydrochloric, nitric, and sulfuric acids, acetone, and isopropyl alcohol. Bldg. 9926A was used for detonating 2.3-kilogram (5-pound) charges for shock wave studies. The explosive tests involved the use of cadmium sulfide.

Two restrooms with associated indoor floor drains and sinks, discharged to a 3,300 L (875 gal) septic tank and 2 seepage pits 1.5 m (5 ft) in diameter by 1.5 m (5 ft) deep. The tank was pumped in the past. Building 9926A has a floor drain that discharged to a separate seepage pit of the same size located next to the two Bldg. 9926 seepage pits. The floor drain system never functioned properly, and the room was dry-swept rather than hosed down. The septic system and the

industrial wastewater disposal system are no longer in use. Estimated effluent volumes range from 456 L/day (120 gal/day) to 4,560 L/day (1,200 gal/day).

Bldg. 9921 is a small earth-covered explosives-storage bunker located northeast of Bldg. 9926. It contains an explosive storage room with a sink that discharged to a dry well located south of the building. Former employees at the site indicate that powdered explosive compounds, depleted uranium, and heavy metals were handled in the building during test-device assembly and that metal filings and other residues were routinely discharged to the dry well. The dry well is no longer in use.

The site is approximately 154 meters (505 feet) above the regional water table.

Constituents of Concern

The constituents of concern released from Bldg. 9926/9926A include photo-processing chemicals (silver, cadmium, hexavalent chromium, and cyanide), organic compounds (TCE, methanol, acetone, isopropyl alcohol, and toluene), acids, cadmium, and explosives residue.

The potential contaminants released from Bldg. 9921 are explosives residues including nitroguanidine and PETN, depleted uranium, organic compounds, and heavy metals (mercury, lead, and cadmium).

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

Samples from the septic tank at Bldg. 9926 were analyzed for waste characterization purposes in 1994.

A passive soil gas survey conducted in the spring of 1994 showed detectable concentrations of BTEX north of the seepage pits. However, soil sampling in the fall of 1994 did not detect any BTEX components in the soil adjacent to the septic system units at this site, indicating that the anomalies may be related to oil applied to the gravel road to reduce dust generation.

Soil sampling around the septic tank and the three seepage pits at Bldg. 9926 and 9926A and at the drywell next to Bldg. 9921 was completed in late 1994.

Waste was removed from the septic tank and the empty tank was inspected by New Mexico Environment Department (NMED) in late 1995. The tank was decontaminated, and concrete samples were collected from the tank to verify that no COCs remain. The tank was then backfilled with clean soil.

A confirmatory sampling No Further Action (NFA) proposal was submitted to the NMED/HRMB

in July 1996. NMED issued a Request for Supplemental Information (RSI) in June 1998, and SNL/NM responded to this RSI in November 1998. NMED issued a second RSI in June 2000.

In response to the original request by and negotiations with NMED, re-sampling of soil from directly beneath the three seepage pits at this site was completed in January 1998. Soil samples had been previously collected from pairs of borings located on either side of each of the three seepage pits, but this method was considered inadequate by NMED. Analytical results for soil samples collected from directly beneath the three seepage pits were not significantly different from the analytical results for soil samples collected on either side of the seepage pits. NMED regulators agreed with this conclusion, and determined that additional soil sampling beneath the seepage pits would not be required.

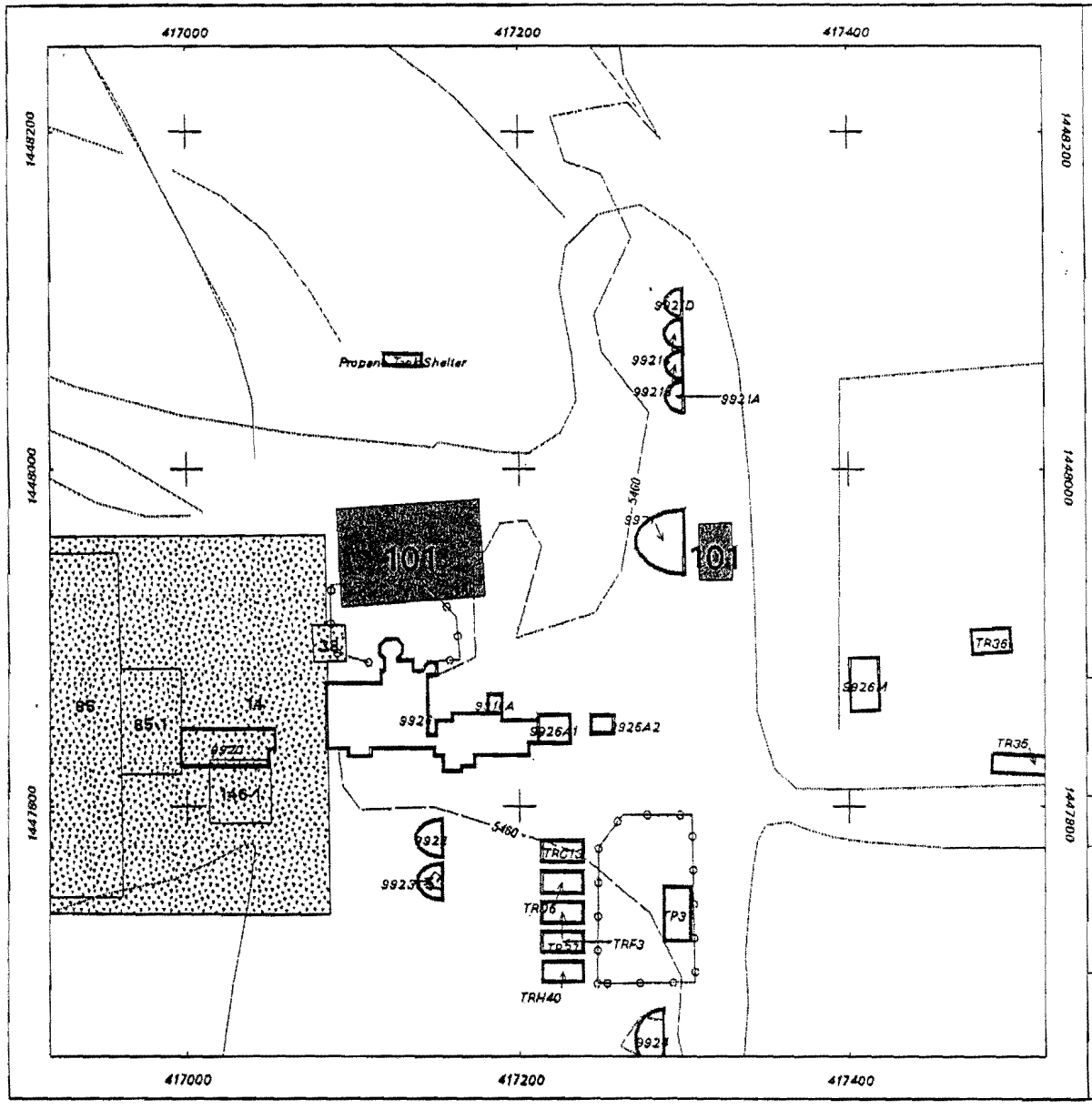
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems sampling and analysis plan (SAP).

Waste Volume Estimated/Generated

The waste volume generated at this site is five 55-gallon drums of mixed waste in FY96.

Information for ER Site 101 was last updated Jan 7, 2002.



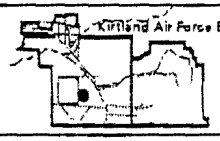
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- 800 Building
- Technical Area
- SWMU 101
- Other SWMUs

Center of Site:
X = 417217
Y = 1447951

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 101

Explosive Contaminated Sumps, Drains (Building 9926)

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
cistenap-bc.aml	MAPID = 010853

ER Site No. 116: Building 9990 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 116 includes the process waste and the septic system serving Bldg. 9990. Bldg. 9990 is located southeast of Coyote Canyon less than 1.6 km (1 mi) south of Bldg. 9820 and about 1.2 km, (0.75 mi) northwest of the Old Cable Site. The facility was constructed in 1969 and used as an explosive test facility from 1969 to 1986. Tests were conducted behind the building, and debris from the blasts, which often used depleted uranium (DU), fell out over the area.

Photographic chemicals from a former darkroom were disposed to the upstairs sink, which discharged to a seepage pit southwest of the building. Spills of polychlorinated biphenyls (PCB)-contaminated transformer oil from a bank of 72 transformers located next to unprotected floor drains were cleaned up, but some PCB-contaminated oil may have entered the floor drains. In the early 1980s, drums of methylene chloride were stored in the building near the floor drains. Leakage may have occurred to the seepage pit that received photographic wastes. In addition, small quantities of dilute copper sulfate from water resistors may have been discharged into either the seepage pit or the septic system.

The septic system for Bldg. 9990 consists of one 2,850 L (750 gal) septic tank connected to a distribution box and four seepage pits located approximately 30 m (100 ft) southwest of the building. The septic system received septage from restrooms and other drains and was last pumped in the spring of 1989. A fifth seepage pit of the same dimensions is also located southwest of the building and has received industrial wastewater from the upstairs sink in the darkroom and floor drains on the west side of the building. This pit probably received the largest volume of

wastewater. Estimated effluent discharge rates from the facility range between 230 to 2,300 L/ day (60 and 600 gal/day). The industrial wastewater system and septic system have been inactive since 1989.

The site is estimated to lie approximately 30 - 45 meters (100 - 150 feet) above the regional water table, although depth-to-groundwater data is lacking for the area in which this site is located.

Constituents of Concern

The constituents of concern at the site are photo-processing chemicals (silver, cadmium, hexavalent chromium, and cyanide), methylene chloride, HE, DU, and PCBs. Aqueous samples obtained from the septic tank detected cadmium, chromium, copper, lead, manganese, silver, total phenolics, and oil and grease.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

The material in the septic tank was sampled for waste characterization purposes in the spring of 1994.

A passive soil gas survey conducted in the spring of 1994 showed detectable concentrations of BTEX northeast of the seepage pits. Process knowledge does not include BTEX as a potential contaminant and it is believed that the anomalies are the result of oil and gas leaks from vehicles parked on a concrete pad northeast of the site.

Soil samples were collected around the discharge points of the two systems in 1994.

Wastes in the septic tank were removed for disposal and the empty tank inspected by NMED in 1995. The tank was decontaminated, and concrete samples were collected from the tank to verify that no COCs remain. The tank was then backfilled with clean soil.

A confirmatory sampling No Further Action (NFA) proposal was submitted to the New Mexico Environmental Department/Hazardous and Radioactive Materials Bureau (NMED/HRMB) in July 1996. NMED issued a Request for Supplemental Information (RSI) in June 1998. SNL/NM responded to the RSI in November 1998. NMED issued a second RSI in June 2000 and required that additional high explosives (HE) soil samples be collected, and a monitoring well be installed at this site. SNL/NM responded to this second RSI in September 2000 and agreed to these additional requirements. A groundwater monitoring well (well CTF-MW1) was installed at a location approximately one-quarter of a mile southwest, and downstream of this site in August 2001. Also, two additional high explosives soil samples were collected at this site on Oct. 10, 2002.

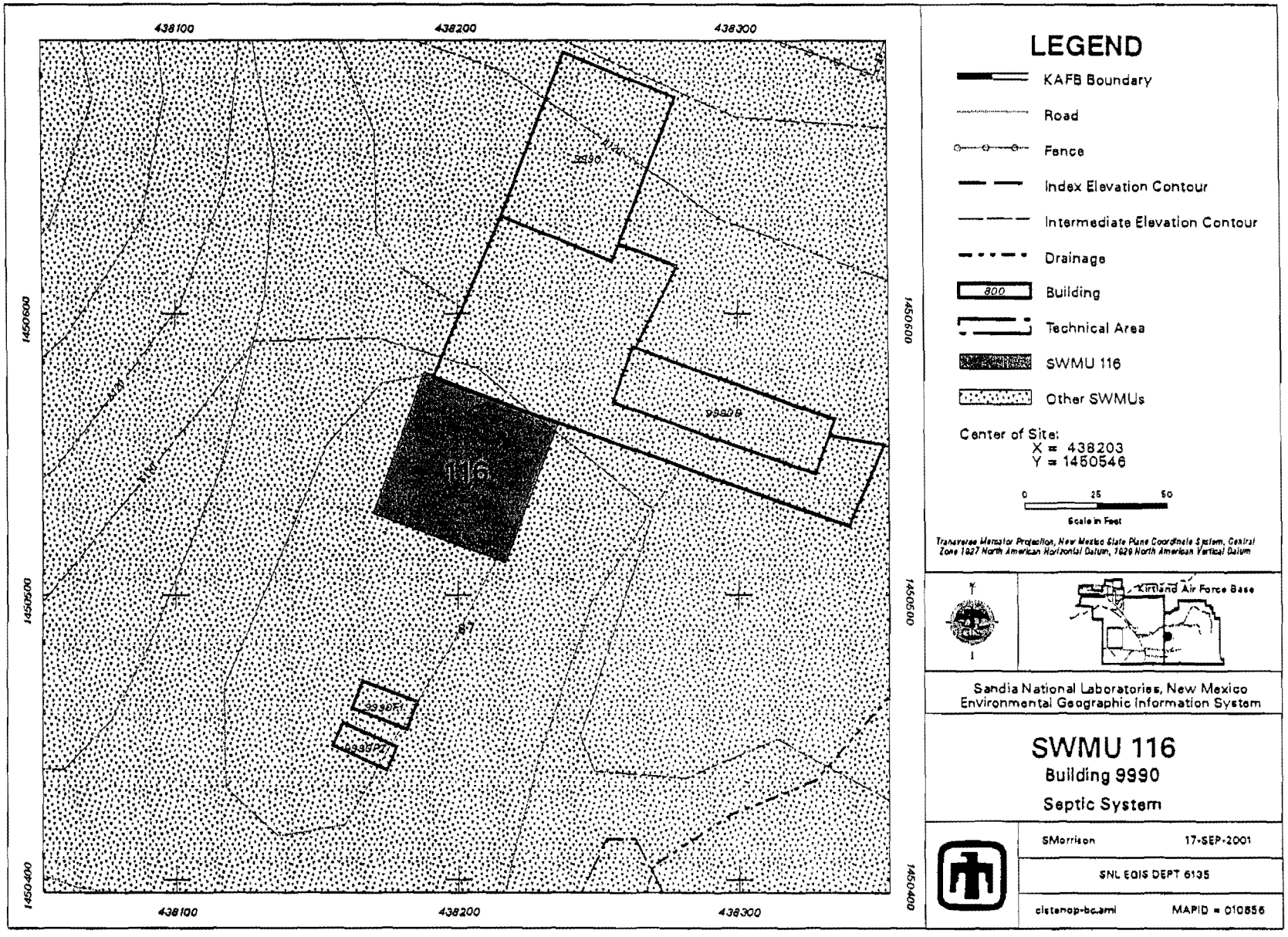
Future Work Planned

Groundwater samples are being collected from well CTF-MW1 for eight quarters, or two years. These samples are being analyzed for volatile organic compounds (VOCs), high explosive (HE) compounds, metals, and cyanide. The analyical results for these groundwater and additional soil samples will be reviewed by NMED and SNL/NM personnel and the site will either be approved for NFA, or additional characterization work will be completed.

Waste Volume Estimated/Generated

A total of 4 drums of radioactive waste was generated and disposed of in FY96.

Information for ER Site 116 was last updated Jan 17, 2003.


438100
438200
438300
1450600
1450500
1450400
116
9990
9990B
9990P1
9990P2
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 116
Other SWMUs
Center of Site:
X = 438203
Y = 1450546
0
25
50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 116
Building 9990
Septic System
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
cistenop-bc.ami
MAPID = 010856

ER Site No. 137: Bldg 6540/6542 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 137 includes the two septic systems located southwest of Building 6540. Buildings 6540 and 6542 are located in the northeast quadrant of Technical Area III. Building 6540 was constructed in 1959 to house instrumentation for the short rocket-sled track, the centrifuge, and high explosives (HE) test facilities. In the mid-1960s, a darkroom was constructed to develop black-and-white and high-speed color photographs of various experiments. The darkroom facility was in use from 1966 until 1989.

Two septic tanks and leachfields served the building. A 1900-L (500-gal) tank and a leachfield with six 10-cm by 18-m (4-in by 60-ft) distribution lines are located across the fence directly southwest of Building 6542, and a 3400-L (900-gal) tank and a leachfield with 12 distribution lines are located south of the 1900-L tank. The total leaching area is 268 m2 (2880 ft2). The south system was installed to replace the undersized north system. Both septic tanks are now inactive.

Approximately 19 L (5 gal) each of fixer and developer solution from the darkroom were discharged to the septic system every two to three months. Small quantities of trichloroethene (TCE) were used for cleaning parts. Estimated effluent discharge rates range between 190 and 3040 L/day (60 and 800 gal/day).

The site is approximately 145 meters (475 feet) above the regional water table.

Constituents of Concern

The constituents of concern at the site include photoprocessing wastes (silver, cyanide, hexavalent chromium, and cadmium) and TCE. Shallow subsurface soil samples collected in 1991 just below the drain lines from the 3400-L tank were analyzed for Semi-Volatile Organic Compounds (SVOCs) and toxic metals during installation of a new sanitary sewer line.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

Septic tank sampling was performed in the spring of 1994 to characterize the waste in the tanks for disposal.

Passive soil gas sampling was performed at the site in the summer of 1994. No significant Volatile Organic Compounds (VOC) anomalies were found.

Soil sampling in the two drainfields and on either side of both septic tanks was completed in the fall of 1994.

Disposal of the contents of the septic tanks was completed in 1995. The tanks were decontaminated and then backfilled with clean soil. The abandoned drainfields drainlines are still present at the site. The south system drainlines are buried at an average depth of five feet below the surface, and those for the north septic system are an average of three feet deep.

A confirmatory sampling No Further Action (NFA) proposal was submitted to the New Mexico Environment Department/Hazardous Radioactive Materials Bureau (NMED/HRMB) in January 1997. NMED issued a Request for Supplemental Information (RSI) in June 1999. SNL/NM responded to the RSI in September 1999.

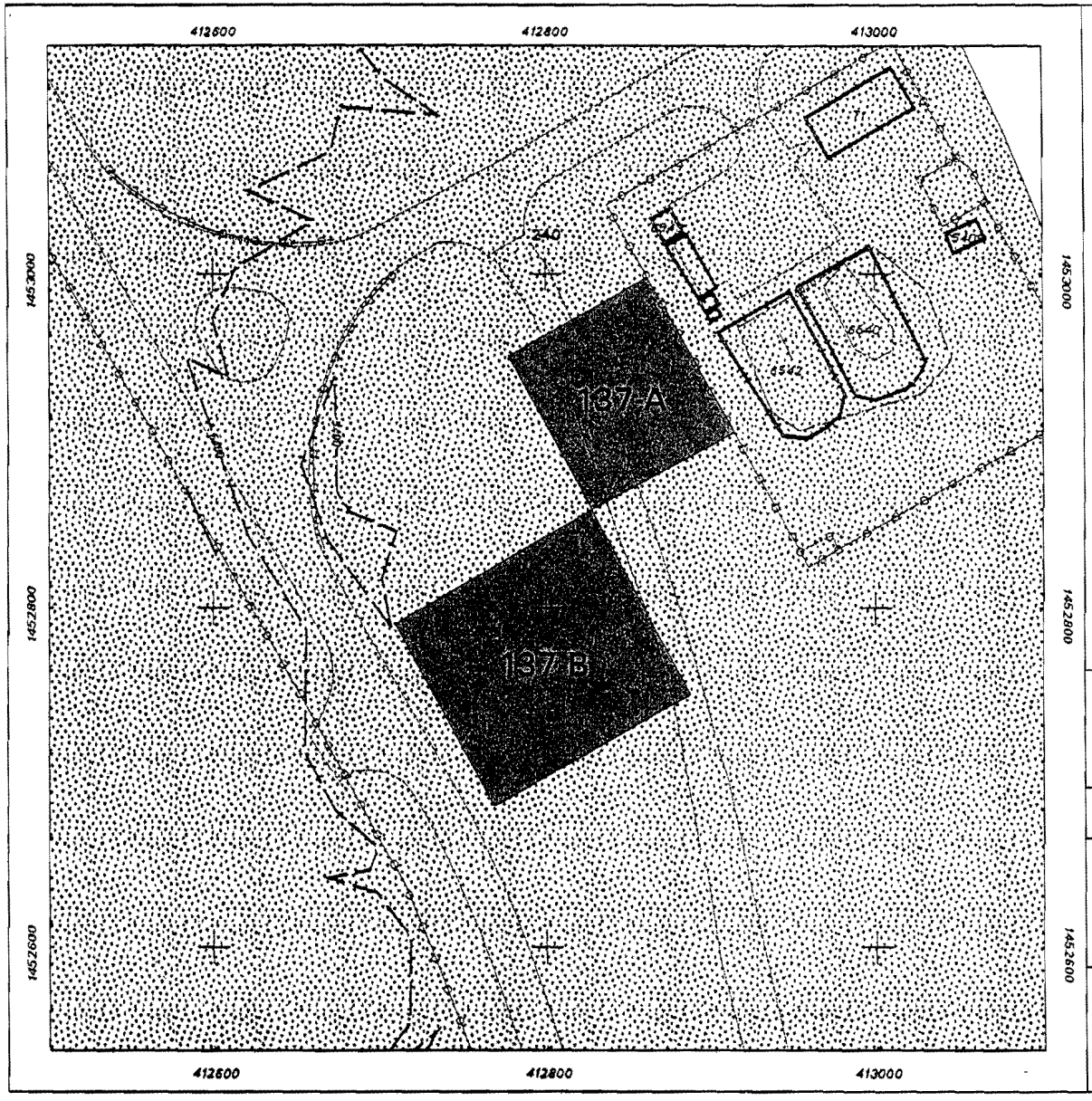
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems sampling and analysis plan (SAP).

Waste Volume Estimated/Generated

Around 2 drums of liquid radioactive waste, 4 drums of hazardous waste, 21 drums of mixed waste, and one mixed waste PPE drum were generated.

Information for ER Site 137 was last updated Jan 7, 2002.



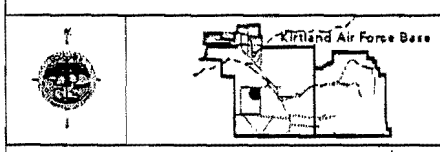
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 137
- Other SWMUs

Center of Site:
X = 412801
Y = 1452838

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 137

Building 6540/6542

Septic System

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
eistenop-bcami	MAPID = 010859

ER Site No. 138: Bldg 6630 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 138 includes the septic tank and drainfield serving Building 6630. Building 6630 is located in the southeast quadrant of Technical Area (TA)-III. It was constructed in 1959 for environmental testing of steel alloys. Metal mixtures containing iron, nickel, chromium, manganese, silicon, copper, DUI, molybdenum, and titanium were melted in either a vacuum induction furnace, a vacuum arc furnace, or a high-vacuum electron beam furnace. Ingots from the furnaces were milled by various saws, which were cooled by an ethylene glycol/water system. A limited number of corrosion studies were performed on the alloys in a salt spray/fog climatic chamber. The building currently is served by a new sewer line.

One 2300-L (600-gal) septic tank and drainfield are located on the west side of Building 6630. The drainfield consists of 73 m (240 ft) of 10-cm (4-in.) drain tile in four parallel 0.6-m (2-ft)-wide trenches on 3-m (10-ft) centers. The drainfield area is apparent by the growth of grasses and salt cedars. This septic system received wastewater from the bathrooms, sinks, floor drains, and sumps. Estimated effluent discharge rates range between 450 and 4500 L/day (120 and 1200 gal/day). According to the Resource Conservation and Recovery Act (RCRA)Facility Investigation (RFI) work plan, three French drains or drywells are associated with Building 6630. One is located off the northeast corner of the building beneath a concrete slab and metal shed and reportedly received wastewater from a hand sink. The second French drain is located on the west side of the building and reportedly received water from the salt corrosion test facility. The third French drain is reportedly located east of the building and received hundreds of liters per month of cooling tower water, which could contain descalants, rust inhibitors, and decalcification acids.

Inspection of the building and engineered drawings and interviews with building operators during a site visit in September 1993 provided no evidence of any drains to the east or northeast of the building, and no knowledge of the existence of a cooling tower at the facility. According to the drawings and building personnel, all drains discharged to the documented septic system west of the building. The location of the French drain for the salt corrosion test facility is now covered with mobile offices. Because the French drains or drywells either can not be located or have no history of releases of constituents of concern, only the septic system was investigated as part of ER Site 138.

In the past, spills of ethylene glycol coolant occurred and may have been flushed down the floor drains and sumps that drained to the septic tank. The sumps have since been plugged. Once in the past, one of the vacuum pumps spilled approximately 76 L (20 gal) of chlorinated lubricating oil, which may have contained polychlorinated biphenyls (PCBs) into one of the sumps in the building. This spill was picked up by absorbent material and wiped up with rags. The contaminated material was drummed and transported off site for disposal.

Over the life of the facility, approximately 76 L (20 gal) of organic compounds were used for cleaning parts and vacuum chambers. The compounds include acetone, alcohol, carbon tetrachloride, trichloroethylene (TCE), and xylene. Small quantities of HCL and nitric acid were used for etching.

The site is approximately 145 m (480 ft) above the regional water table.

Constituents of Concern

The constituents of concern include organic compounds, metals, depleted uranium (DU), acids, and PCBs.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

The contents of the septic tank were analyzed for waste disposal purposes in the spring of 1994.

Passive soil gas sampling in the summer of 1994 detected TCE, BTEX, and PCE anomalies in the drainfield.

Soil samples were collected in the drainfield and around the septic tank in 1994.

Wastes in the septic tank were removed for disposal in 1995. The tank was decontaminated, and tank concrete samples were collected to verify that no COCs remained. The tank was determined to be clean and was backfilled with clean soil. The abandoned drainfield drainlines are still present at the site and are buried at an average depth of about five feet below the surface.

A confirmatory sampling No Futher Action (NFA) proposal was submitted to the New Mexico Environment Department/Hazadous Radioactive Materials Bureau (NMED/HRMB) in July 1996. NMED issued a Request for Supplemental Information (RSI) in June 1998 and SNL/NM responded to the RSI in November 1998. NMED issued a second RSI in June 2000.

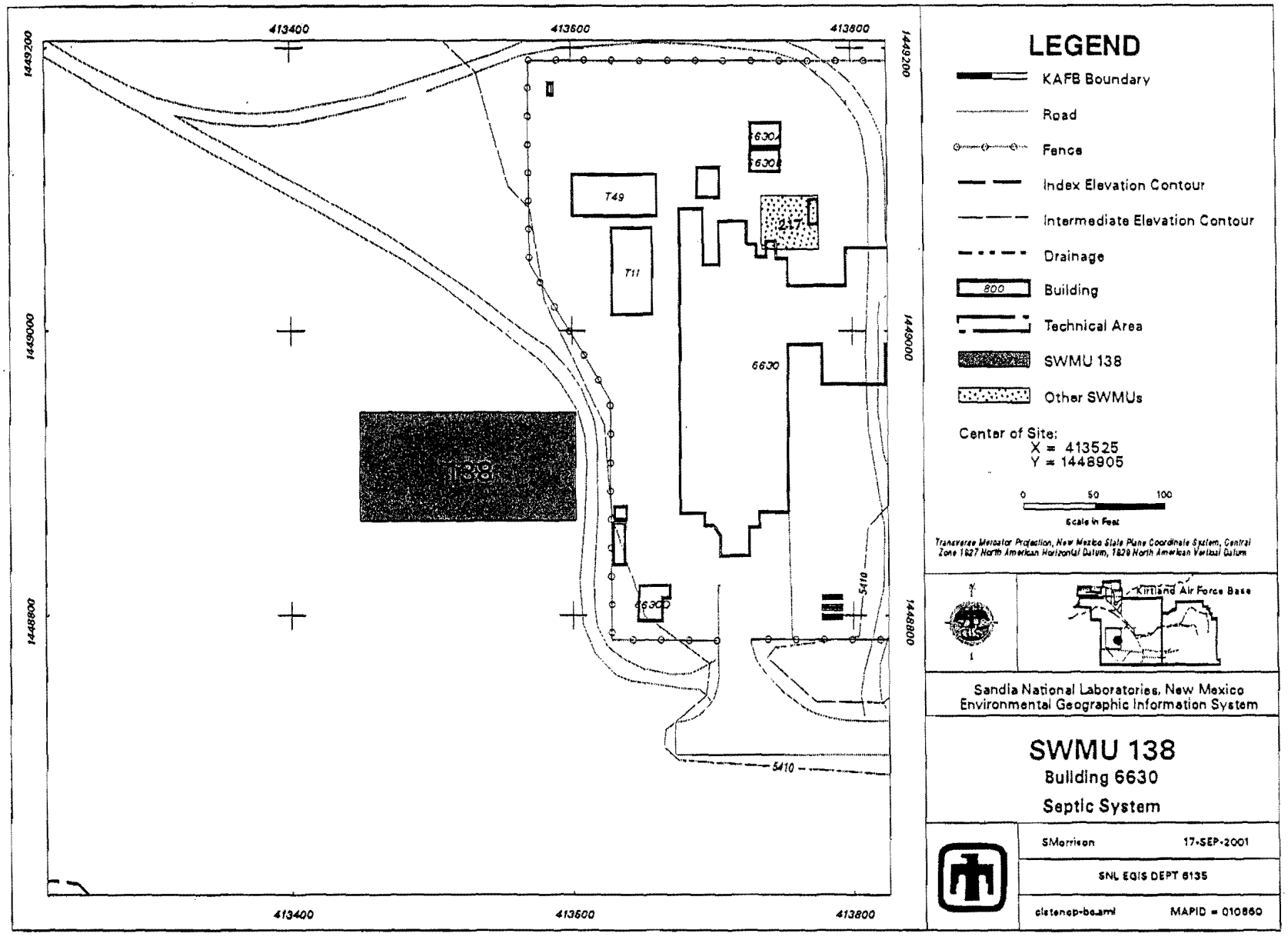
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems sampling and analysis plan (SAP).

Waste Volume Estimated/Generated

Waste volumes generated at this site include 74 gallons of mixed waste and 10 gallons of hazardous waste.

Information for ER Site 138 was last updated Dec 11, 2001.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T11
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6630A
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6630C
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5410
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 138
Other SWMUs
Center of Site:
X = 413525
Y = 1448905
0
50
100
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 138
Building 6630
Septic System
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
cistenep-be.aml
MAPID = 010860

ER Site No. 140: Bldg 9965 Septic System (Thunder Range)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 140 includes a septic system and two drywells serving Bldg. 9965. Bldg. 9965 is located in the Thunder Range of the Coyote Test Field, approximately 300 m (1,000 ft) northeast of Bldg. 9964. It was constructed in 1965 and used as a control building for the Shock Facility. The building also was used as a darkroom for photographic processing of black and white film.

The Bldg. 9965 has one restroom, two hand sinks, and two floor drains. One hand sink was used for disposal of photographic processing wastewater. The second sink is located in the main equipment area and was used principally for hand washing. One septic tank, one seepage pit, and two drywells served Bldg. 9965. The 2,850 L (750 gal) septic tank and 1.8 m (6 ft) diameter by 2 m (6.5 ft) deep seepage pit are located southwest of the building and on the opposite side of the fence. The septic tank was pumped once in the past. Two drywells, each 1.2 by 1.2 by 1.2 m (4 by 4 by 4 ft) and filled with 2 cm (0.75 in) aggregate, are located near the north end of the building. One drywell was determined from the September 1993 site walkover to be located northeast of Bldg. 9965. It was installed in July 1972 to replace another drywell in the same vicinity. Both drywells received wastewater from two floor drains located inside Bldg. 9965. Estimated effluent discharge rates range between 38 and 1,900 L/day (10 and 500 gal/day).

The site is approximately 111 meters (364 feet) above the regional water table.

Constituents of Concern

The constituents of concern are photoprocessing wastes (silver, cyanide, hexavalent chromium, and cadmium), which could have been discharged to the septic system and both drywells. Hazardous materials that may have entered the septic system through hand washing activities, include elemental carbon, aluminum oxide, and possibly nitric acid. Aqueous samples obtained from the septic tank in 1991 contained trichlorethylene (TCE), barium, chromium, cadmium, copper, lead, manganese, mercury, total phenolic compounds, and nitrate/nitrites.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

The septic tank was sampled for waste characterization in the spring of 1994.

A passive soil gas survey in the summer of 1994 did not detect any significant volatile organic compound or semi-volatile organic compound anomalies.

Soil sampling around the seepage pit, septic tank, and dry well was completed in 1994 and early 1995

Waste was removed from the septic tank, and the empty tank was inspected by New Mexico Environment Department (NMED) in late 1995. The tank was decontaminated, and concrete samples were collected to verify that no COCs remain. The tank was then backfilled with clean soil.

A confirmatory sampling No Further Action (NFA) proposal was submitted to the NMED/HRMB in January 1997. NMED issued a Request for Supplemental Information (RSI) in June 1999, and SNL/NM responded to the RSI in September 1999.

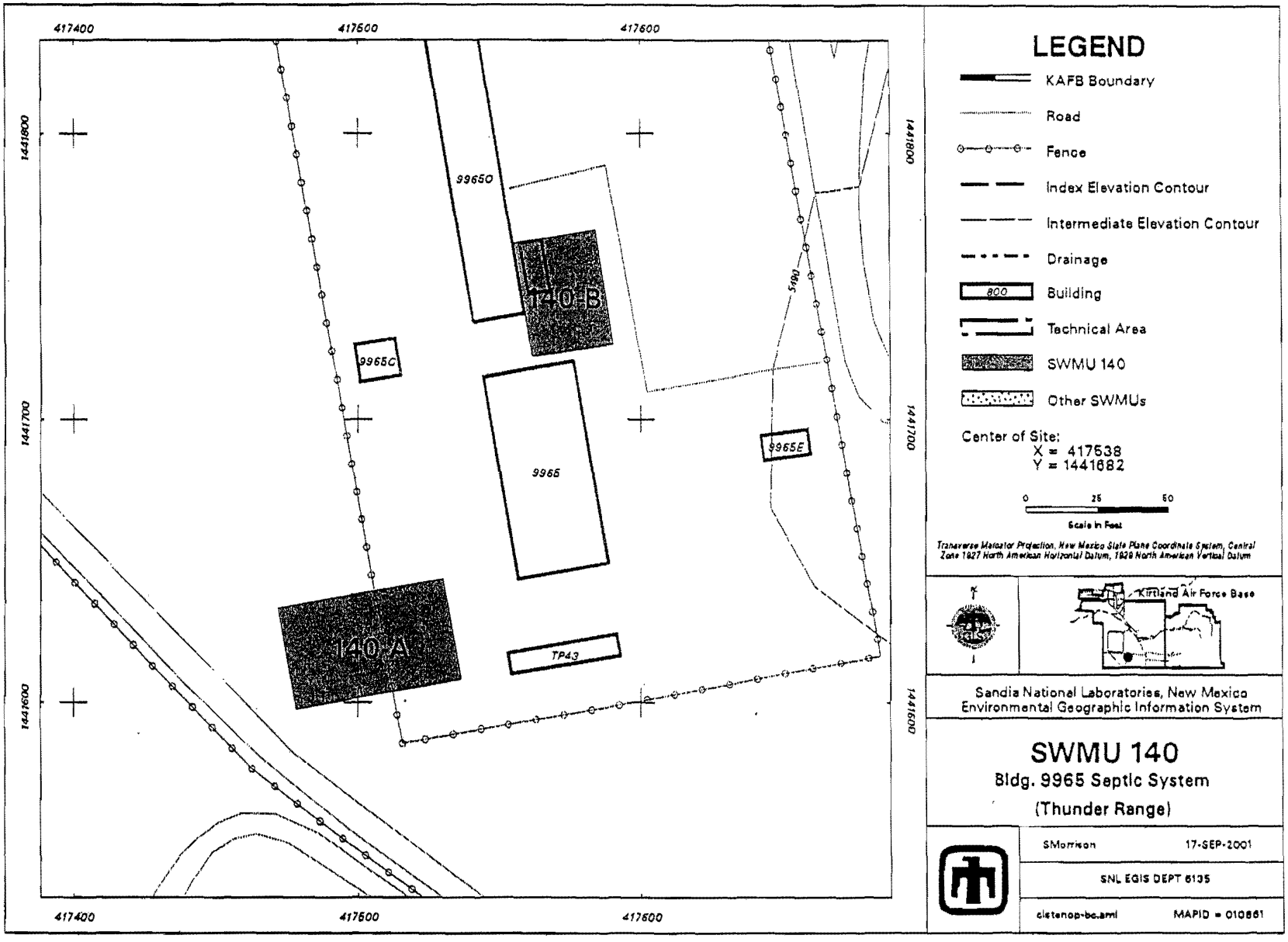
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems sampling and analysis plan (SAP).

Waste Volume Estimated/Generated

Around 26 drums of mixed waste were generated at this site.

Information for ER Site 140 was last updated Dec 12, 2001.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1441600
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140 B
9965C
9965
9965E
140 A
TP43
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 140
Other SWMUs
Center of Site:
X = 417538
Y = 1441682
0
25
50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 140
Bldg. 9965 Septic System
(Thunder Range)
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
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MAPID = 010861

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ER Site No. 141: Bldg 9967 Septic System (Thunder Range)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 141 includes a seepage pit and a small French drain serving Bldg. 9967. Bldg. 9967 is located in the Thunder Range of the Coyote Test Field approximately 335 m (1,100 ft) northeast of Bldg. 9965. It was constructed in 1968 and was used for assembling high explosives (HE) for explosive testing.

The building has one hand sink and a floor trough. The hand sink is located in the northwest corner of the explosive assembly room and discharged to a drywell on the west side of the building. The floor trough discharged through a concrete channel with a steel cover, which exits at the south end of the building and turns west to a catch box lined with a polyethylene filter bag. Heavy particles of waste HE were then collected in the catch box lined with the polyethylene filter bag, and the liquid overflow discharged into the seepage pit. The filter bags were periodically replaced and disposed of by the U.S. Air Force explosive ordnance disposal (EOD). Currently the floors are swept and wet-mopped rather than washed down into the floor trough.

Overflow from the catch box entered a 1.0 m (3 ft) diameter by 4.8 m (15.7 ft) deep seepage pit. Estimated effluent discharge rates from the floor trough range between 76 and 760 L/day (20 and 200 gal/day). There are no estimates of releases from the hand sink. During past operations, the floor in the explosive assembly area was washed down with water into the floor trough. The system is no longer in use.

The site is approximately 58 meters (190 feet) above the regional water table.

Constituents of Concern

The constituents of concern is primarily HE residues.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

A passive soil gas survey performed in the summer of 1994 did not detect any volatile organic compound (VOC) anomalies.

Soil samples were collected around the seepage pit in the fall of 1994 and beneath the drywell in early 1995.

A confirmatory sampling No Further Action (NFA) proposal for this site was submitted to the New Mexico Environment Department/Hazardous Radioactive Materials Bureau (NMED/HRMB) in July 1996.

In response to requests by and negotiations with NMED/HRMB and DOE OB, re-sampling of soil from directly the seepage pit at this site was completed in January 1998. Soil samples had been previously collected from a pair of borings located on either side of the seepage pit, but this method was considered inadequate by NMED. Analytical results for soil samples collected from directly beneath the seepage pit were not significantly different from the analytical results for soil samples collected on either side of the seepage pit. NMED regulators agreed with this conclusion, and determined that additional soil sampling beneath the seepage pit would not be required.

NMED issued a Request for Supplemental Information (RSI) in June 1998, and SNL/NM responded to the RSI in November 1998. NMED issued a second RSI in June 2000, and indicated that this site was acceptable for NFA. The NFA was approved by NMED on November 19, 2001, after completing the public review and permit modification process.

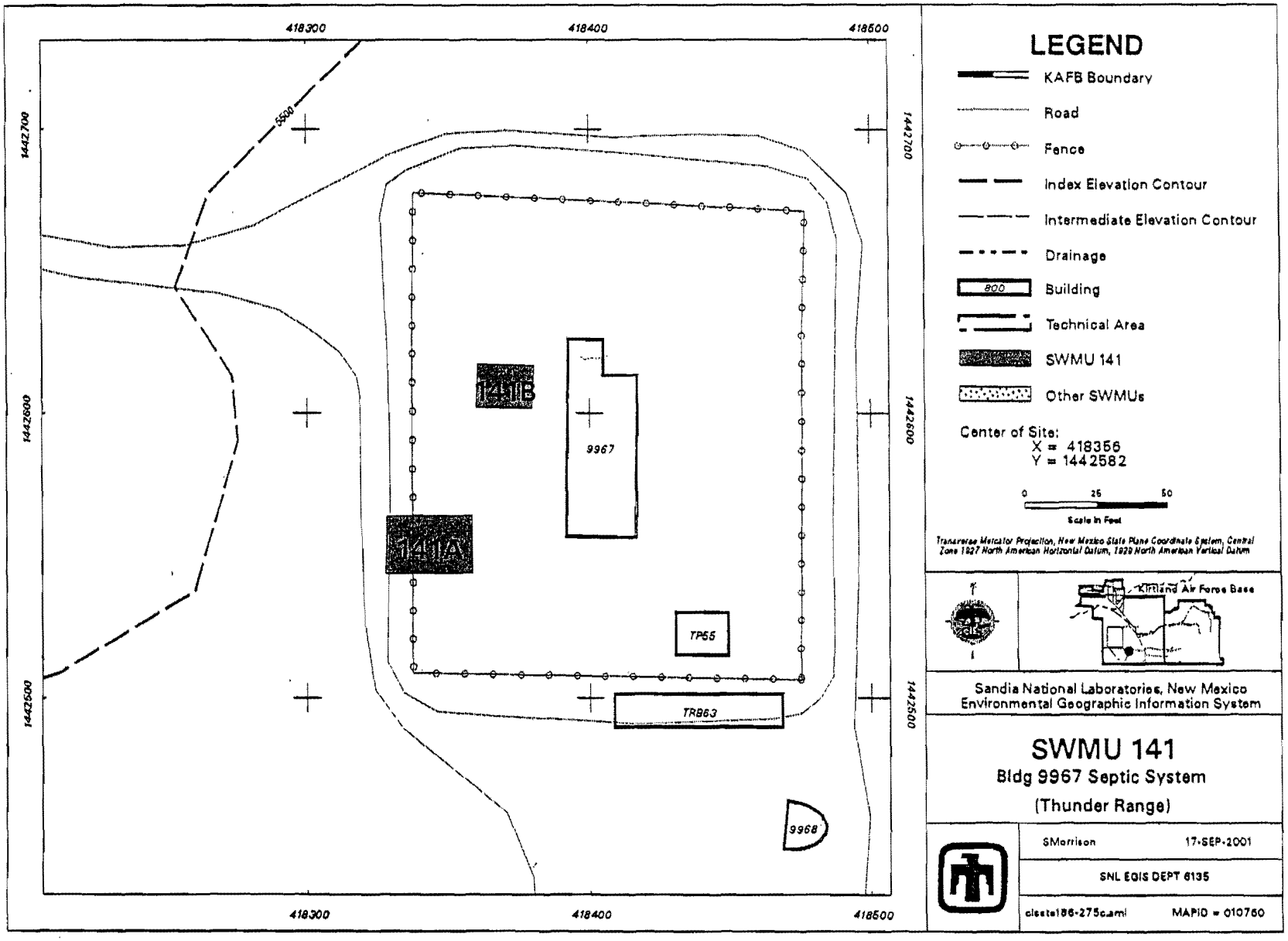
Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

No waste was generated at this site.

Information for ER Site 141 was last updated Mar 12, 2002.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141A
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TP55
TRB63
9968
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 141
Other SWMUs
Center of Site:
X = 418356
Y = 1442582
0
25
50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 141
Bldg 9967 Septic System
(Thunder Range)
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
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MAPID = 010760

ER Site No. 142: Bldg 9970 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 142 includes the septic system and two drywells serving Bldg. 9970. Bldg. 9970 is located west of Lovelace Road, approximately 1.6 km (1.0 mi) east of the Solar Power Tower. It was constructed in 1963 and used to test aircraft radar. Small quantities of organic compounds and cleaning agents, which include toluene and methyl ethyl ketone (MEK), were reportedly used but not discharged to the septic system.

Bldg. 9970 is served by a 3,040 L (800 gal) septic tank and a 5-ft-diameter by 10-ft-deep seepage pit, both located east of the northeast corner of the building. A toilet, sink, and floor drains in the northeast section of the building appear to have discharged to the septic system. Two floor drains located in a trench system in the inflatable-building part of the facility discharged to two drywells located along the southeast wall of the building, each 4 ft by 4 ft deep. The trench system was installed to allow routing instrumentation cabling below the level of the floor during acoustic tests.

The floor drains were designed to drain any liquids (from fire suppression or building leaks, for example) that flowed into the trench system. No hazardous material is known to have been discharged to the floor drains. The septic system and dry wells are inactive. Any effluent generated from the northeast part of the building is now discharged to an extension of the sanitary sewer system. Bldg. 9970 is currently an inactive facility.

The site is approximately 30 meters (98 feet) above the regional water table.

Constituents of Concern

Septic tank sampling in 1991 detected phenolic compounds, low concentrations of heavy metals and low concentrations of organic compounds in the sludge in the septic tank. No other constituents of concern are identified for the site.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

The septic tank was sampled for waste characterization in 1992 and the spring of 1994.

A passive soil gas survey in the summer of 1994 did not detect any organic compounds.

Soil sampling was performed around the seepage pit and septic tank in the fall of 1994. The U.S. Environmental Protection Agency (EPA) agreed that no soil sampling was necessary around the two drywells because there was no evidence or indication that hazardous constituents were discharged to them.

Waste was removed from the septic tank, and the empty tank was inspected by New Mexico Environment Department (NMED) in late 1995. The tank was decontaminated, and concrete samples were collected from the tank to verify that no COCs remain. The tank was then backfilled with clean soil.

A confirmatory sampling No Further Action (NFA) proposal for this site was submitted to the NMED/HRMB in September 1995, and NFA comments were received from NMED/HRMB in April 1997. SNL replied to the NMED comments in June 1997. NMED issued a second Request for Supplemental Information (RSI) in February 2000, and SNL/NM responded to this second RSI in April 2000. On April 18, 2000 NMED found Site 142 to be acceptable for a NFA petition. The NFA was officially approved by NMED in October 2000 after completing the public review and permit modification process.

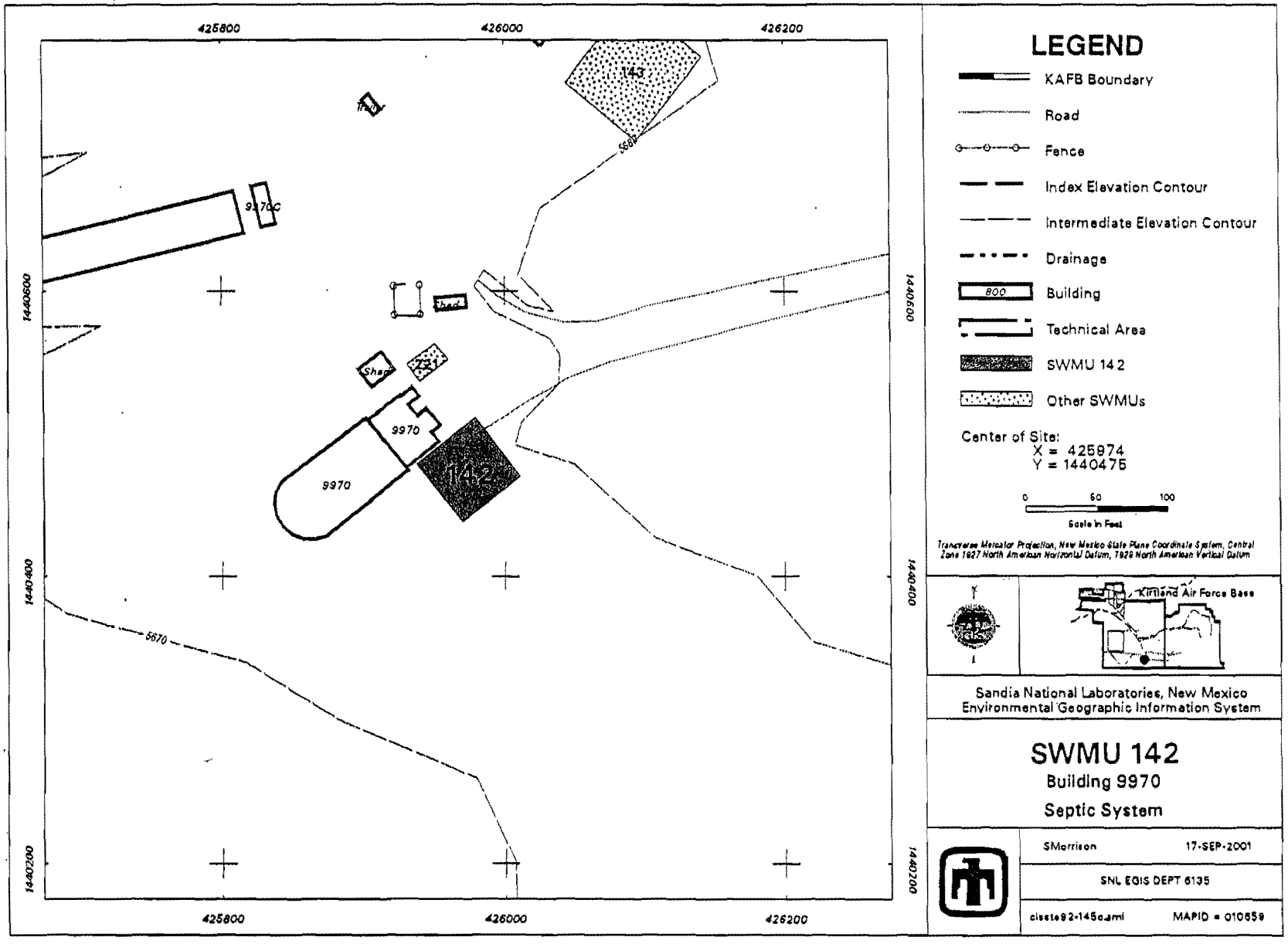
Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

Around 14 drums of mixed waste were generated at this site.

Information for ER Site 142 was last updated Aug 15, 2001.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Shed
Shed
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9970
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LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 142
Other SWMUs
Center of Site:
X = 425974
Y = 1440475
0
50
100
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 142
Building 9970
Septic System
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
ciesta92-145c.aml
MAPID = 010659

ER Site No. 143: Bldg 9972 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 143 is the septic system serving Building 9972. Building 9972 is located west of Lovelace Road, approximately 1.0 mi east of the Solar Power Tower. It was constructed in 1987 and used for radar development. According to the building occupants, waste chemicals or contaminants were never discharged into the septic system.

A septic system that received discharge from a restroom in the building is located southeast of the building. It includes one 1250-gal. septic tank and a leachfield consisting of six 50-ft drain lines. The septic system is no longer in use and effluent from the restroom is now directed to an extension of the sanitary sewer system.

A 3-ft by 3-ft drywell filled with 0.75 in. of aggregate is buried 2 ft below grade on the southwest side of the building. According to interviews with building operators during the September 1993 site visit, no floor drains exist in the northwest part of the building, as postulated in the Resource Conservation and Recovery Act (RCRA)Facility Investigation (RFI) work plan. The drywell, which remains active, serves as a drain for the condensate from an air conditioning unit. The area where the drywell is located is covered with asphalt paving and no soil sampling was performed or is anticipated around the area.

The site is approximately 30 meters (99 feet) above the regional water table.

Constituents of Concern

There are no known releases of constituents of concern at this site. Aqueous samples obtained from the septic tank in 1991 detected phenols and total phenolic compounds.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

A passive soil gas survey conducted around the septic tank and in the drainfield in the summer of 1994 potentially identified PCE, BTEX, and aliphatic compounds in soil gas at a number of locations. However, analytical results of soil samples collected from around the septic tank and in the drainfield in the fall of 1994 did not identify hazardous or radioactive constituents above action levels or background.

The septic tank was sampled in 1994 for waste characterization purposes.

Waste was removed from the septic tank, and the empty tank inspected by New Mexico Environment Department (NMED) in late 1995. The tank was decontaminated, and concrete samples were collected from the tank to verify that no COCs remain. The tank was then backfilled with clean soil. The abandoned drainfields drainlines are still present at the site, and are buried at an average depth of 7.5 feet below the surface.

An NFA proposal for ER Site 143 was submitted to the NMED/HRMB in September 1995, and NFA comments were received from NMED/HRMB in April 1997. SNL replied to the NMED comments in June 1997. NMED issued a second Request for Supplemental Information (RSI) in February 2000, and SNL/NM responded to this second RSI in April 2000. On April 18, 2000, NMED found Site 143 to be acceptable for NFA petition. The NFA was officially approved by NMED in October 2000 after completing the public review and permit modification process.

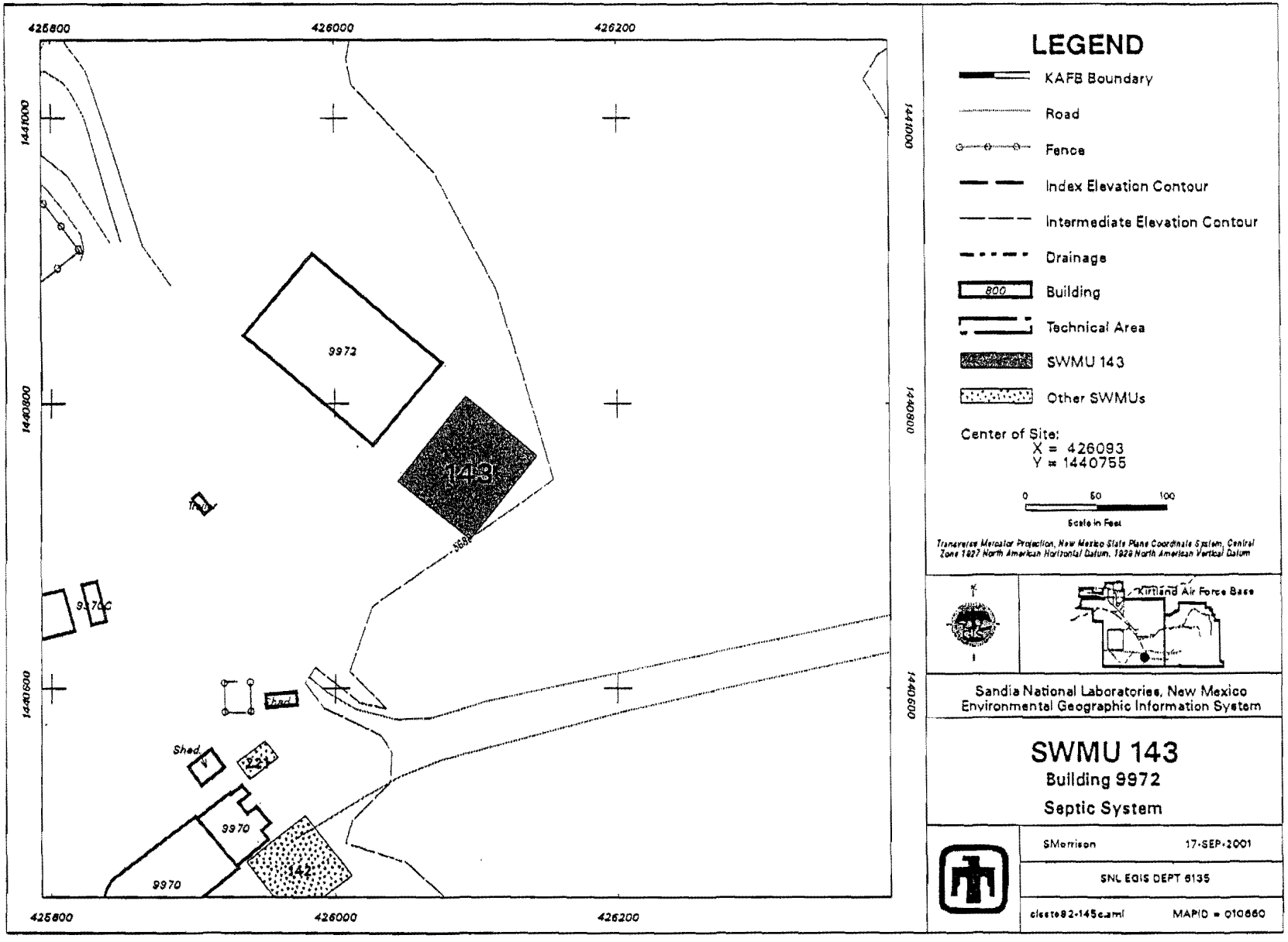
Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

Fourteen drums of mixed waste were generated at this site.

Information for ER Site 143 was last updated Aug 15, 2001.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9970C
Shed
Shed
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9970
9970
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LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 143
Other SWMUs
Center of Site:
X = 426093
Y = 1440755
0
50
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Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 143
Building 9972
Septic System
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
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MAPID = 010660

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ER Site No. 144: Bldg 9980 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 144 includes a septic system and a surface outfall serving Bldg. 9980. Bldg. 9980, the Solar Power Tower, is located in the Coyote Test Field off Magazine Road, approximately 1.2 km (0.75 mi) west of the intersection with Lovelace Road. The solar facility was constructed in 1976 for the research and development of solar thermal technology.

Wash sinks and toilet facilities for up to 20 people were served by a 3,800 L (1000 gal.) septic tank and a 56 sqaure meter (600 square feet) leachfield with six 15 m (50 ft) distribution lines. The septic system is located on the west side of the west access road to the Solar Tower. The estimated effluent discharge rate for the Site 144 septic system ranges from 380 to 8,500 L/day (100 to 2,500 gal/day). Some floor drains in the Solar Power Tower discharged to a surface outfall located in a depression between the parking lot and the west access road.

Large volumes of ethylene glycol coolant are used in Bldg. 9980, along with small volumes of ammonium hydroxide and hydrazine. An underground storage tank receiving the spent coolant and effluent from floor drains was discharged periodically to the asphalt south of the Building 9980.

The site is approximately 33 meters (110 feet) above the regional water table.

Constituents of Concern

Aqueous samples obtained from the septic tank detected trichloroethylene, cadmium, copper, lead, manganese, mercury, total phenolic compounds, and oil and grease. No other constituents of concern were identified during personnel interviews.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

Septic tank sampling was performed for waste characterization purposes in 1994 and 1995.

A passive soil gas survey in the summer of 1994 did not detect any volatile organic compound anomalies.

Soil samples were collected in the drainfield, around the septic tank, from the surface outfall location in the fall of 1994, and from a second surface discharge location in May 1995.

Waste was removed from the septic tank, and the empty tank inspected by New Mexico Environment Department (NMED) in late 1995. Concrete samples were collected to verify that no COCs remain. The tank was decontaminated and then backfilled with clean soil. The abandoned drainfield drainlines are still present at the site and are buried at an average depth of about five feet below the surface.

A confirmatory sampling No Further Action (NFA) proposal for this site was submitted to the NMED/HRMB in May 1997. NMED issued a Request for Supplemental Information (RSI) in June 1999, and SNL/NM responded to that RSI in September 1999. In December 1999, NMED issued a second RSI and indicated that Site 144 was acceptable for NFA. The NFA was officially approved by NMED in October 2000 after completing the public review and permit modification process.

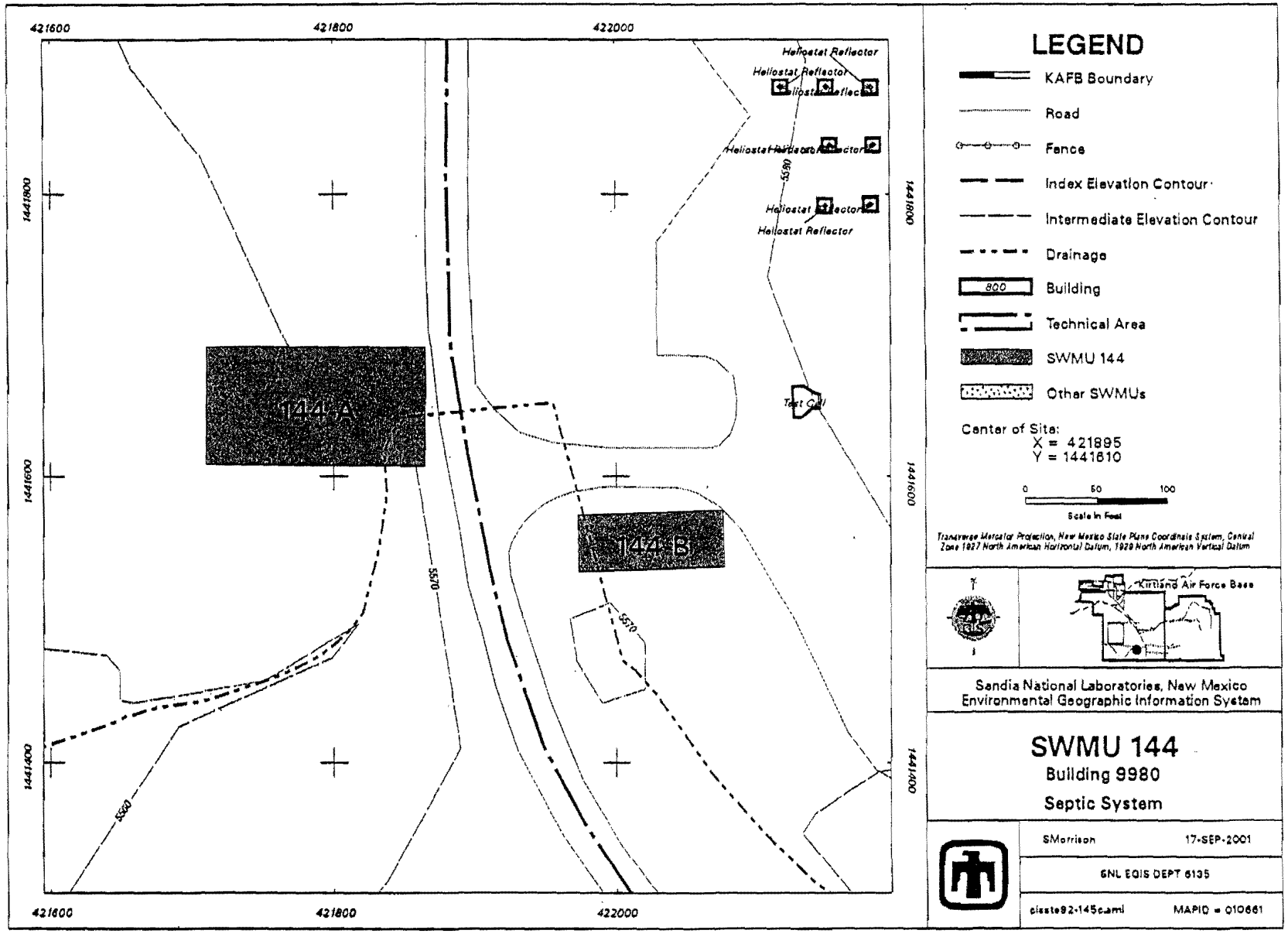
Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

Nine drums of radioactive waste was generated at this site.

Information for ER Site 144 was last updated Aug 15, 2001.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Heliostat Reflector
Heliostat Reflector
Heliostat Reflector
Heliostat Reflector
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Test Cell
144 A
144 B
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5570
5570
5500
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 144
Other SWMUs
Center of Site:
X = 421895
Y = 1441610
0
50
100
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 144
Building 9980
Septic System
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
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MAPID = 010661

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ER Site No. 145: Bldg 9981/9982 Septic Systems

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 145 includes the septic system and surface outfall that formerly served Bldg. 9984, and the septic system formerly serving Bldg. 9981/9982. Bldgs. 9981/9982, the Solar Control/Solar Assembly facility, are located in the Coyote Test Field off Magazine Road, approximately 1.2 km (0.75 mi) west of the intersection with Lovelace Road. The solar facility was constructed in 1976 for the research and development of solar thermal technology. The Solar Control Building is a large office and control building containing a staff of 30 to 50 people. The Solar Assembly Building is used for repair and assembly of heliostats and other solar equipment. Bldg. 9984, located west of Bldg. 9982, is known as the Engine Test Facility.

Buildings 9981 and 9982 share a septic system for lavatories and sinks. The septic system is located northwest of Bldg. 9982 and west of the north-south access road, and consists of a 3,800 L (1,000 gal) septic tank and a leachfield with five 15.4 m (50 ft) distribution lines. The septic system is no longer in use. According to the September 1993 site visit interviews, floor drains in Bldg. 9982 discharged to a surface outfall near the northwest corner of the building. SNL/NM Facilities Engineering drawings indicate that the surface outfall released the liquid wastes from the drain into a ditch west of Bldg. 9981. The floor drains are now filled with grout. There is no historical evidence that any constituents of concern were released to the surface outfall via the floor drains. Material Safety Data Sheets in Bldg. 9981 list other chemicals as well (methyl cyanide, methylene chloride, hexane, hydrofluoric acid, toluene, benzene, and xylene). There is no evidence that these chemicals were discharged into the septic system or drainfields.

The sinks and toilets in Bldg. 9984 drained to a 4-ft. by 8-ft. septic tank on the west side of the building and into three drain lines, each 12.3 m (40 ft) long. According to the September 1993 site interviews, the three drainfield lines in the southern half of the drainfield were removed when underground utilities were installed during construction of a facility to the west of Bldg. 9984. Three floor drains in Bldg. 9984 discharged to a grease trap outside the northwest corner of the building, and drained to a surface outfall in a roadside ditch about 62 m (200 ft) north of the building. This septic system is also no longer in use. The grease trap outlet is now connected to the sanitary sewer system.

The site is approximately 42 meters (140 feet) above the regional water table.

Constituents of Concern

The constituents of concern at the site include methyl cyanide, acids, and organic compounds [trichloroethylene (TCE), trichloroethane (TCA), PCE, methanol, xylene, hexane, toluene, benzene, and acetone]. Aqueous samples obtained from the septic tank serving Bldg. 9981 and 9982 during a survey in 1991 detected TCE, barium, cadmium, chromium, copper, lead, manganese, mercury, zinc, total phenolic compounds, and oil and grease.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

Septic tank sampling was performed in 1994 for waste characterization.

A passive soil gas survey conducted in the summer of 1994 did not detect any volatile organic compound anomalies.

Soil sampling conducted in the winter of 1994 collected samples from around the two septic tanks, in the two drainfields, and from two locations near the estimated former location of the grease trap surface outfall.

Waste was removed from the septic tanks, and the empty tanks were inspected by New Mexico Environment Department (NMED) in late 1995. Tank concrete samples were collected to verify that no COCs remain. The tanks were decontaminated and then backfilled with clean soil. The abandoned drainfields drainlines are still present at the site. The west system drainlines are buried at an average depth of 2.5 feet below the surface, and those for the east septic system are an average of 7.5 feet deep.

A confirmatory sampling No Further Action (NFA) proposal for this site was submitted to the NMED/HRMB in May 1997. NMED issued a Request for Supplemental Information (RSI) in June 1999, and SNL/NM responded to that RSI in September 1999. In December 1999, NMED found Site 145 to be acceptable for NFA. The NFA was officially approved by NMED in October 2000

after completing the public review and permit modification process.

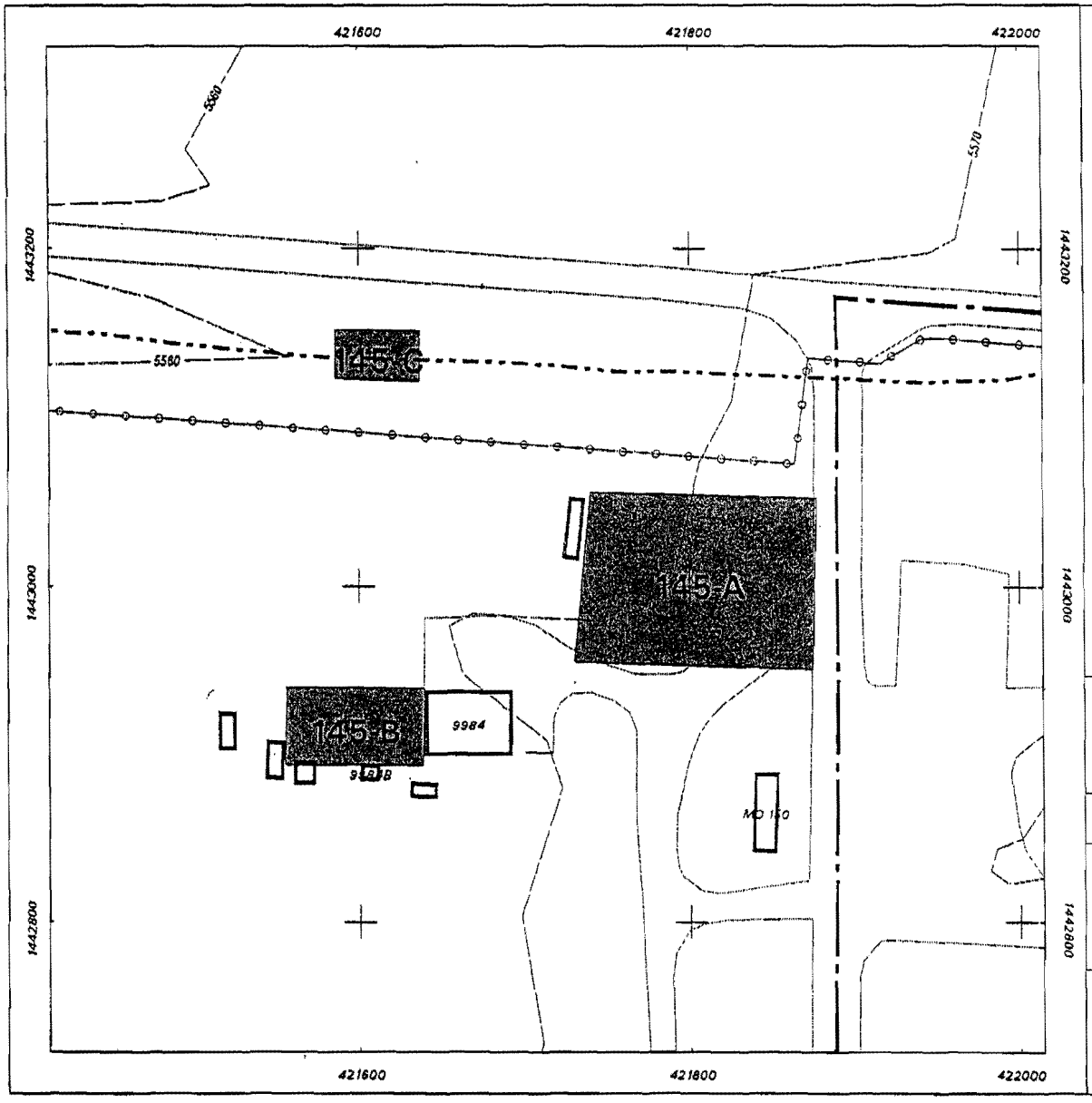
Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

Forty-six drums of mixed waste was generated in emptying the septic tank serving Bldg. 9981/9982.

Information for ER Site 145 was last updated Aug 15, 2001.



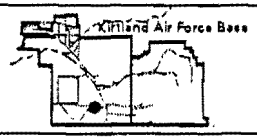
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 145
- Other SWMUs

Center of Site:
X = 421713
Y = 1443022

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 145

Building 9981 / 9982

Septic Systems

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

clesta92-145o.ami MAPID = 010662

ER Site No. 146: Bldg 9920 Drain System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 146 includes a drywell that served a darkroom sink in Bldg. 9920. Bldg. 9920, the Explosive Test Facility is located in Coyote Test Field outside Technical Area III and about 1.05 km (0.65 mi) east of Bldg. 6630. Bldg. 9920 was constructed in 1958 for explosive testing. It contained a darkroom primarily used for black and white film processing. Prior to 1965, when the darkroom was removed, waste solutions from the darkroom were discharged into a sink located in the southeast corner of the building. A drain line from the sink discharged to a drywell located approximately 1.8 m (6 ft) south of the building. There are no sanitary facilities or floor drains inside the building. No data exist regarding past sampling of the local soils or any of the wastewater discharge system. No estimated effluent volumes exist for this site. The sink was removed and the drywell is no longer in use.

The site is approximately 155 meters (505 feet) above the regional water table.

Constituents of Concern

The constituents of concern are photoprocessing chemicals (silver, cadmium, hexavalent chromium, and cyanide).

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

A passive soil gas survey was performed in the summer of 1994, but no volatile organic compound anomalies were detected.

Soil sampling in the fall of 1994 indicated that no detectable concentrations of hazardous or radioactive constituents were released to the environment at this site.

A confirmatory sampling No Further Action (NFA) proposal was submitted to New Mexico Environment Department/Hazardous Radioactive Materials Bureau (NMED/HRMB) in September 1995, and "official" NFA comments were received from NMED/HRMB in April 1997. SNL replied to the NMED comments in June 1997.

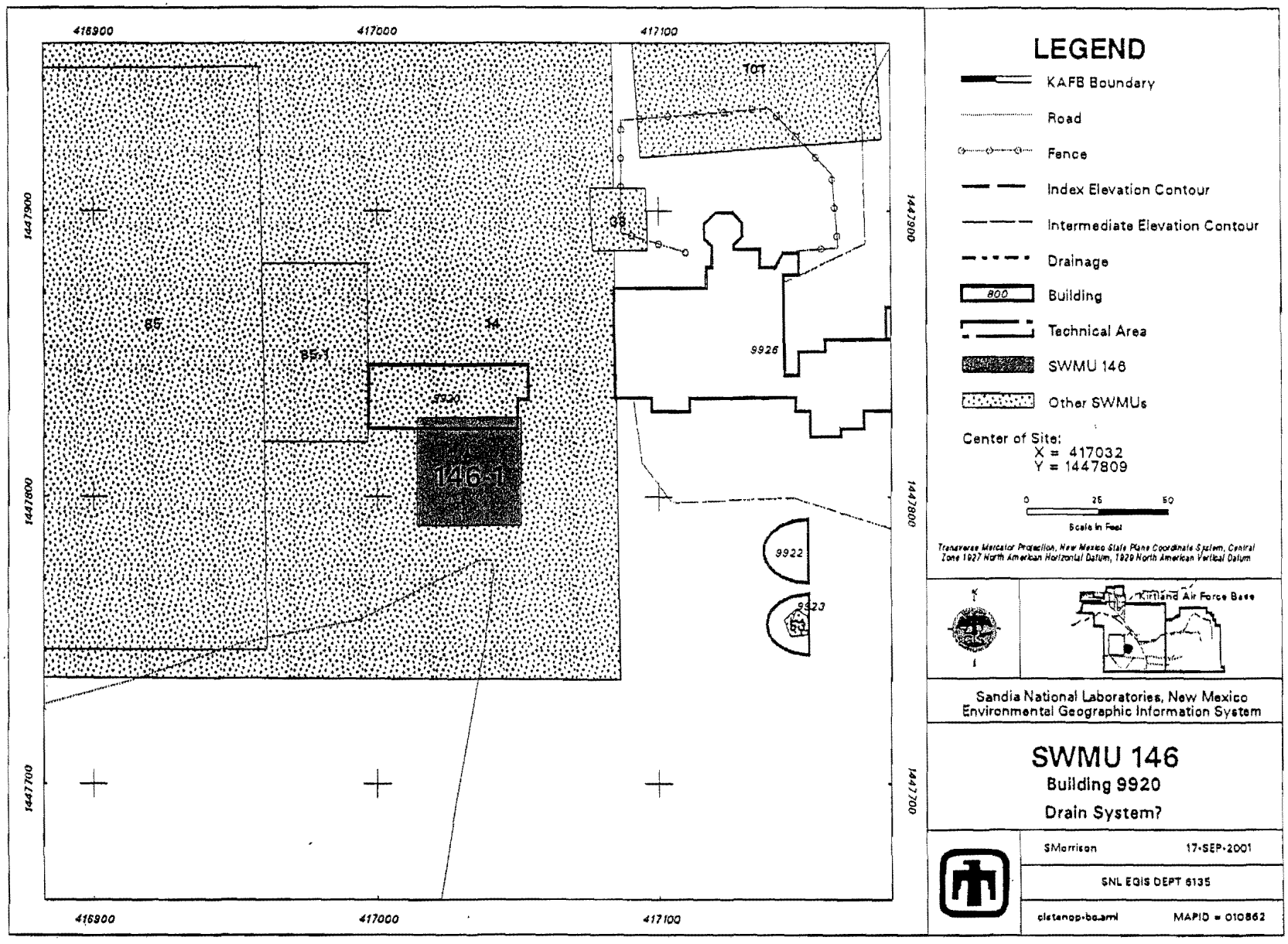
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems Sample and Analysis Plan (SAP).

Waste Volume Estimated/Generated

No waste was generated at this site.

Information for ER Site 146 was last updated Aug 15, 2001.


416900
417000
417100
1447900
1447800
1447700
TOT
98
65
14
65-1
9930
146-1
9926
9922
9923
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 146
Other SWMUs
Center of Site:
X = 417032
Y = 1447809
0
25
50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 146
Building 9920
Drain System?
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
cistanop-ba.aml
MAPID = 010862

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ER Site No. 147: Bldg 9925 Septic Systems

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 147 includes the two septic systems to the northwest, and a third septic system to the south of Bldg. 9925. Bldg. 9925, the Coyote Test Field Headquarters, was built in 1959 and is located near the intersection of Lovelace Road and Isleta Boulevard, about 1.6 km (1.0 mi) east of the Solar Test Facility. A machine shop in the north end of the building occasionally used small quantities of organic compounds, but there is no history of discharges to the septic systems. The septic system furthest north was installed to replace the other two systems.

There are two restrooms with floor drains and two showers in Bldg. 9925. There is no floor drain in the machine shop. The abandoned septic system northwest of Bldg. 9925 consists of a 5,700 L (1,500 gal) septic tank, located about 29 m (95 ft) northwest of the northwest corner of the building, with a drainfield consisting of six 12.3-m (40-ft) distribution lines immediately west of the tank. The new septic system northwest of Bldg. 9925 consists of a 5,700-L (1,500-gal) septic tank located northwest of, and adjacent to the abandoned tank, and is plumbed to a new drainfield consisting of six 15.4-m (50 ft) parallel drainlines located about 80 m (260 ft) north of the building, outside the perimeter fence. This new septic system is no longer in use. A third abandoned septic tank (2,850-L [750-gal]) was plumbed to two parallel 20 m (65 ft)drainlines which are located to the south of the building, under the Optical Range Road pavement. This septic system was abandoned in the 1960s during construction of an addition to Bldg. 9925. The septic tank was filled with soil. Estimated effluent volumes for the abandoned systems range from 3,800 L/day (100 gal/day) to 15,200 L/day (4,000 gal/day).

The site is estimated to be about 9.2 to 27.7 meters (30 to 90 ft) above the regional water table.

Constituents of Concern

The constituents of concern at the site include organic compounds (acetone and methanol), explosives residue, and depleted uranium. A composite aqueous sample obtained from the two north septic tanks in 1991 detected TCE, cadmium, copper, lead, and total phenolic compounds.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

Septic tank sampling for waste characterization was performed in 1994.

A passive soil gas survey was completed in the summer of 1994. BTEX and aliphatic compounds were detected but these volatile organic compounds probably originated from motorized equipment and vehicles stored in the yard west of Bldg. 9925. Soil gas analyses at the septic system south of the facility detected BTEX, however, the entire area is covered by asphalt and there were existing leaks of oil from parked automobiles at the time of the survey. None of the subsequent soil samples detected any organic constituents.

Waste was removed from the two septic tanks west of the building in 1995, and the empty tanks were inspected by NMED in January 1996. The tanks were decontaminated, and concrete samples were collected from the tanks to verify that no COCs remain. The tanks were then backfilled with clean soil. The abandoned drainfields drainlines are still present at the site. The west system drainlines are buried at an average depth of 3.5 feet below the surface, and those for the north septic system (located north of the Bldg. 9925 facility fence) are an average of 7.5 feet deep.

Soil sampling around the three septic tanks and in the three drainfields was completed in late 1994.

A confirmatory sampling NFA proposal for this site was submitted to the NMED/HRMB in May 1997. NFA comments were received from NMED/HRMB in June 1999, and SNL/NM replied to the NMED comments in September 1999. NMED issued a second Request for Supplemental Information (RSI) in December 1999, and SNL/NM responded to this second RSI also in December 1999. Also, as requested by NMED, five additional high explosives soil samples were collected at five locations in the three drainfields at this site on Oct. 9, 2002.

Future Work Planned

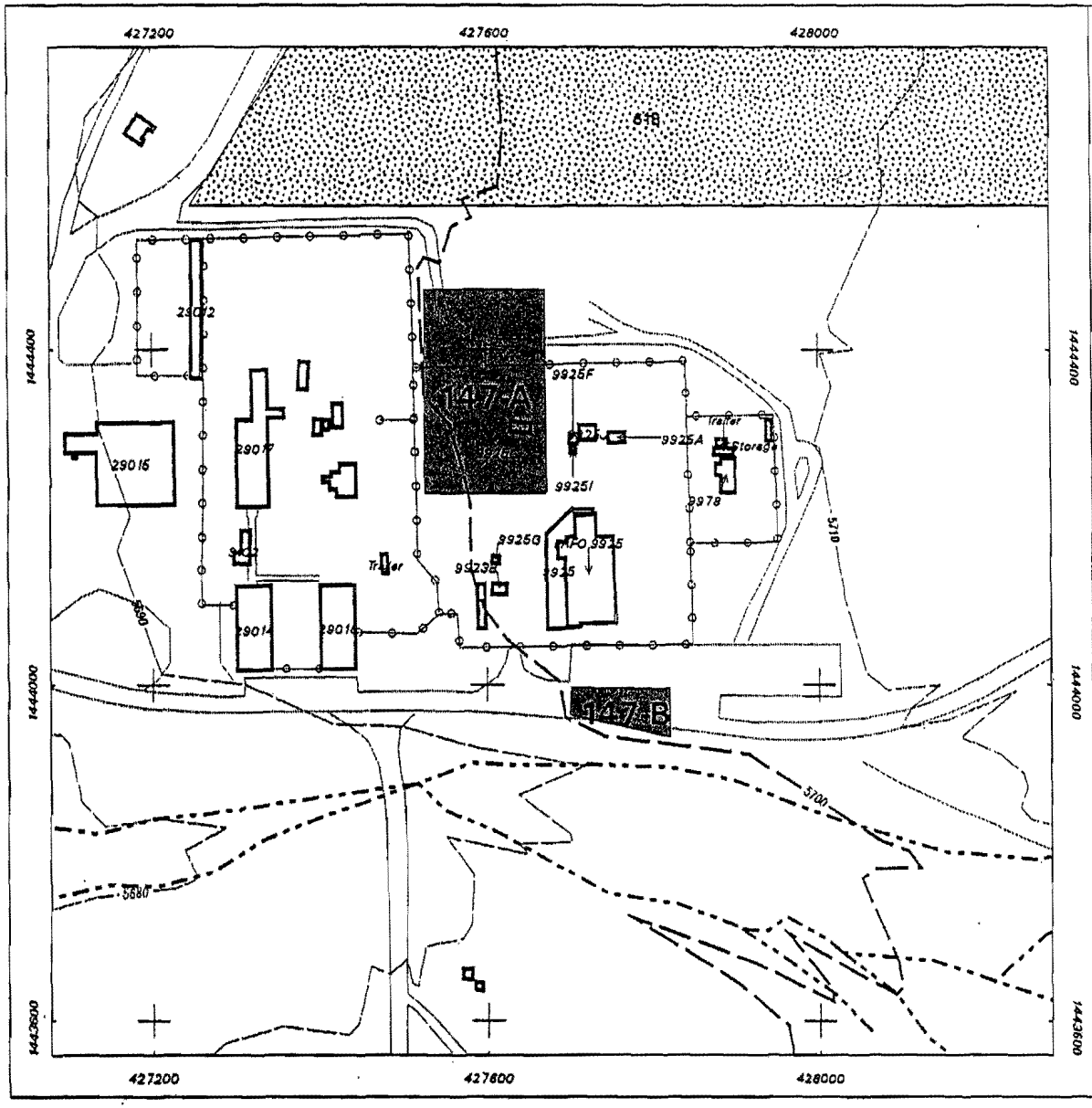
NMED requested, and SNL/NM collected 5 additional soil samples at five locations in the two

drainfields west of Building 9925. These samples have been analyzed for HE compounds by EPA Method 8330. Following evaluation of the sample data an RSI response reporting the results will be submitted to NMED.

Waste Volume Estimated/Generated

Waste volumes generated at this site include 3 drums of mixed waste and 13 drums of radioactive waste.

Information for ER Site 147 was last updated Jan 17, 2003.



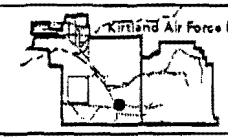
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 147
- Other SWMUs

Center of Site:
X = 427679
Y = 1444158

0 100 200
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 147
Building 9925
Septic Systems

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

cistenop-bc.aml MAPID = 010863

ER Site No. 148: Bldg 9927 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 148 includes a septic tank and dry well serving Bldg. 9927 in Coyote Test Field, outside Technical Area III, approximately 0.8 km (0.5 mi) south of Bldg. 9920 and 9926. Since 1962, the building was used as an explosive test facility for an assortment of outdoor tests, including rocket motor armor-penetration tests and simulated terrorist attacks. Later tests involved the detonation with explosives of beryllium, lead, lithium, and depleted uranium (DU) assemblies. Inside the building, black-and-white and X-ray film were developed in a darkroom, where photographic waste solutions and rinse waters were discharged into the sink. Approximately 38 L (10 gal) of photoprocessing solutions and an unknown volume of rinse water were discharged to the septic system every ten months. The total volume of photographic solutions discharged to the septic system over the life of the facility may exceed 2,300 L (600 gal). Small quantities (1 to 2 L/yr [0.25 to 0.5 gal/yr]) of cleaning compounds such as alcohol and acetone have been used and may have entered the septic system via the sinks or floor drains. Estimated effluent volumes range from 76 L/day (20 gal/day) to 3,800 L/day (1,000 gal/day).

The building contains one restroom with sink, toilet, and floor drain. The darkroom contains one sink and one floor drain. Floor drains in a trough within the building reportedly were never used. All drains and sinks in the building discharged to a septic system consisting of a 2,850-L (750-gal) septic tank and a 1.2-m (4-ft) diameter by 1.2-m (4-ft) deep seepage pit. The tank is located 21 m (70 ft) south of the southeast corner of the building. The top of the seepage pit is 1.8 m (6 ft) below ground surface, with a surface manhole access. The septic tank was pumped three times in 1989. The septic system is no longer in service.

The site is approximately 145 meters (473 feet) above the regional water table.

Constituents of Concern

The constituents of concern are beryllium, lithium hydride, lead, DU, photoprocessing chemicals (silver, cadmium, hexavalent chromium, and cyanide), and cleaning compounds. Aqueous samples obtained from the septic tank in 1991 detected trichloroetylene (TCE) and PCE; sludge samples detected barium, mercury, lead, chromium, and silver.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

Sampling of the septic tank contents for waste characterization was performed in 1994 and 1995.

Passive soil gas sampling was performed in the summer of 1994. No significant Volatile Organic Compound (VOC) or Semi-Volatile Organic Compound (SVOC) anomalies were detected in the soil.

Soil sampling around the septic tank and seepage pit was performed in the fall of 1994. No releases of hazardous or radioactive COCs were detected in soils around the septic system components at this site.

Waste was removed from the septic tank, and the empty tank was inspected by (NMED) in late 1995. The tank was decontaminated, and concrete samples were collected from the tank to verify that no COCs remain. The tank was then backfilled with clean soil.

A confirmatory sampling No Further Action (NFA) was submitted to the New Mexico Environment Department/Hazardous Radioactive Materials Bureau (NMED/HRMB) in September 1995, and NFA comments were received from NMED/HRMB in April 1997. SNL replied to the NMED comments in June 1997.

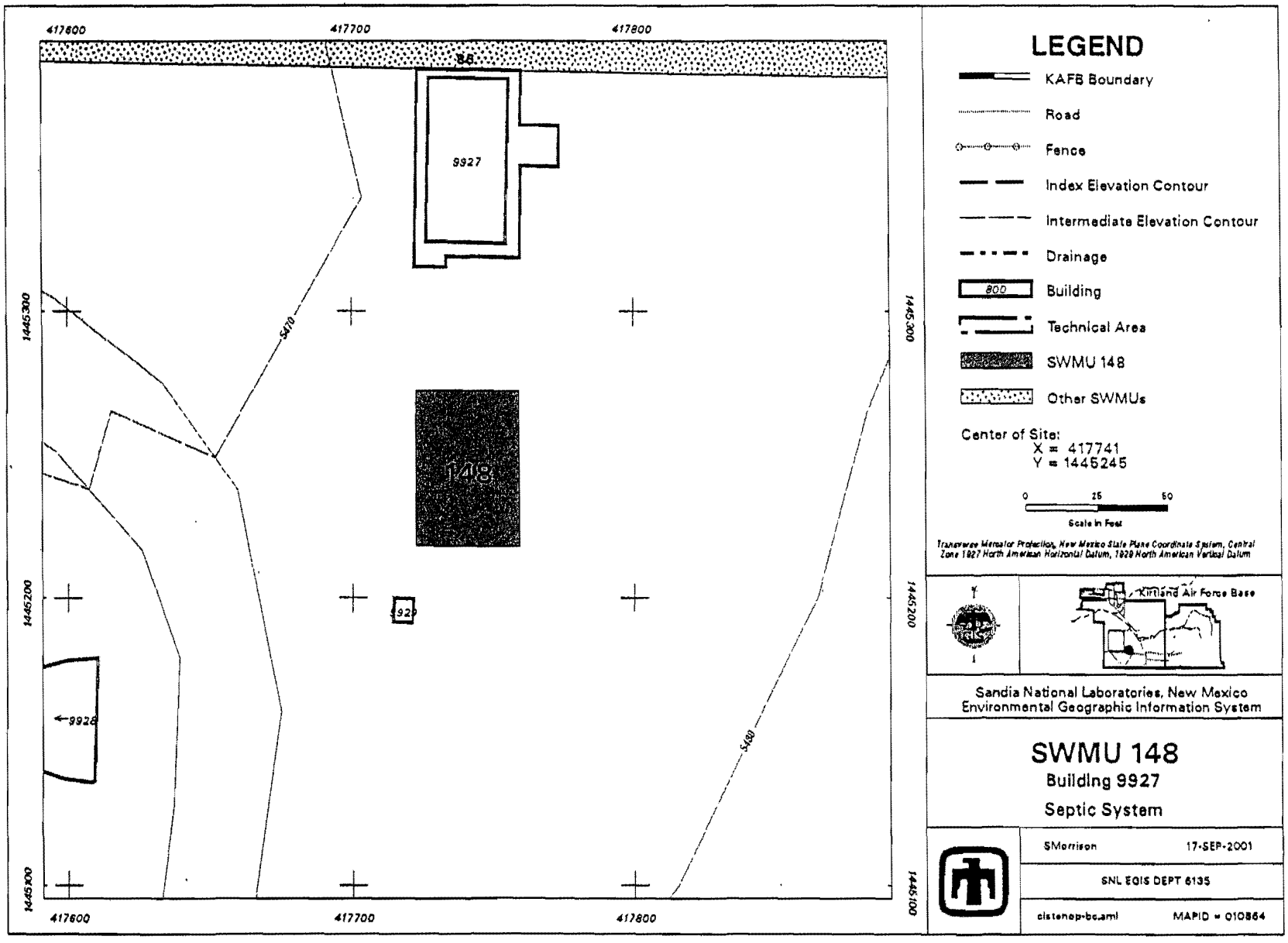
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems sampling and analysis plan (SAP).

Waste Volume Estimated/Generated

Two drums of radioactive waste were generated at this site.

Information for ER Site 148 was last updated Dec 11, 2001.


417600
417700
417800
1445300
1445200
1445100
9927
148
9928
5470
5480
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 148
Other SWMUs
Center of Site:
X = 417741
Y = 1445245
0
25
50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 148
Building 9927
Septic System
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
cistenep-bc.aml
MAPID = 010864

ER Site No. 149: Bldg 9930 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 149 includes the septic tank and seepage pit serving Bldg. 9930. Bldg. 9930 was constructed in 1961 and is located in Coyote Test Field. Currently the building is used for explosive testing, photographic reproduction, and general laboratory operations. Explosive tests are performed northwest of the building in a concrete-bunkered area that contains no drains. Photoprocessing chemicals, including alkaline-based developers, acetic acid, ammonium thiosulfate, and small quantities of sulfuric acid, were discharged directly into the septic system. Laboratory chemicals such as acetone, MEK, and isopropanol were discharged onto the ground or thrown into the trash. Presently, all photographic chemicals and lab wastes are containerized and disposed of off-site.

Sinks and/or floor drains are located in the darkroom, the bathroom, and the compressor room. The septic system for Bldg. 9930 consisted of one 2,850-L (750-gal) septic tank and a 1.2-m (4-ft) diameter by 1.2-m (4-ft) deep seepage pit located south of the building across the access road. Records indicate that the effluent discharge rate ranged between 150 L/day (40 gal/day) and 3,040 L/day (800 gal/per day). The septic system is no longer in use.

The site is approximately 133 meters (431 feet) above the regional water table.

Constituents of Concern

The constituents of concern at the site are photoprocessing chemicals (silver, cadmium, hexavalent chromium, and cyanide), organic compounds (acetone, MEK, and isopropanol), high explosives (HE), and metals (mercury, barium). Aqueous samples obtained from the septic tank in 1991 detected phenol, phenolic compounds, chromium, and silver. No releases of radioactive material are known to have occurred.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

The septic tank was sampled in the spring of 1994 for waste characterization.

A passive soil gas survey was conducted in 1994. The only volatile organic compound anomalies were a few samples showing BTEX in the soil. Because the septic system is downhill from a parking area serving the facility and because heavy earth-moving equipment was at the site when the building was connected to the sanitary sewer system, the source of the BTEX is not considered to be the septic system.

Waste was removed from the septic tank, and the empty tank was inspected by NMED in 1995. The tank was decontaminated , and concrete samples were collected to verify that no constituents of concern remained. The decontaminated tank was then backfilled with clean soil.

A confirmatory sampling No Further Action (NFA) proposal was submitted to the New Mexico Environment Department/ Hazardous Radioactive Materials Bureau (NMED/HRMB) in July 1996. Comments on the NFA proposal were received from the NMED in June 1998, and SNL/NM responded to these comments in November 1998. NMED issued a second request for supplemental information (RSI) in June 2000 and required that additional high explosives (HE) soil samples be collected, and a monitoring well be installed at this site. SNL/NM responded to this second RSI in September 2000 and agreed to these additional requirements. A groundwater monitoring well (well CTF-MW3) was installed at a location approximately 300 feet west of, and downstream of this site in August 2001. Also, one additional high explosives soil sample was collected at the former seepage pit location at this site on Oct. 10, 2002.

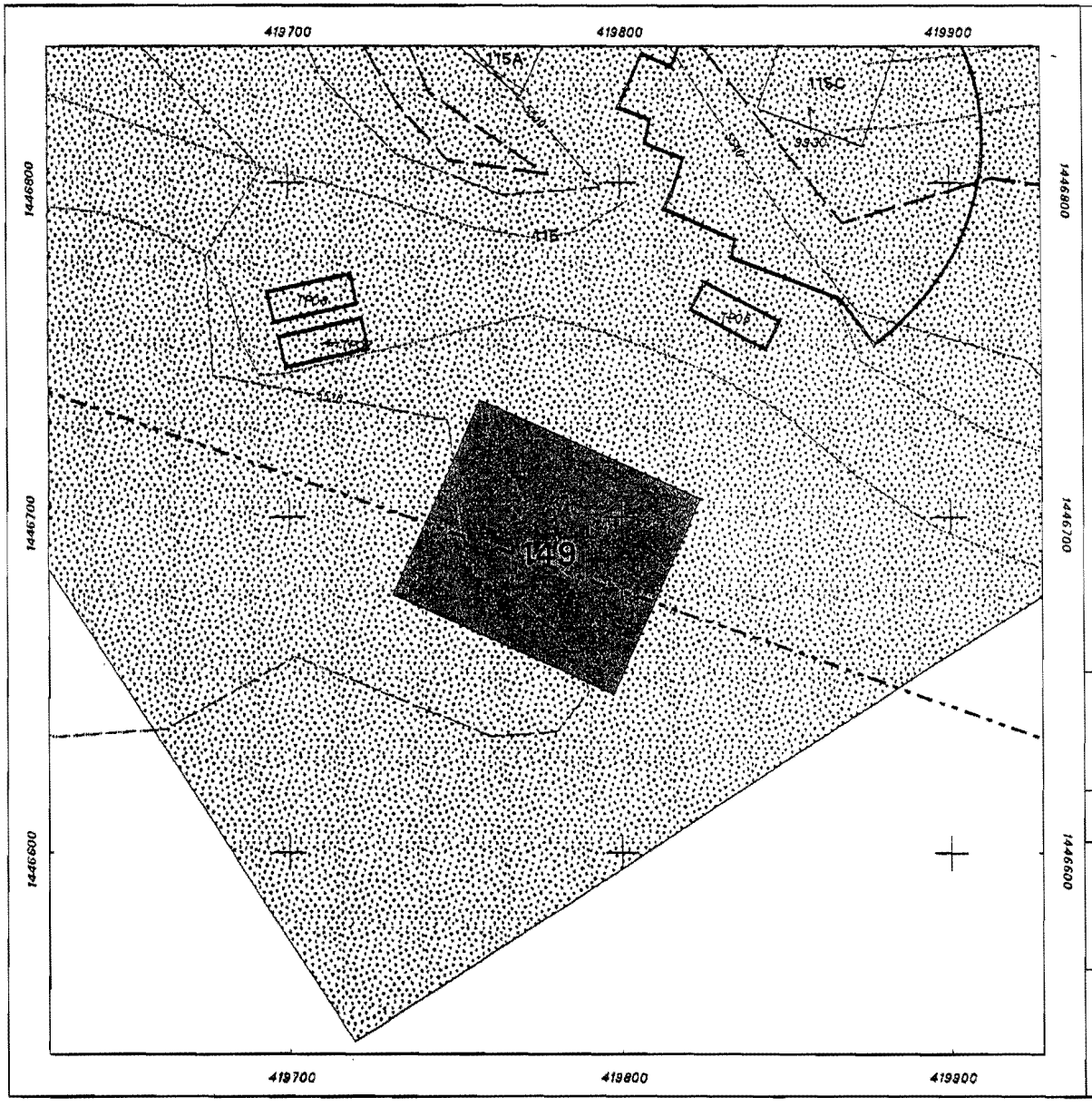
Future Work Planned

Groundwater samples will be collected from well CTF-MW3 for a minimum of eight quarters, or two years. These samples will be analyzed for volatile organic compounds (VOCs), high explosive (HE) compounds, metals, and cyanide. The analyical results for these groundwater and additional soil samples will be reviewed by NMED and SNL/NM personnel and the site will either be approved for NFA, or additional characterization work will be completed.

Waste Volume Estimated/Generated

Five drums of hazardous waste were generated at this site.

Information for ER Site 149 was last updated Jan 17, 2003.



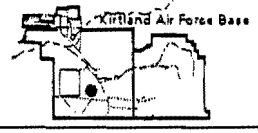
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 149
- Other SWMUs

Center of Site:
X = 419778
Y = 1446691

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 149
Building 9930
Septic System

SMorrison 17-SEP-2001

SNL EGIS DEPT 8135

cistanop-be.aml MAPID = 010865

ER Site No. 150: Bldg 9939/9939A Septic Systems

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 150 includes the septic tank and seepage pits serving Bldg. 9939 and a small drainfield serving Bldg. 9939A. Buildings 9939 and 9939A are located just west of Lovelace Road, about 1.6 km (1.0 mi) north of the Solar Tower (Bldg. 9980). Bldg. 9939 was built in 1967 but remained unoccupied until 1977, when it was used to conduct outdoor nuclear meltdown tests. Metals tested included aluminum, steel, zirconium, and depleted uranium (DU). The waste generated was managed by the SNL/NM Radiation Protection Operations (RPO) Department. Surface contamination exists in some areas from the tests. A metallurgic testing laboratory was operated in Bldg. 9939, where laboratory waste such as acids, bases, xylene, hexane, methanol, ethanol, and vacuum grease may have been discharged to the septic system.

Bldg. 9939 contains floor drains and sinks that discharged to the septic system, consisting of a 2,850-L (750-gal) septic tank connected to a distribution box leading to two seepage pits, each 1.5 m (5 ft) in diameter by 2.7 m (9 ft) deep. The system is located about 22 m (70 ft) southeast of the building. Sampling activities conducted during 1991 indicate the septic system consists of a septic tank and a clarifier or second chamber. Estimated effluent volumes during operation ranged from 76 L/day (20 gal/day) to 1,500 L/day (400 gal/day). The septic system is no longer in use.

Bldg. 9939A was constructed sometime between 1977 and 1979. Experiments involving the use of molten sodium were performed outside. A water-cooled laser was located in the building, and

cooling water was discharged directly to a floor drain. At one time transformers containing polychlorinated biphenyls (PCBs) exploded inside the building but no releases to the drainfield occurred because the floor drains had been already sealed with grout. The small drainfield north of Bldg. 9939A was formerly used only to dispose of uncontaminated cooling water from the water-cooled laser and effluent from the floor drain. The drainfield drainlines are still present at the site, and are buried about two feet below the surface.

The site is approximately 90 meters (294 feet) above the regional water table.

Constituents of Concern

The constituents of concern at the site are organic compounds (xylene, hexane, methanol, ethanol), acids, bases, and depleted uranium. Aqueous samples obtained from the septic tank in 1991 detected trichloroethylene (TCE), 4-methylphenol, barium, cadmium, and manganese.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

The septic tank was sampled in the spring of 1994 for waste characterization.

A passive soil gas survey was conducted in the summer of 1994 and detected trace amounts of BTEX near a concrete pad in front of a storage shed. The location of the anomalies indicate that the probable source is a leak from a vehicle or activities in the shed.

Soil samples were collected in early 1995 from around the septic tank and seepage pits, and in the drainfield. Analytical results of these samples indicate that no significant releases of hazardous or radioactive materials occurred at this site.

Waste was removed from the septic tank, and the empty tank was inspected by NMED in early 1996. The tank was decontaminated, and concrete samples were collected from the tank to verify that no COCs remain. The tank was then backfilled with clean soil.

A confirmatory sampling No Further Action (NFA) proposal was submitted to the New Mexico Environment Department/ Hazardous Radioactive Materials Bureau (NMED/HRMB) in January 1997. Comments on this NFA proposal were received from the NMED in June 1999, and SNL/NM responded to these comments in September 1999. As of August 2001, additional comments pertaining to the NFA proposal for this site had not been received from the NMED.

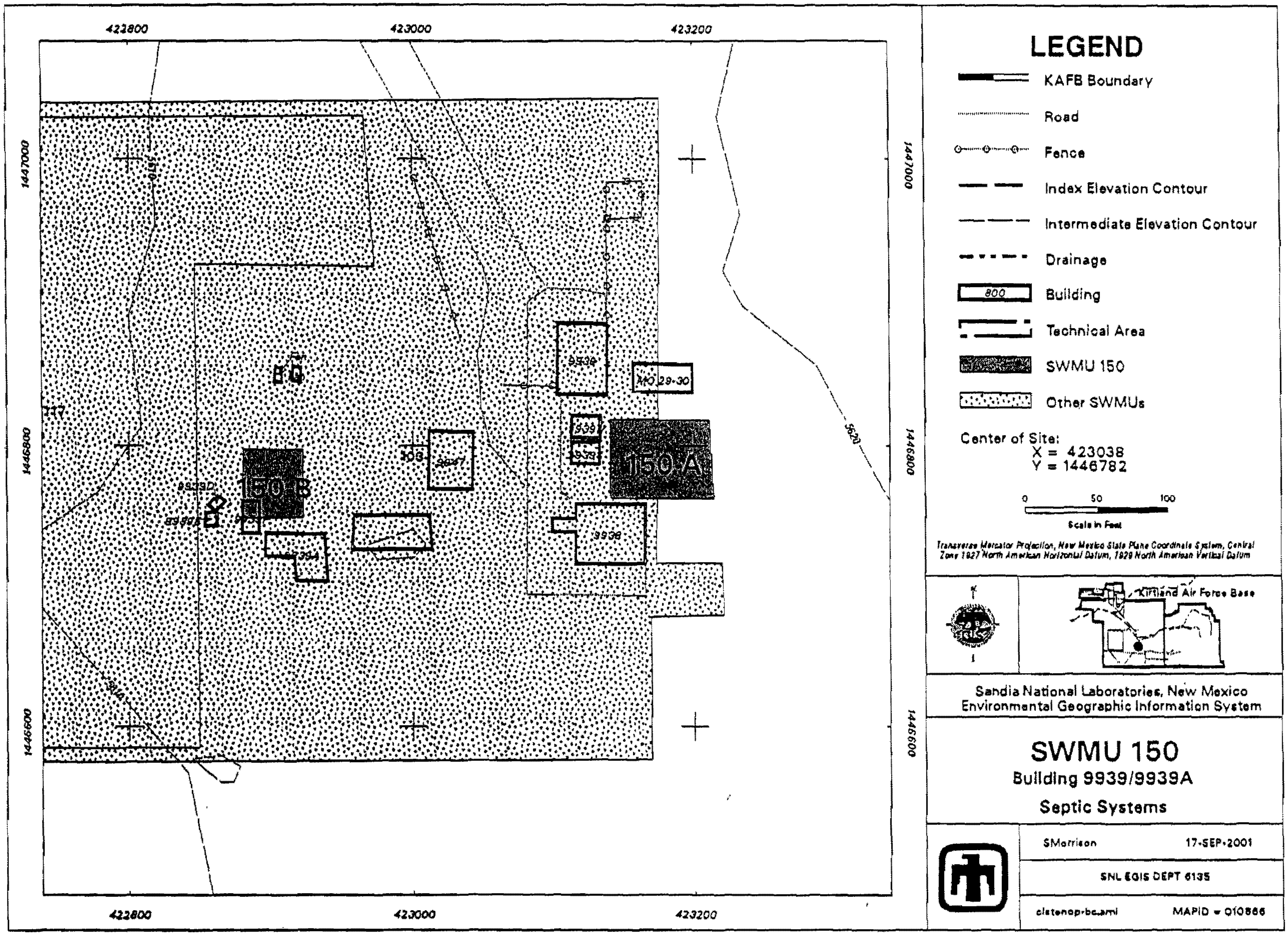
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems sampling and analysis plan (SAP).

Waste Volume Estimated/Generated

Eighteen drums of mixed waste were generated at this site.

Information for ER Site 150 was last updated Jan 7, 2002.


LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 150
Other SWMUs
Center of Site:
X = 423038
Y = 1446782
0
50
100
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 150
Building 9939/9939A
Septic Systems
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
MAPID = 010866
422800
423000
423200
1447000
1446800
1446600
150-A
150-B
9939
9938
MO 29-30
5620

ER Site No. 151: Bldg 9940 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 151 includes the septic system serving Building 9940 and surface outfalls from Buildings 9940 and 9940A. Building 9940 is located west of Lovelace Road, approximately 1.0 mi east of Area III, in Coyote Test Field. The building was constructed in 1962 as an explosives test facility. It was converted to a U.S. Nuclear Regulatory Commission (NRC) testing facility in 1978. The NRC tests included dropping superheated metals containing iron and aluminum into vats of cooling water, using depleted uranium (DU) to simulate nuclear reactor settings. Wastewater from the tests was discharged onto the ground surface or into the septic system. Inactive facilities at Building 9940 include an underground chamber that was used to store DU components and a darkroom from which photoprocessing chemicals and organic compounds such as acetone, toluene, and MEK may have been discharged into the septic system.

The septic system consists of a 1000-gal septic tank and a 6.5-ft in diameter by 15-ft deep seepage pit located on the northwest side of Building 9940. The system received discharge from sinks and drains in the building. Estimates of effluent discharged to the septic system range between 40 gal/day and 400 gal/day. A surface outfall located on the southwest side of the building and connected to floor drains in Building 9940A may have received explosives residue and DU. A second surface outfall, located within a few feet of the first outfall, drains a concrete settling tank that received liquid waste from floor drains in the underground storage chamber. The septic system at this site is no longer in use, and restroom and sink effluent is discharged to an extension of the SNL sanitary sewer system. The floor drain outfalls have been blocked.

The site is approximately 146 meters (474 feet) above the regional water table.

Constituents of Concern

Constituents of concern include DU, explosives residue, photoprocessing chemicals (silver, cadmium, hexavalent chromium, and cyanide), and organic compounds (acetone, toluene, MEK, trichloroethylene (TCE), and PCE).

Current Hazards

There are no known current hazards at this site related to contamination of the surface or subsurface soils. There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

The septic tank was sampled for waste characterization in 1994.

A passive soil gas survey was conducted around the septic tank and seepage pit in the summer of 1994, but no Volatile Organic Compounds (VOC) anomalies were detected.

Soil sampling around the two surface outfalls, the septic tank, and the seepage pit were conducted in the fall of 1994 and early 1995. Analytical results for the soil samples collected indicate that no significant concentrations of hazardous or radioactive materials were released to the environment at this site.

The waste from the septic tank and settling tank was removed and the empty tanks inspected by NMED in late 1995. The septic tank was decontaminated, and concrete samples were collected from the tank to verify that no COCs remained. The tanks were then backfilled with clean soil.

In response to requests by and negotiations with NMED/HRMB and DOE OB, this and four other ER septic system sites with seepage pits were selected for re-sampling of soil from directly beneath the seepage pits. This re-sampling was completed in January 1998. Soil samples had been previously collected from a pair of borings located on either side of the seepage pit, but this method was considered inadequate by NMED. Analytical results for soil samples collected from directly beneath the three seepage pits were not significantly different from the analytical results for soil samples collected on either side of the seepage pits. NMED regulators agreed with this conclusion, and determined that additional soil sampling beneath the seepage pits would not be required.

A confirmatory sampling No Further Action (NFA) proposal for this site was submitted to the NMED/HRMB in July 1996. NMED issued a Request for Supplemental Information (RSI) in June 1998, and SNL/NM responded to that RSI in November 1998. In June 2000, NMED found Site 151 to be acceptable for NFA. The NFA was approved by NMED on November 19, 2001, after completing the public review and permit modification process.

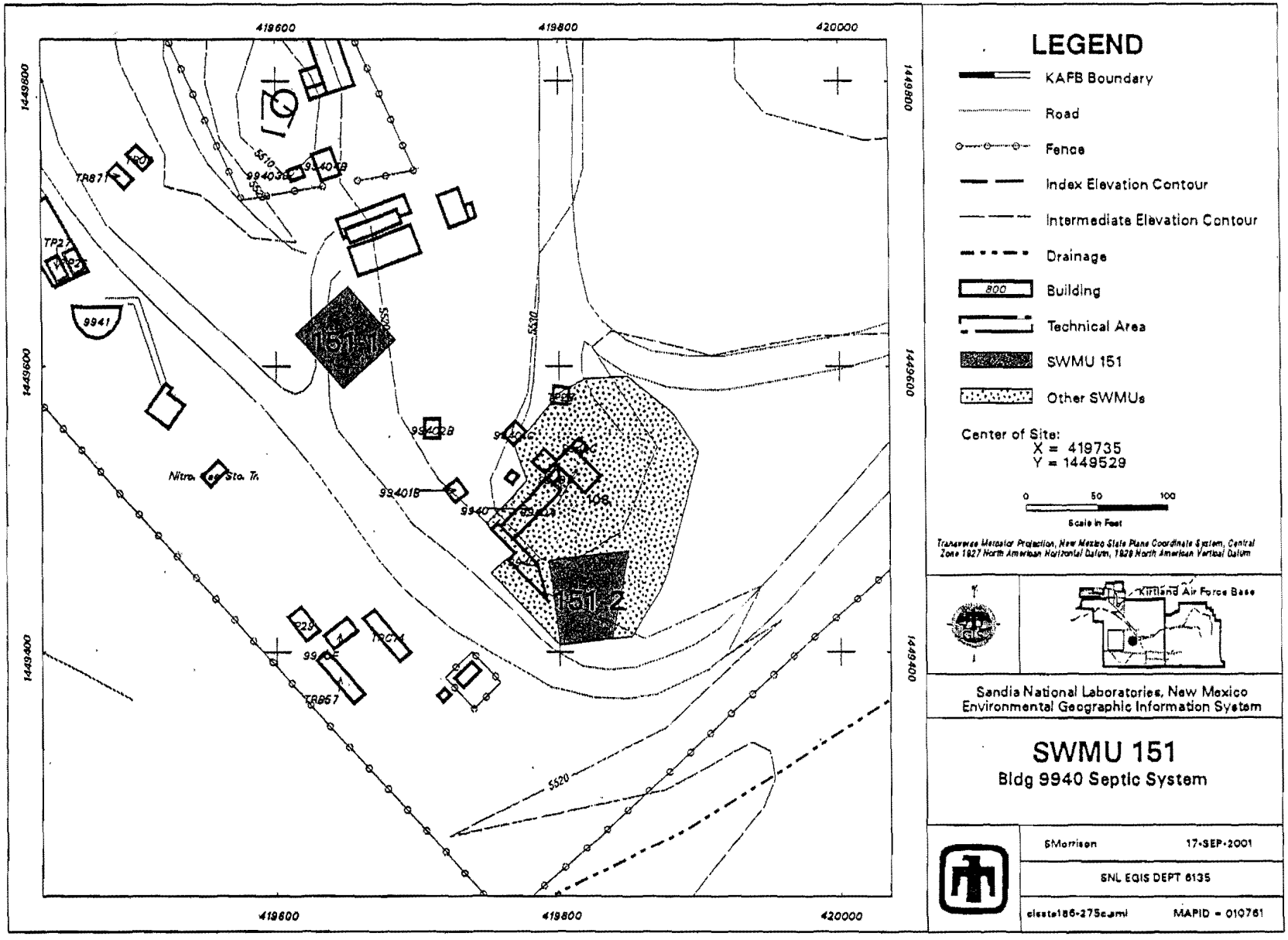
Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

Five drums of radioactive waste were generated.

Information for ER Site 151 was last updated Mar 12, 2002.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151.2
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9940B
9940C
9940D
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9940F
9940G
9940H
9940I
9940J
9940K
9940L
9940M
9940N
9940O
9940P
9940Q
9940R
9940S
9940T
9940U
9940V
9940W
9940X
9940Y
9940Z
TR87
TP27
TR67
TRCH
Nitro. Gas Sta. Tk.
5510
5520
5530
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 151
Other SWMUs
Center of Site:
X = 419735
Y = 1449529
0
50
100
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 151
Bldg 9940 Septic System
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
clesta186-275c.aml
MAPID = 010761

ER Site No. 152: Bldg 9950 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 152 includes the septic system serving Bldg. 9950, which is located 0.8 km (0.5 mi) east of Technical Area III. It was constructed in the early 1960s and was used originally as an explosives test facility. Prior to 1969, explosives testing at Bldg. 9950 involved beryllium, cadmium, lead, mercury, nitroguanidine, Baratol, cyclotrimethylene trinitramine (RDX), and cyclotetramethylene tetranitramine (HMX). The building contained a darkroom, and photographic chemicals were discharged in the sink prior to 1974. Alcohol, kerosene, acetone, and MEK were used to clean parts but were reportedly never discharged into the septic system.

The septic system for Bldg. 9950 consisted of one 2,850-L (750-gal) septic tank and a leachfield with four 7.7-m (25 ft) parallel drainlines. The system is located about 18 meters (60 ft) west of the building. The tank was pumped once a week in the past, indicating that the system may have been overloaded. The estimated effluent volumes for Site 152 range from 115 L/per day (30 gal/per day) to 1,700 L/day (450 gal/day).

The site is approximately 165 meters (535 feet) above the regional water table.

Constituents of Concern

The constituents of concern at the site include beryllium, cadmium, lead, mercury, explosives

residue (nitroguanidine, Baratol, RDX, and HMX), and photoprocessing chemicals (silver, cadmium, hexavalent chromium, and cyanide). Aqueous samples obtained from the septic tank in 1991 detected trichloroethylene (TCE), phenol, chromium, and silver.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

The septic tank was sampled for waste characterization in the spring of 1994.

A passive soil gas survey in the summer of 1994 found trace quantities of TCE near the distribution box however subsequent soil samples did not detect any organic constituents.

Soil samples were collected from the drainfield and near the septic tank in 1994.

Wastes from the septic tank were removed, the empty tank was inspected by NMED. The tank was decontaminated, and concrete samples were collected to verify that no COCs remain. The tank was then backfilled with clean soil. The abandoned drainfields drainlines are still present at the site, and are buried at an average depth of 3.5 feet below the surface.

A confirmatory sampling No Further Action (NFA) was submitted to the New Mexico Environment Department/ Hazardous Radioactive Materials Bureau (NMED/HRMB) in January 1997. NFA comments were received from NMED in June 1999, and SNL replied to the NMED comments in September 1999. As of August 2001 no additional response to the NFA proposal had been received from NMED.

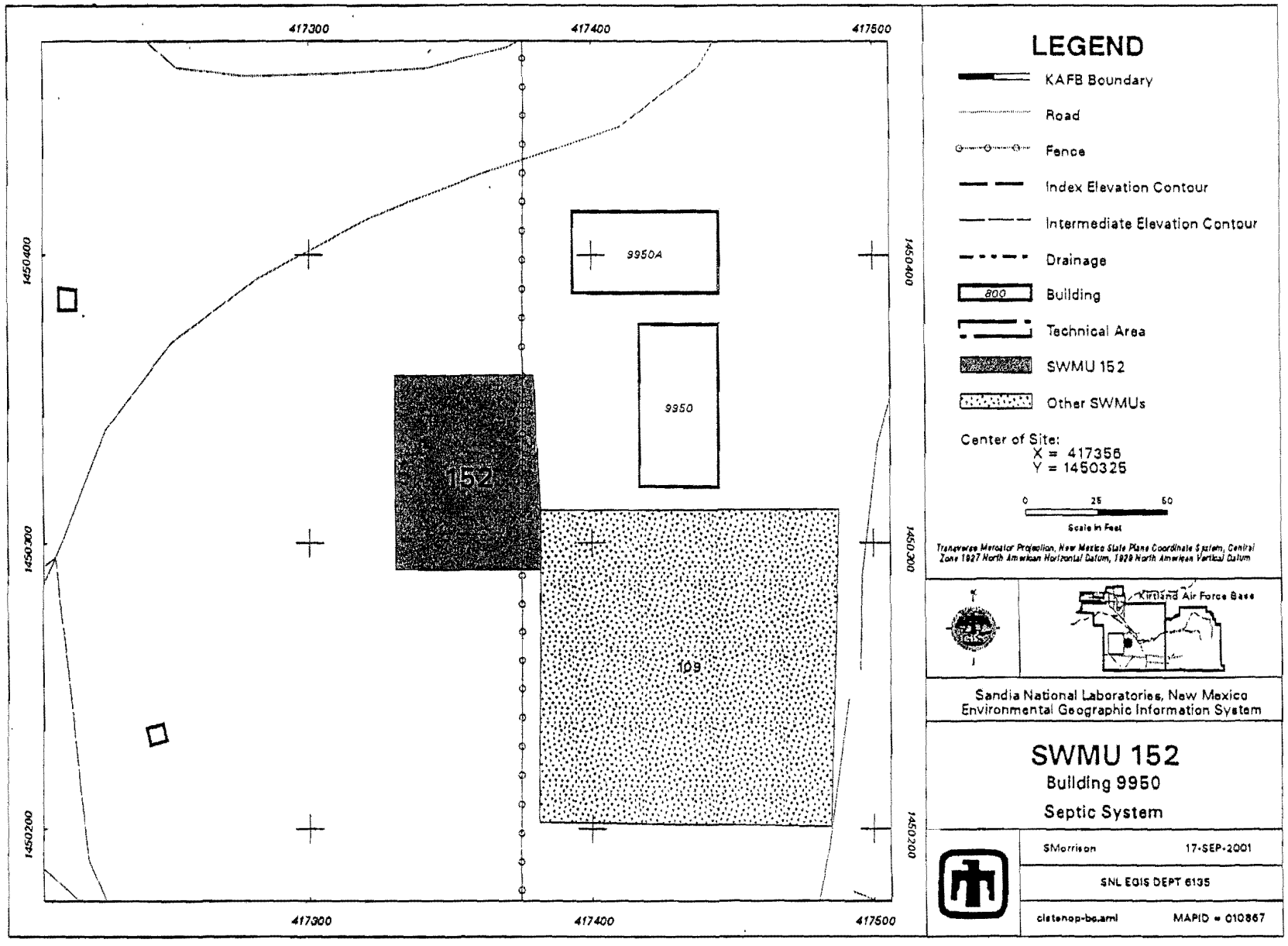
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems sampling and analysis plan (SAP).

Waste Volume Estimated/Generated

Around sixteen drums of mixed waste.

Information for ER Site 152 was last updated Jan 7, 2002.


417300
417400
417500
1450400
1450300
1450200
9950A
9950
152
109
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 152
Other SWMUs
Center of Site:
X = 417356
Y = 1450325
0
25
50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 152
Building 9950
Septic System
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
cistenop-bo.aml
MAPID = 010867

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ER Site No. 153: Bldg 9956 Septic Systems

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 153 includes the two septic systems serving Bldg. 9956. Bldg. 9956, the Hypervelocity Gun Facility, is located north of Bldg. 9920, 0.8 km (0.5 mi) east of Technical Area III. It was constructed in 1969 after the original Bldg. 9956 structure was blown up during explosives testing at Bldg. 9950. Bldg. 9956 contains a machine shop, air gun, photographic processing equipment, X-ray equipment, and shower facilities. Metal shavings from the machine shop may have entered the floor drain. Photographic processing is performed in a closed system, and very little processing waste is suspected to have entered the septic system.

The original septic system in Bldg. 9956 consisted of a 3,800 L (1,000 gal) septic tank and one 2.5-m (8-ft) diameter by 2.5-m (8-ft) deep seepage pit. This system is located on the east side of the building. The lack of restrictions on releases of contaminants to the original older system may have resulted in the disposal of radioactive or hazardous materials to this septic system. A new septic system, installed in 1988, consists of a 5-ft. by 8-ft septic tank and drainfield composed of four 50-ft. parallel PVC drainlines, located about 120 feet southwest of the building in a fenced-in area. The estimated effluent volumes for Site 153 range from 115 L/day (30 gal/ day) to 1,700 L/day (450 gal/day). Both systems are no longer in service.

The site is approximately 162 meters (530 feet) above the regional water table.

Constituents of Concern

The constituents of concern at the site include photographic processing chemicals (silver, cadmium, hexavalent chromium, and cyanide), black powder, beryllium, depleted uranium, explosives residue, and alcohol cleaning agents. Aqueous samples obtained from the new septic tank in 1991 found toluene, trichloroethylene (TCE), PCE, manganese, and phenolic compounds.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

The two septic tanks were sampled for waste characterization in 1994.

A passive soil gas survey performed in 1994 did not detect any volatile organic compound anomalies.

Soil sampling was performed in the fall of 1994 around the septic tanks, seepage pit, and in the drainfield.

Waste was completely removed from both septic tanks and the empty tanks were inspected by NMED in early 1996. The tanks were decontaminated, and concrete samples were collected from the tanks to verify that no COCs remained. The tanks were then backfilled with clean soil. The abandoned drainfields drainlines are still present at the site. The east system drainlines are buried at an average depth of 6.5 feet below the surface, and those for the west septic system are an average of 4.5 feet deep.

A confirmatory sampling No Further Action (NFA) proposal was submitted to the New Mexico Environment Department/ Hazardous Radioactive Materials Bureau (NMED/HRMB) in January 1997. NMED issued a Request for Supplemental Information (RSI) in June 1999, and SNL/NM responded to that RSI in September 1999. As of August 2001, further comments to the NFA proposal had not been received from NMED.

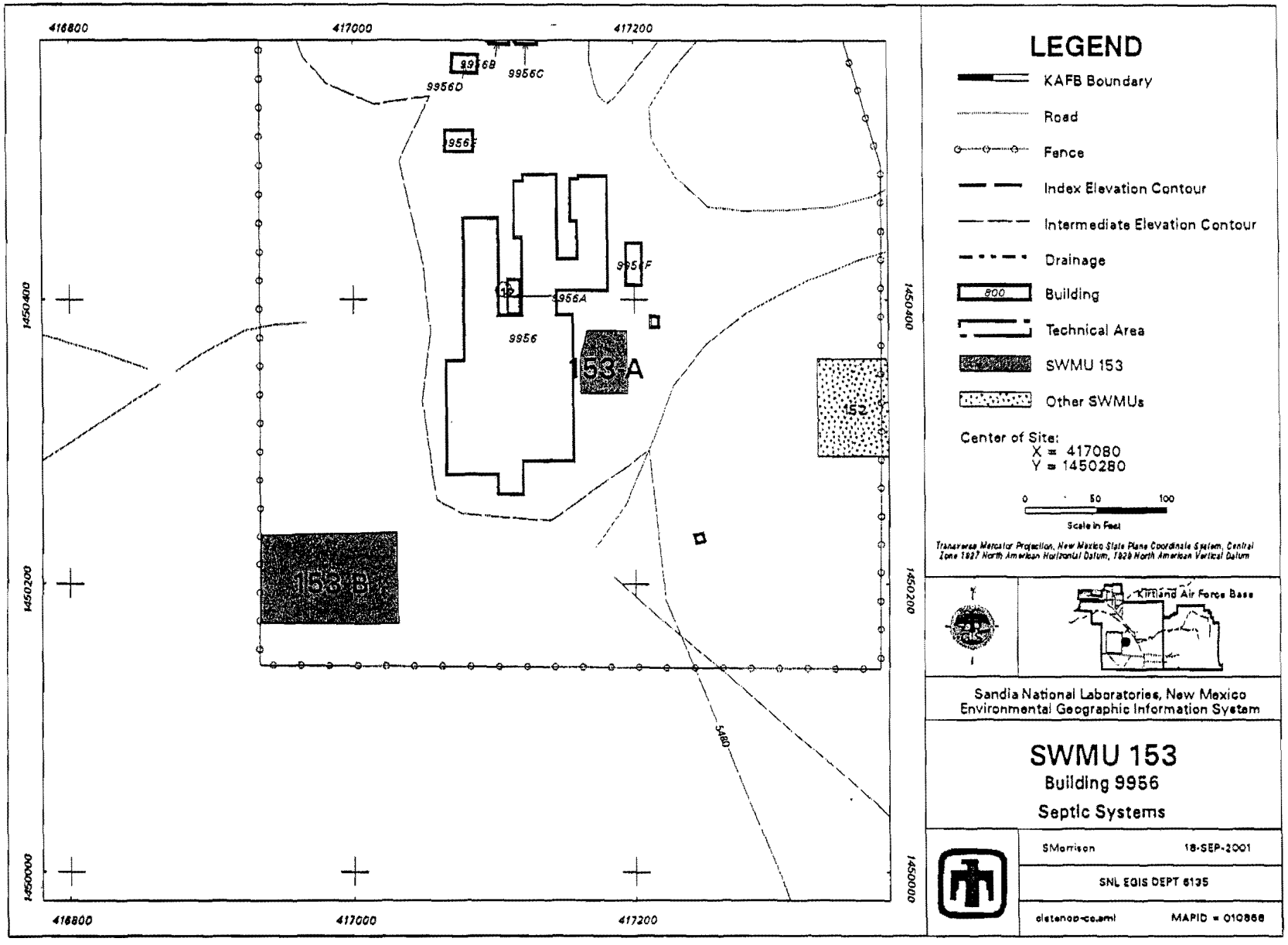
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems sampling and analysis plan (SAP).

Waste Volume Estimated/Generated

One drum of radioactive waste, 2 drums of hazardous waste, and 4 drums of non-regulated septage waste were generated.

Information for ER Site 153 was last updated Dec 11, 2001.


416800
417000
417200
1450400
1450200
1450000
9956B
9956C
9956D
9956
9956F
9956A
9956
153 A
153 B
152
5460
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 153
Other SWMUs
Center of Site:
X = 417080
Y = 1450280
0
50
100
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 153
Building 9956
Septic Systems
SMorrison
18-SEP-2001
SNL EGIS DEPT 6135
sistenop-ce.aml
MAPID = 010868

ER Site No. 154: Bldg 9960 Septic Systems

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 154 includes the septic system and high explosives (HE) seepage pits serving Bldg. 9960. Bldg. 9960, the Explosives Preparation Facility (Explosives Machining Facility), is located in the Coyote Test Field to the west of Lovelace Road, north of the intersection of the Coyote Springs Road, about 2.1 km (1.3 mi) east of Technical Area III. It was constructed in 1965 for the purpose of preparing explosive assemblies for tests at various locations in Coyote Test Field. Wastewater from hosing down explosive machining equipment and the floor contaminated with explosive cuttings such as TNT, PBX-9404, RDX, Composition B, Octol, Amatol, and Baratol, was discharged directly to the HE wastewater system. The HE wastewater system consisted of an open concrete channel lined with rubber matting leading to a filter basket and distribution/catch box on the southwest side of the building. The liquid from the distribution box discharged to two 1.5-m (5-ft) diameter by 7-m (23-ft) deep seepage pits. The cotton bags that lined the filter basket prior to 1980 often failed, resulting in the discharge of explosives residue to the seepage pits. They were replaced with polyester bags, which were disposed of by Air Force explosive ordinance disposal team every six months. Small quantities of alcohol cleaning solution may have been discharged to the drains. Up to 1,140 L (300 gal) per day of wastewater may have been generated from hosing down machines and the floor. The HE seepage pits are no longer in use. Liquid effluent from machining operations is currently diverted at the end of the trench to aboveground polyethylene tanks located nearby. The water in the tanks is analyzed periodically then disposed to the sanitary sewer system.

Bldg. 9960 contains one bathroom with shower, sink, toilet, and floor drain. These discharge to a

septic system consisting of a 3,400-L (900-gal) septic tank and one 1.5-meter (5-foot) diameter by 3-meter (10-feet) deep seepage pit located about 12 meters (40 feet) north of the building. The septic system is no longer in use. Estimated effluent volumes range from 150 L/day (40 gal/day) to 1,500 L/day (400 gal/day).

The site is approximately 125 meters (411 feet) above the regional water table.

Constituents of Concern

The constituents of concern at the site include various explosive compounds (TNT, PBX-9404, RDX, HMX, Composition B, Octol, Amatol, and Baratol [with barium]). Aqueous samples obtained from the septic tank in 1991 detected phenols, chromium, copper, lead, manganese, and mercury. No releases of radioactive contaminants are known to have occurred.

Current Hazards

No known surface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site. High explosive (HE) contaminants have been detected in subsurface soil samples collected from beneath the two HE seepage pits on the west side of Building 9960. HE compounds have been detected at a depth of 22 to 25 feet below the surface, and include TNT, HMX, and RDX. The metal barium has also been detected above naturally occurring background concentrations in some soil samples.

Current Status of Work

The septic tank was sampled for waste characterization in the spring of 1994.

A passive soil gas survey conducted in the summer of 1994 did not detect any volatile organic compound anomalies.

The first round of soil samples was collected from around the east septic system units, and from immediately around the HE seepage pits in October 1994. Relatively high concentrations of TNT and barium, and lesser amounts of the explosive compounds RDX and HMX were detected in soils immediately around, and beneath the HE pits. As a result, three additional rounds of soil sampling were completed in October 1995, June and July 1996, and March 1997, in order to fully define the extent of the HE and barium contamination around the HE pits at this site.

Wastes were removed from the septic tank, and the tank was closed in 1995. The tank was decontaminated, and concrete samples were collected to verify that no constituents of concern (COCs) remained. The decontaminated tank was then backfilled with clean soil.

A confirmatory sampling No Further Action (NFA) proposal for this site was submitted to the New Mexico Environment Department/ Hazardous Radioactive Materials Bureau (NMED/HRMB) in August 1997.

In response to requests by and negotiations with the NMED/HRMB and DOE/OB, re-sampling of

soil from directly beneath the two HE pits at this site was completed in January 1998. Soil samples had been previously collected from pairs of borings located on either side of each of the HE pits, but this method was considered inadequate by NMED. Analytical results for soil samples collected from directly beneath the HE seepage pits were not significantly different from the analytical results for soil samples collected on either side of the seepage pits. NMED regulators agreed with this conclusion, and determined that additional soil sampling beneath these seepage pits would not be required.

Comments on the August 1997 NFA proposal were received from the NMED in December 1999, and NMED required that a monitoring well be installed at this site. As a result, a groundwater monitoring well (well CTF-MW2) was installed at a location approximately 300 feet west of this site in August 2001.

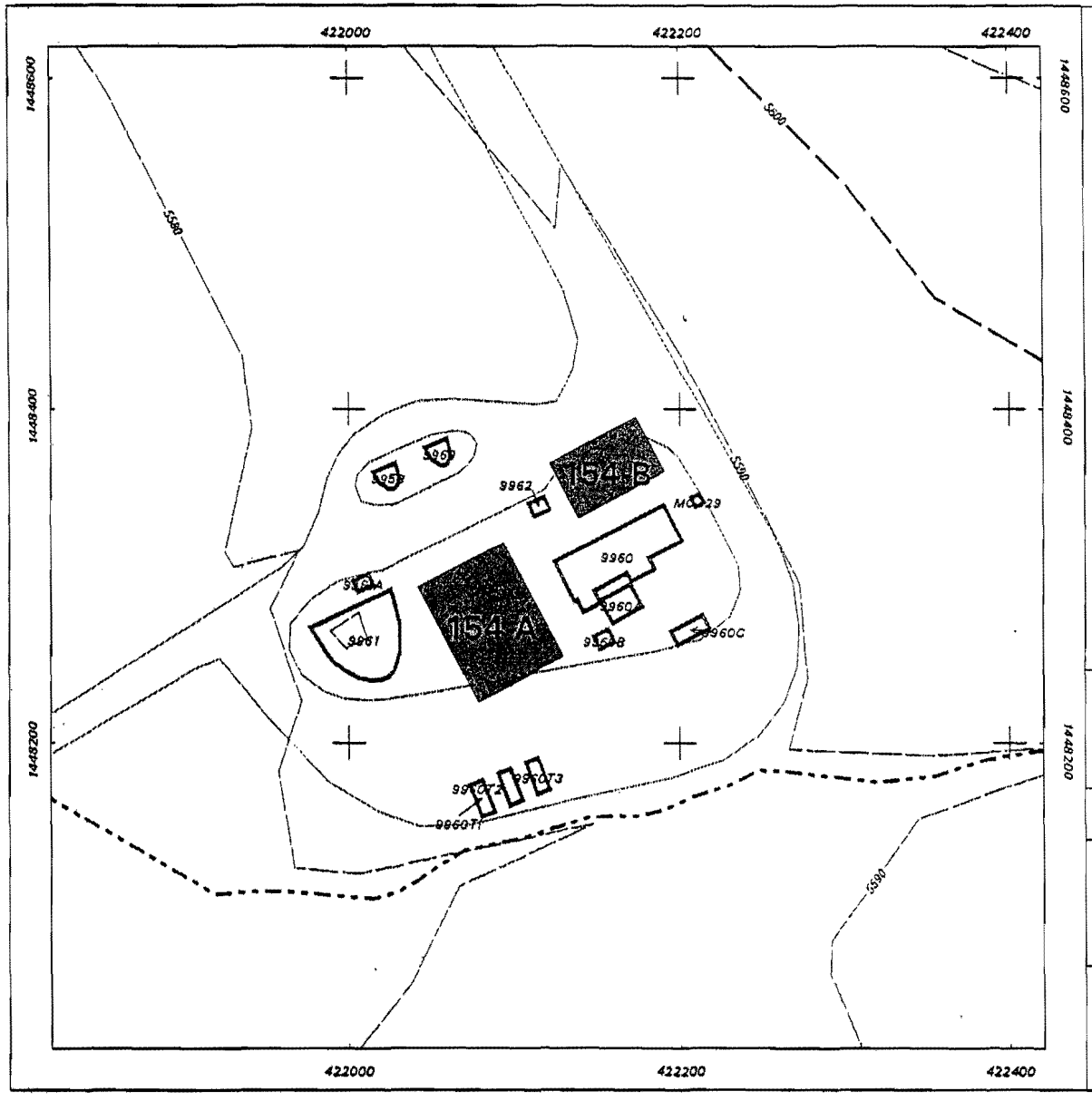
Future Work Planned

Groundwater samples will be collected from well CTF-MW2 at some point in the future. The actual number of quarters of sampling, and analytical requirements for those samples had not been specified by NMED as of December 2001. Analytical results for these future groundwater samples, and for subsurface soil samples previously collected at the site will be reviewed, and the site will either be approved for NFA, or additional characterization work may be required. It is also possible that a remediation effort of some sort may eventually be required to reduce the HE concentrations in soils beneath the HE pits. The need for a remediation work will depend on the future land use determined for the site, human health and ecorisk calculations, decisions by regulatory personnel, etc.

Waste Volume Estimated/Generated

Nineteen drums of mixed waste were generated.

Information for ER Site 154 was last updated Jan 7, 2002.



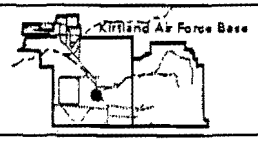
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 154
- Other SWMUs

Center of Site:
X = 422120
Y = 1448319

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 154
Building 9960
Septic Systems

SMorrison	16-SEP-2001
SNL EGIS DEPT 6135	
clstenop-cc-ami	MAPID = 010869

ER Site No. 160: Bldg 9832 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 160 includes the seepage pit serving the high explosives (HE) wastewater system for Bldg. 9832. There is no septic system associated with this site. Building 9832, the Vehicle Assembly Building, is located on the northwest corner of the intersection of the Burn Site road and the new Cable Site road in Lurance Canyon. The building was constructed in 1968 for the preparation of explosive tests, involving explosive train assembly, propellant assemblies, parts degreasing, and painting of test assemblies. Wastewater from the assembly area cleanup, some of which may have contained nitroguanidine, ammonium nitrate, Composition C4, PBX-9404, PBX-9205, and PETN, was discharged through a floor trough to a catch box and a seepage pit. A hand-washing sink, located inside the high bay on the east wall, empties into the trough just before it exits the building. The building has no toilet facilities or permanent water supply; water for washing was provided by a tanker truck to a holding tank located on the north side of the building.

During past operations, the floor in the HE assembly area was washed with water into the floor trough that discharged via a concrete channel covered with a steel lid to a catch box and seepage pit. The concrete channel exits the southeast end of the building, turns southwest, and drains into the catch box, which contained a polyethylene filter bag for collecting heavy particles of waste HE. The filter bags were periodically replaced and turned over to the U.S. Air Force (USAF) explosive ordnance disposal team for disposal. The floors are no longer washed down with water; they were swept and wet-mopped since the late 1980s. The liquid overflow from the catch box entered a 1.5-m (5-ft) diameter by 2.4-m (8-ft) deep seepage pit located on the southwest side of the fence. Estimated effluent volume has not been quantified. The seepage pit is no longer in use. Bldg. 9832

is no longer continuously occupied.

The site is estimated to be approximately 15 to 46 meters (50 to 150 feet) above the regional water table. However, depth-to-groundwater information is lacking for the area in which this site is located.

Constituents of Concern

Constituents of concern are primarily explosive compounds (nitroguanidine, ammonium nitrate, Composition C4, PBX-9404, PBX-9205, and PETN).

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

A passive soil gas survey was conducted at the site 1994. No significant Volatile Organic Compound (VOC) or Semi-Volatile Organic Compound (SVOC) anomalies were detected.

Soil sampling around the seepage pit was performed in 1994.

A confirmatory sampling No Further Action (NFA) proposal was submitted to the New Mexico Environment Department/ Hazardous Radioactive Materials Bureau (NMED/HRMB) in July 1996.

In response to requests by and negotiations with the NMED/HRMB and DOE OB, resampling of soil from directly beneath the seepage pit at this site was completed in January 1998. Soil samples had been previously collected from a pair of borings located on either side of the seepage pit, but this method was considered inadequate by the NMED. Analytical results for the additional soil samples collected from directly beneath the seepage pit were not significantly different from the analytical results for soil samples collected on either side of the seepage pit. NMED regulators agreed with this conclusion, and determined that additional soil sampling beneath the seepage pit would not be required.

NMED issued a Request for Supplemental Information (RSI) in June 1998, and SNL/NM responded to this RSI in November 1998. NMED issued a second RSI in June 2000, and indicated that the site was acceptable for NFA. The NFA was approved by NMED on November 19, 2001, after completing the public review and permit modification process.

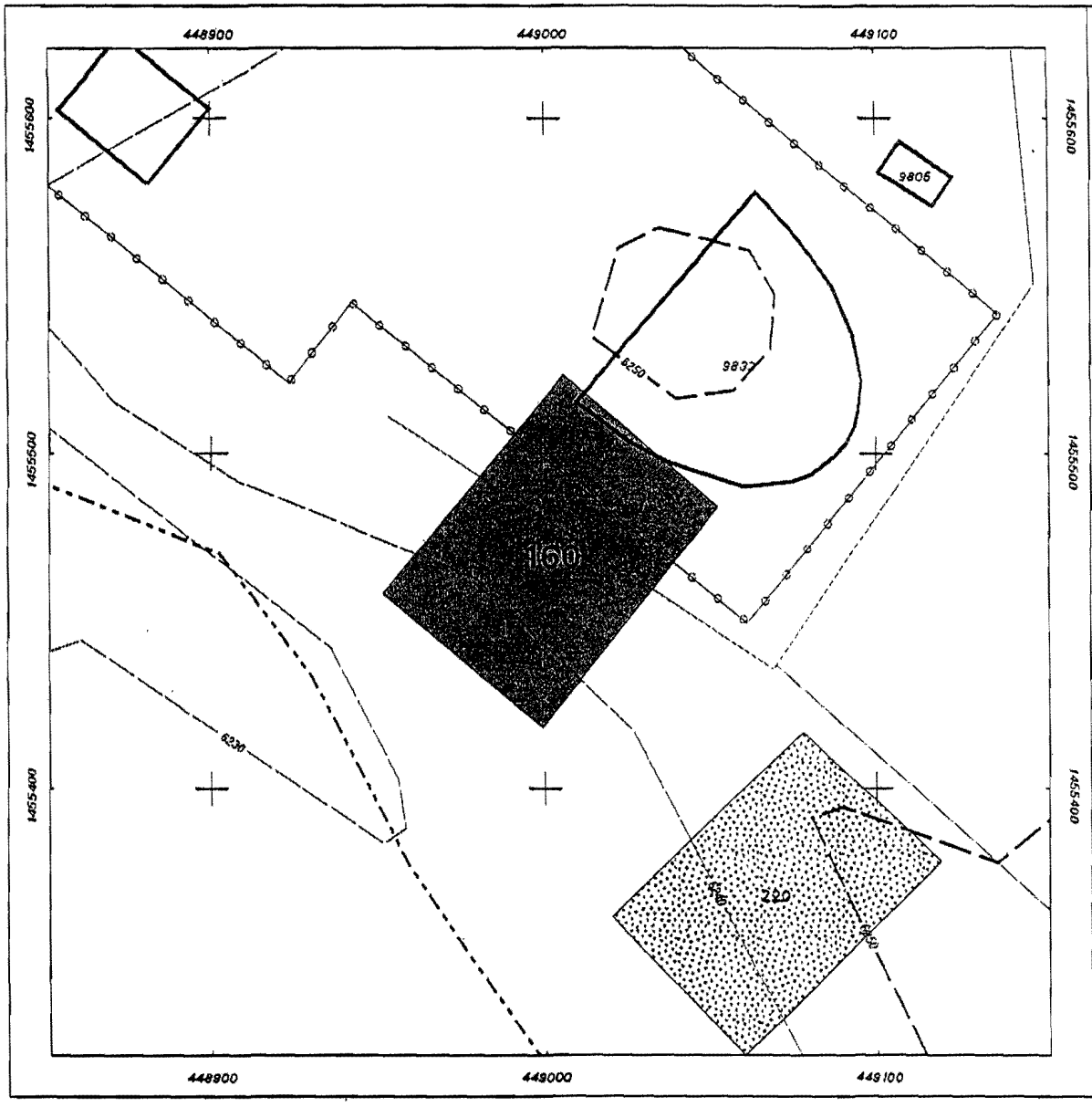
Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

No waste was generated at this site.

Information for ER Site 160 was last updated Mar 12, 2002.



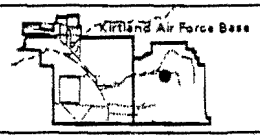
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 160
- Other SWMUs

Center of Site:
X = 448002
Y = 1455471

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 160

Bldg 9832 Septic System

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

cisste186-275cami MAPID = 010762

ER Site No. 161: Bldg 6636 Septic System

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

ER Site 161 includes the septic system serving Building 6636. Bldg. 6636, the control building for the Nondestructive Test Facility, is located in the southeast quadrant of Technical Area (TA) III, about 0.4 km (0.25 mi) west of Building 6630. The building was constructed in 1971 for monitoring climatic tests and for developing X-ray film. From 1971 to 1989, approximately 3400 L (900 gal) of waste photographic processing chemicals containing silver and sodium dichromate were discharged to the septic system. Since 1989, the waste photographic chemicals were containerized for disposal off site. Currently a silver recovery cartridge is attached to the waste line from the photoprocessing equipment and the facility is connected to the sanitary sewer system. The Nondestructive Test Facility (Bldg. 6635) is located immediately southwest of Bldg. 6636. The building contains floor drains in the northwest and southeast corners of the building, which discharged to the Bldg. 6636 septic system. These two drains may have received ethylene glycol coolant from past spills within Building 6635.

The septic system consists of a 2850-L (750-gal) septic tank located about 12 m (40 ft) south of Building 6636, and a drainfield consisting of ten 18-m (60-ft) distribution lines constructed of 10-cm (4-in.) vitrified clay tile (VCT), located outside the outer perimeter fence. Estimated effluent rates range from 38 L/day (10 gal/day) to 3800 L/day (100 gal/day). The septic system is no longer in use. All discharges are now directed to the sanitary sewer system.

The site is approximately 140 meters (461 feet) above the regional water table.

Constituents of Concern

The constituents of concern are primarily photoprocessing chemicals (silver, cadmium, hexavalent chromium, and cyanide). No releases of radioactive contaminants are known to have occurred.

Current Hazards

No known surface or subsurface hazards have been identified, based on environmental soil and soil-gas sampling that has been conducted at the site.

Current Status of Work

Analysis of the tank contents was completed in 1994.

A passive soil gas survey was completed in 1994.

Soil sampling in the drainfield and around the septic tank was performed in 1994.

Wastes from the septic tank were removed for disposal in 1995. The tank was decontaminated, and tank concrete samples were collected to verify that no COCs remained. The tank was determined to be clean and was backfilled with clean soil. The abandoned drainfield drainlines are still present at the site and are buried at an average depth of about 7.5 feet below the surface.

A confirmatory sampling No Further Action (NFA) proposal was submitted to the New Mexico Environment Department/ Hazardous Radioactive Materials Bureau (NMED/HRMB) in July 1996. NMED issued a Request for Supplemental Information (RSI) in June 1998, and SNL/NM responded to the RSI in November 1998. NMED issued a second RSI in June 2000.

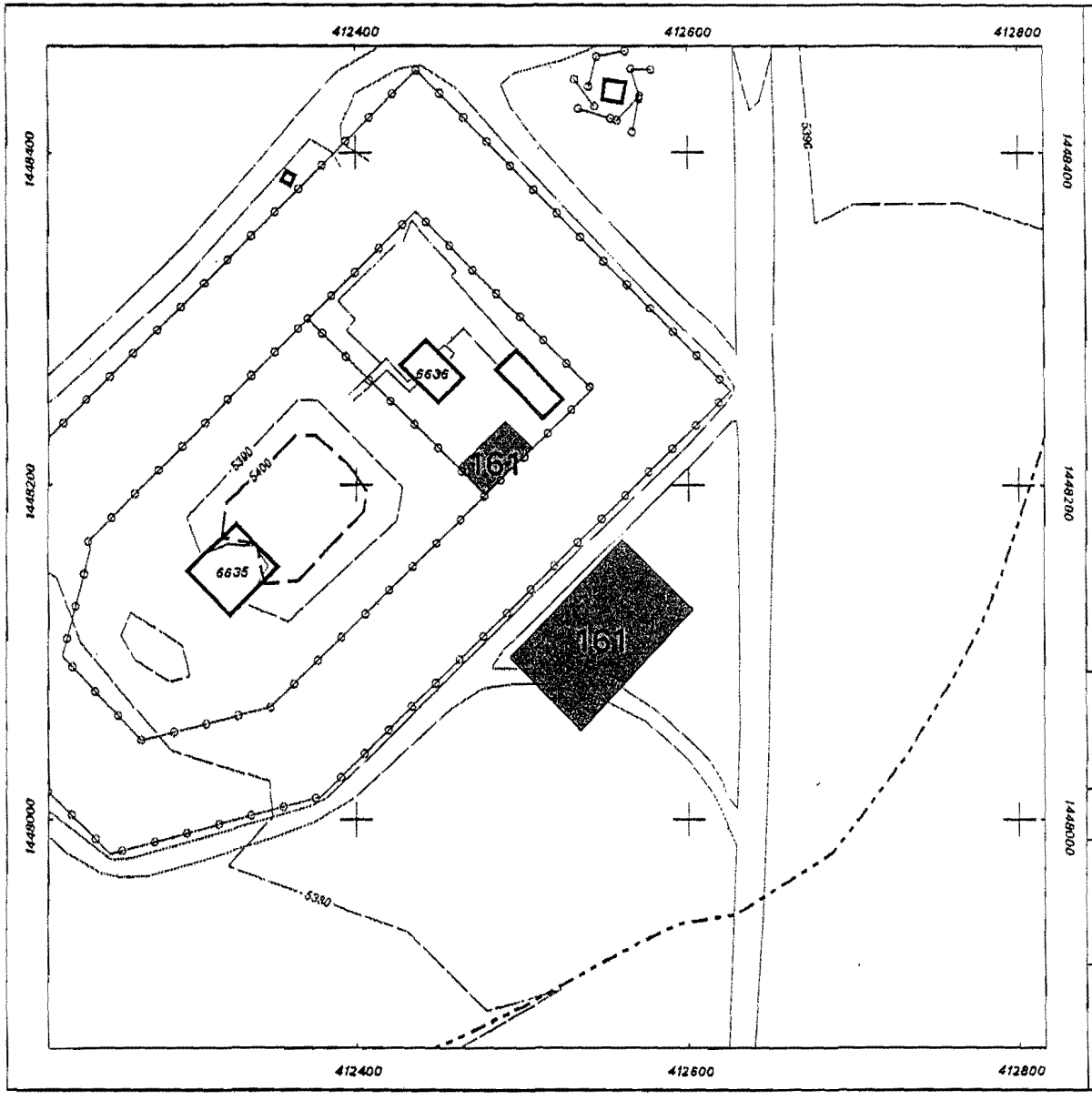
Future Work Planned

Additional work may be completed at this site pursuant to the Small Septic Systems sampling and analysis plan (SAP).

Waste Volume Estimated/Generated

One thousand gallons of non-regulated waste was disposed to the sanitary sewer.

Information for ER Site 161 was last updated Dec 11, 2001.



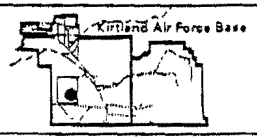
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 161
- Other SWMUs

Center of Site:
X = 412515
Y = 1448163

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 161
Building 6636
Septic System

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SNL EGIS DEPT 6135	
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OU-1302
TA-I

ER Site No. 30: PCB Spill (Reclamation Yard)

ADS: 1302
Operable Unit: Technical Area I

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf or Mike Skelly
Office Phone: 284-3272 or 284-2483

Site History

ER Site 30 is located at the southeast corner of the intersection of M and 14th streets, in the southeast portion of Technical Area (TA) I. The site, most commonly called the Old Reclamation Yard, has also been known as the TA-I Reclamation Yard, Sandia Salvage Yard, Old Salvage Yard, Old Reapplication Yard, Auction Yard, and Reclamation Receiving Dismantling Yard. Other reapplication yards exist in TA-I that are not part of ER Site 30.

The entire 6.59-acre site is fenced. The site is unpaved and flat with minor engineering controls for surface water runoff on the western portion of the site. Until its removal in 2000, Building 897X was located within the site boundary and was used for storage by several different groups. Building 897X was constructed in 1952 as a reclamation storage building and has been used continuously since that time. The building was originally used for melting scrap aluminum into ingots as part of a disposal process. From the early 1960s until 1992, the building stored excess SNL/NM equipment that was to be sold at auctions. Employees interviewed said that small amounts (less than 5 gal at a time) of virgin acids and organic compounds were stored in the building for up to 60 days.

Until their removal, other on-site structures included Building 889 (the Storage Shed Building) on the site's western boundary and a caretaker's office in the north-central part of the site. Temporary buildings (MO-220, MO-221, and MO-222) along the northern boundary were not originally considered part of the site.

Details of the site's early history are limited. By the early 1950s, surplus supplies and scrap materials were sold there every week. Items to be sold were separated by type and organized in different areas within the yard. The arrangement of materials in the yard is unknown. Supplies and material stored and sold at this site include cabinets, desks, scrap metal, pallets, wood, machines, general equipment, capacitors, transistors, transformers of various sizes, miscellaneous electronic components, hardware (e.g., bolts), tools, epoxies, polyester resins, and hobby-type material. In September 1990, the site was cleared of salvage.

While excavating a pit to install utilities in the western portion of the site in August 1991, workers uncovered a viscous, black, oozing substance in a layer 1 to 3 ft below grade. A sample of this material was collected and sent to an analytical laboratory. The material was determined to be non-hazardous waste and was disposed of accordingly. It is not known what became of the soil that was removed from this excavation.

In the fall of 1991, an assessment and remediation were expedited in the western portion of the site to prepare for construction of an office complex. At about the same time, the site was expanded to include the western one-third of the current site. A Sampling and Analysis Plan was prepared and implemented in the spring of 1992. In the spring of 1993, it was determined that the existing data were insufficient to characterize the site and that a more rigorous, Environmental Protection Agency (EPA)-approved strategy would be required for the next sampling event.

In May 1993, during installation of a gas line immediately south of the southwestern corner of the site boundary, construction workers discovered a heavy oil- or tar-based substance in soil approximately 3 ft below grade. This material appeared to be the same substance that was uncovered in August 1991. Again, this material was determined to be non-hazardous waste and was left in place. However, because the oil- or tar-like substance was observed outside the existing ER Site 30 boundary, the boundary was redefined on June 2, 1993, to include an additional area 60 ft by 120 ft on the southwest corner of the site.

The TA-I RFI Work Plan was delivered to the EPA for review in February 1995. Field activities outlined in the work plan began in March 1995. The surface and near-surface field investigation as outlined in the work plan was completed in April 1995. Site characterization included collection of surface (0-1 ft) and near-surface (4-5 ft) soil samples.

The following conclusions were determined based on the results of the RFI:

- Polychlorinated biphenyl (PCB) concentrations indicative of contamination and potentially hazardous to human health were detected during field screening and confirmatory laboratory analysis. The results indicated the presence of PCB-contaminated soils in both the surface and the near-surface samples (<5 ft). The highest levels of PCBs were detected in the surface samples (0-1 ft) in the northwestern portion of the site. However, low levels of PCBs were detected across the entire site. The PCB levels range from <1 to 87 ppm.
- No volatile organic compounds (VOCs) were detected by the on-site laboratory, and no significant concentrations of VOCs were detected by the off-site laboratory. The few VOCs that were detected are attributable to laboratory contamination.
- The semivolatile organic compounds detected in low-level concentrations are indicative of widespread, low-level contamination associated with the industrial setting of TA-I and do not pose a significant risk to human health.
- Metals were detected in low-level concentrations that do not pose a significant risk to human health.
- Other than the tar-like substance identified in the southwestern corner of the site, visibly

contaminated soils were not observed during soil sampling, and organic vapors were not detected by field screening with a photoionization detector.

Interviews conducted as part of the site investigation confirmed the storing of capacitors in the yard and the potential for PCB contamination at unspecified locations in the yard. Additional site history information and compilation of data that have been collected at this site are provided in the TA-I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan that was submitted to the Environmental Protection Agency (EPA) in February 1995.

A voluntary corrective measure (VCM) plan to remediate the site for PCBs was completed and submitted to New Mexico Environment Department (NMED) in April 1998. NMED returned a request for supplemental information (RSI) in September 1998. The RSI was responded to in November 1998.

In January 2000, supplemental sampling was completed to characterize the portion of the site where the temporary buildings (MO-220, MO-221, and MO-222) had been located along the northern boundary of the site. Twenty composite soil samples were collected for PCBs and 12 discrete soil samples were collected for TAL metals. PCBs were detected in the samples but all concentrations were well below the PCB Megarule cleanup level of 1 mg/kg. Several of the samples also had metal concentrations above background. The following metals exceeded NMED-approved maximum background concentrations, with the number of samples eceeding background provided parenthetically: arsenic (1), barium (10) cadmium (5), copper (4), lead (4), silver (1) and zinc (3). The maximum concentrations of PCBs and metals were clustered in the south-central portion of the originally-excluded area.

As a result of this study and other information the boundary for Site 30 was modified to include the area originally occupied by the MOs (MO-220, MO-221, and MO-222 as well as most of the ditch to the west of the original Site 30 boundary.

Constituents of Concern

The potential constituents of concern (COCs) that have been identified for this site during evaluation of its history include:

PCBs,
Petroleum hydrocarbons,and
Metals.
As indicated below in "Current Status of Work," the only COC thought to be of concern after site investigation is PCBs.

Current Hazards

There are no current hazards at this site.

Current Status of Work

Changes in regulations and planned near-term usage of the site caused a revision to the cleanup strategy propose in the original VCM plan submitted to NMED. Thus, in April 1999, a notice was sent to the Environmental Protection Agency notifying them of the intent to conduct a self-implementing cleanup under 40 CFR 761.61(a). (40 CFR 761 is also known as the "PCB Megarule.") The EPA returned deficiency comments on cleanup proposal in May 1999. In March 2000, SNL submitted a revised notification of the self-implementing cleanup. In April, the EPA indicated that SNL had adequately addressed EPA concerns about the original notification of the self-implementing cleanup.

The self-implementing cleanup started May 1. All the soil within the "hot spot" areas (PCB levels greater than 1 PPM) within and adjacent to the soil boundary were excavated and sent to landfills. Most of the site was determined to be clean, based on field-screening using an immunoassay analysis, after excavating the top 1 foot of soil. However, a portion of the northwestern portion of the site, which originally had the highest PCB concentrations, required excavation of the top 3 feet of soil before it was determined to be conditionally clean based on the field-screening. A total of 341 composite soil samples were collected and sent to an off-site laboratory as verification samples. The initial excavation was completed on June 6, 2000 based on immunoassay field screening results. Four of the 341 soil samples sent to an off-site laboratory returned concentrations of greater than 1 PPM. Thus, limited additional excavation was completed to clean the quadrants in which these samples occurred. The laboratory results of these sampled areas returned concentrations of less than 1 PPM in September 2000.

A No Further Action (NFA) Proposal was submitted to the NMED/HWB in October 2001. The NMED accepted the NFA Proposal for Site 30 in January 2003.

Future Work Planned

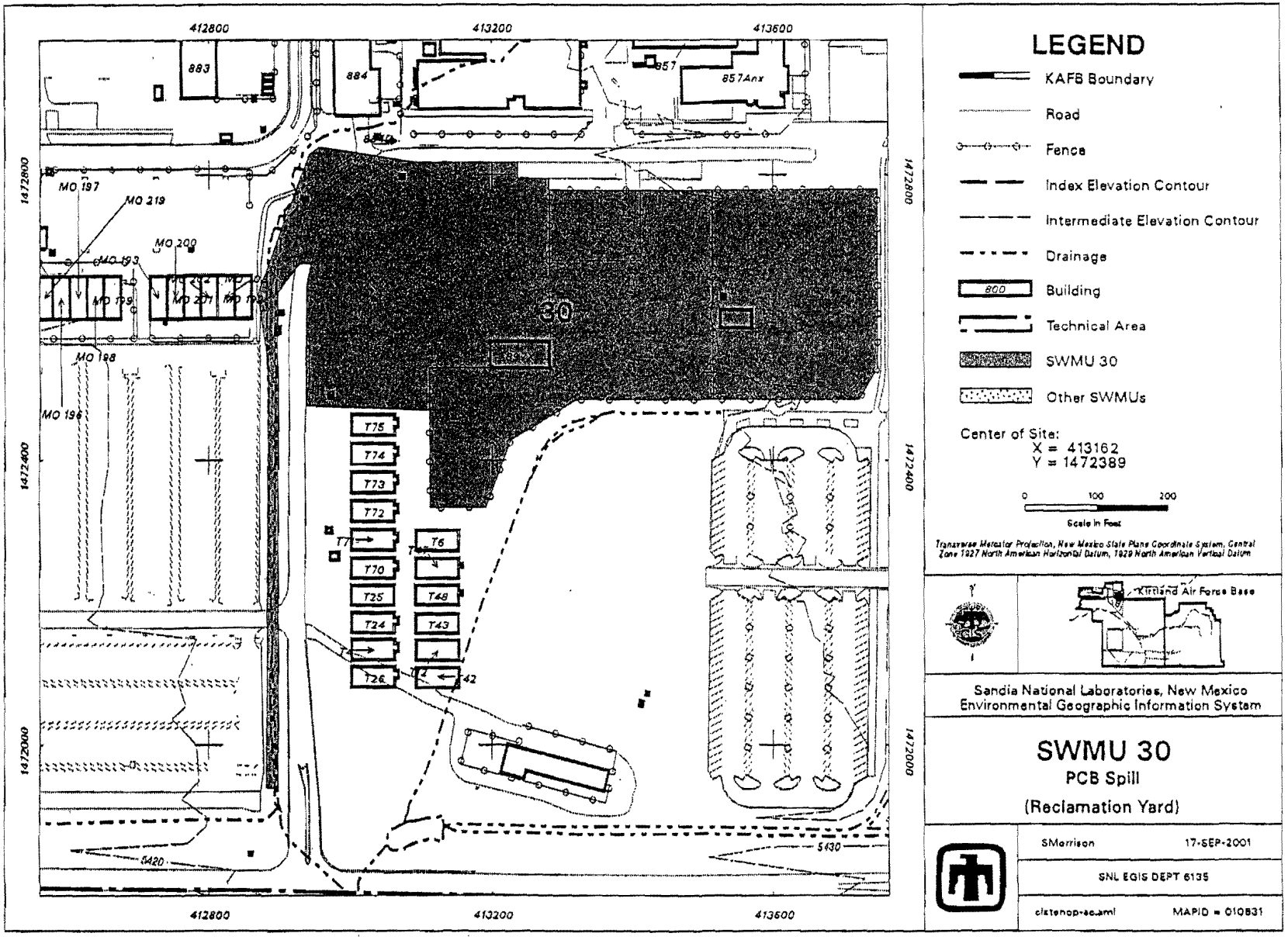
No further work is planned.

Waste Volume Estimated/Generated

As a result of the self-implementing surface cleanup, waste was generated and disposed in landfills:

- An estimated 5066 cubic yards of 1 to 50 ppm PCB-contaminated soils was excavated and disposed of at a permitted landfill.
- Additionally, an estimated 35 cubic yards of PCB-TSCA-contaminated soils with PCB concentration greater than 50 ppm was excavated and disposed at a permitted disposal facility in Utah.

Information for ER Site 30 was last updated Jan 28, 2003.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T70
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T26
T6
T48
T43
T42
5420
5430
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 30
Other SWMUs
Center of Site:
X = 413162
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100
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Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 30
PCB Spill
(Reclamation Yard)
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ER Site No. 33: Motor Pool Oil Spill

ADS: 1302
Operable Unit: Technical Area I

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

ER Site 33, the Motor Pool is located on the northeast corner of H and 12th Streets just outside the Technical Area (TA)I secured area. The Motor Pool occupies 2.3 acres and consisted of six buildings at the height of operations: Buildings 873, 874, 875, 876, 8874, and a car wash. The Motor Pool opened in 1946 as the home of the Transportation and Safeguards organization, which has had responsibility for servicing DOE/AL and SNL/NM vehicles since that time.[1]

The site was first listed as a potential solid waste management unit (SWMU) by the Comprehensive Environmental Assessment and Response Program (CEARP), Phase I: Installation Assessment, Sandia National Laboratories, Albuquerque, New Mexico in September 1987. A gasoline spill (not oil as the ER site name suggests) occurred in 1983 at the present fuel dispensing island; the gasoline flowed to the southeast side of the Motor Pool. The spill was contained by an asphalt berm, covered with soil and/or sand, and removed to the Chemical Waste Landfill. The report deemed the remedial action completed.

When the Motor Pool opened in 1946, the first structure was Building 874. The site included various fuel dispensing areas until 1996; the fuel dispensing area has occupied three different locations. A wash/steam clean area was also constructed within the site. Descriptions and histories of the Motor Pool buildings and area follow.

Building 873
Building 873 was constructed in the southwest corner of the Motor Pool area in the late 1940s and

served as the dispatch office until the 1990s. The building was renovated in the 1960s. There have been no known sources of a potential release in, and no reported releases of hazardous materials from, this building. Building 873 was demolished through the Facilities Decontamination and Decommissioning (D&D) Program in FY02.

Building 874

Building 874 was the original building in the Motor Pool. It was constructed near the middle of the southern fence in 1946 as the original service station. The building initially included service bays, and a fuel dispensing area was located on its north side. Design drawings were prepared for building renovations undertaken in the 1960s to provide a dispatch area. No building design drawings were located that indicated whether there were any floor drains or other pathways for contaminant migration from the original building. Renovations were performed in the 1980s at Building 874 to provide office and computer space. The drawings do not indicate any potential sources for contaminant releases to the environment. Individuals interviewed regarding past activities at Building 874 did not have any information to indicate there was ever a contaminant release from the building. The building currently provides office space for personnel involved in Motor Pool quality assurance. During a 1993 visit to the building, no floor drains or potential sources of a contaminant release to surrounding soil were observed. The fuel dispensing area was investigated as part of the ER Site 33 RFI.

Building 875

Building 875 was constructed in the late 1940s or early 1950s as the automobile machine shop. In 1959, a front-end machine room and pit, a brake machine room and pit, a parts room, and an office were added. By 1965 an automotive shop, a body shop and a truck shop were located in the building. Minor modifications in 1985 brought it to its current configuration. Interviews of past and present Motor Pool employees indicated there have been no releases of hazardous materials from this building.

According to personnel interviewed, no hazardous materials were used and no hazardous waste was generated in the front-end and brake machining areas. The machine shop was originally used to machine parts for the vehicles. Equipment included a boring press, a boring bar, and a honing machine. In the early 1980s, the honing machine was reportedly found to contain polychlorinated biphenyls (PCBs) and was removed. Regarding disposition of the machine oil, two employees stated that the oil was never changed. Both said the oil was managed by ES&H personnel when the machine was removed.

Building 876

Building 876 was constructed in the late 1940s for its current use, vehicle maintenance and repairs. Building drawings indicate that the building originally contained a vehicle wash room, boiler room, tire room, and a grease room. The grease room ran the length of the building with a grease pit in the center. Vehicles were reportedly parked over the grease pit when serviced. The room was designed with an oil collection system. Oil entering the grease pit was diverted through oil interceptor lines to an underground drain oil tank on the north side of the building. The waste oil discharged to the abandoned grease pit and interceptor lines in Building 876 flowed by gravity to the drain oil tank. Other materials may also have been collected in the grease pit during automobile maintenance and repair activities, including cleaning compounds, antifreeze, and metals from motor oil (lead and aluminum).

The grease pit was abandoned and filled with concrete in the mid-1960s. By 1965, use of the drain oil tank had also ceased. Reportedly, oil was either collected in a large tank for use in dust control on roads between TA-I and TA-III or poured into a 10-ft by 20-ft pit under the wash/steam clean

area. The drain oil tank was removed in May 1991 under New Mexico Environment Department (NMED) oversight. Soil samples were collected and analyzed. No documentation of NMED site closure was located in the background information reviewed in preparation of the TA-I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) work plan. The former drain oil tank site was evaluated under ADS 1300, Underground Storage Tanks, as part of the SNL/NM ER Project. A complete history of the grease pit, interceptor lines, and drain line could not be completed during the development of the TA-I RFI. The grease pit and interceptor lines were investigated as part of the ER Site 33 RFI.

Building 8874

Building 8874 is a small corrugated metal building that has occupied the southeast corner of the Motor Pool since the mid-1940s. The building has been used to store equipment for most, if not all, of its history. No drawings were located for the building. Based on the information available, no hazardous materials were stored in or released from the building. This building was demolished through the Facilities D&D Program in FY02.

Fuel Dispensing Areas

The fuel dispensing area north of Building 874 operated from approximately 1946 until the mid- to late-1960s. There were two 8,000-gal underground gasoline storage tanks and one 8,000-gal underground diesel fuel tank. The gasoline tanks were located approximately 25 ft northeast and northwest of Building 874; the diesel tank was located about 50 ft north of Building 874. The tanks were filled either from H Street via fill lines or from directly above the tank.

The fuel dispensing area was moved to a concrete area east of Building 876 in the late 1960s. Based on information gathered through employee interviews and a review of the building drawings, it is unclear whether both diesel and gasoline were dispensed from the same area east of Building 876 or whether tanks were installed adjacent to the pumps. During the gathering of RFI background information, an employee indicated that gasoline was supplied to the second dispensing area from the tanks located north of Building 874 but was uncertain whether diesel was dispensed from the same location. During the ER Site field investigation, the Motor Pool manager stated that no underground storage tanks (USTs) were located east of Building 876 and the fuel for the second dispensing area was supplied through the distribution lines from the original USTs, north of Building 874.

Between 1982 and 1984, the fuel dispensing area was relocated north of Building 873, along the western side of the Motor Pool. The tanks north of Building 874 were reportedly removed and the fill lines capped in 1983, per interviews with employees. SNL/NM Mechanical Drawing No. 92537, M-1, indicates that the fueling facility was renovated and relocated in 1982 and the existing lines were capped and abandoned in place; no tanks are shown. The fuel dispensing areas north of Building 874 and east of Building 876 were investigated as part of the ER Site 33 RFI. The fuel dispensing area north of Building 873 was not investigated because it was relatively new at the time of the RFI investigation. In 1996, the fuel dispensing area north of Building 873 was shut down and the associated tanks were removed.

Based on information gathered through employee interviews, the spill reported in the 1985 CEARP interviews occurred soon after the fuel dispensing area was moved to its location north of Building 873. Someone filling a vehicle reportedly failed to replace the gas nozzle before leaving the pump. The pump was not equipped with an automatic shut-off valve, and gasoline leaked for approximately one-half hour before the spill was noticed and the pump shut off. The spill flowed toward the southeast corner of the Motor Pool, where it was contained by an asphalt dike and covered with sand or soil. The sand or soil was collected and temporarily stored in the southwest

corner of the Motor Pool before it was removed. In interviews conducted for the RCRA Facility Assessment (RFA), personnel indicated that the soil was taken to the Chemical Waste Landfill for final disposal. Because the spill should not have penetrated the asphalt cover at the site, no further investigation of the spill site was planned.

Wash/Steam Clean Area
In 1965 a wash/steam clean area was constructed south of Building 876. The wash area is composed of a grated pit with four evenly spaced floor drains that were originally connected to the storm drain system via an oil interceptor east of the wash area. The pit was routinely cleaned every six months from 1983 to the early 1990s but there was no known inspection of the pit during this time. Maintenance practices before 1983 are unknown. In the early 1990s the interceptor line was rerouted from the storm drain to the sanitary sewer system.

Information gathered from interviews with current and past Motor Pool employees indicates that waste was drained into the wash/steam clean area. Batteries were drained on pit edges and waste antifreeze was poured into the pit. One individual said waste oil was dumped into the pit; however, another individual said that it was not. Materials other than wash water were allowed to drain and were poured into the pit from 1965 until the early 1980s. The wash/steam clean area was investigated as part of the ER Site 33 RFI.

Car Wash Area
The car wash was constructed around 1987. No known hazardous materials are used in the car wash, and no releases of hazardous materials have been reported from the facility. No further investigation of the area was planned.

Constituents of Concern

The potential constituents of concern (COCs) that have been associated with this site during its history include:

Petroleum hydrocarbons,
Organic compounds,
and Metals.

Current Hazards

The final risk assessment for this site indicated that the human health risk was acceptable for an industrial site. Elevated levels of nickel and copper caused the site to have unacceptable risk for residential usage; however these elevated concentration were found at depths greater than 10 feet below the ground surface and should not be a danger to emergency workers at the ground surface.

There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

The TA-I RFI Work Plan was delivered to the Environmental Protection Agency (EPA) for review in February 1995. The field investigation outlined in the work plan for this site was completed in 1995. Site characterization included collection of near-surface (5-20 ft) soil samples.

There were low levels of organic compounds found at the site, the greatest being, for one sample 0.550 PPM tetrachloroethene, and, for another sample, 7.6 PPM bis (2-ethylhexyl) phthalate and 2.5 PPM pyrene. There were also concentrations of some metals above background including concentrations of silver, thallium, nickel and vanadium. This site was proposed to the regulatory agencies for No Further Action (NFA) in October 1996 based on the results of the confirmatory sampling.

NMED reviewed the NFA and returned a Request for Supplemental Information (RSI) in February 1998. SNL responded to the RSI in May 1998 and submitted most of the information requested. The NMED requested a few items that were not included in the May 1998 response: closure letters for underground tanks and the gasoline spill, a risk assessment, and constituent cross-sections. The risk assessment and constituent cross-sections were presented to NMED in October 2000. The closure letters were unavailable in SNL's Record Center; the NM Underground Storage Tank (UST) Office was contacted to obtain the letters. The UST Office indicated verbally that they did not have the closure letters that were requested, and would not issue the closure letters at this time.

In December 2000, the NMED issued a second RSI. In this RSI, the NMED requested that additional sampling be completed in the vicinity of the gasoline spill, and beneath the underground waste storage tank. Samples were collected in April and May 2001. The samples beneath the gasoline spill were analyzed for VOCs, and those beneath the underground waste storage tank for VOCs, SVOCs, and metals.

This additional laboratory data was submitted to the NMED in July 2001. There were very few detections of VOCs and SVOCs, and most of the values were below the laboratory reporting limit. There were detections of arsenic, barium, cobalt, copper, thallium and vanadium above background values.

In August 2001, a final risk assessment and the Motor Pool cross-sections were submitted to the NMED.

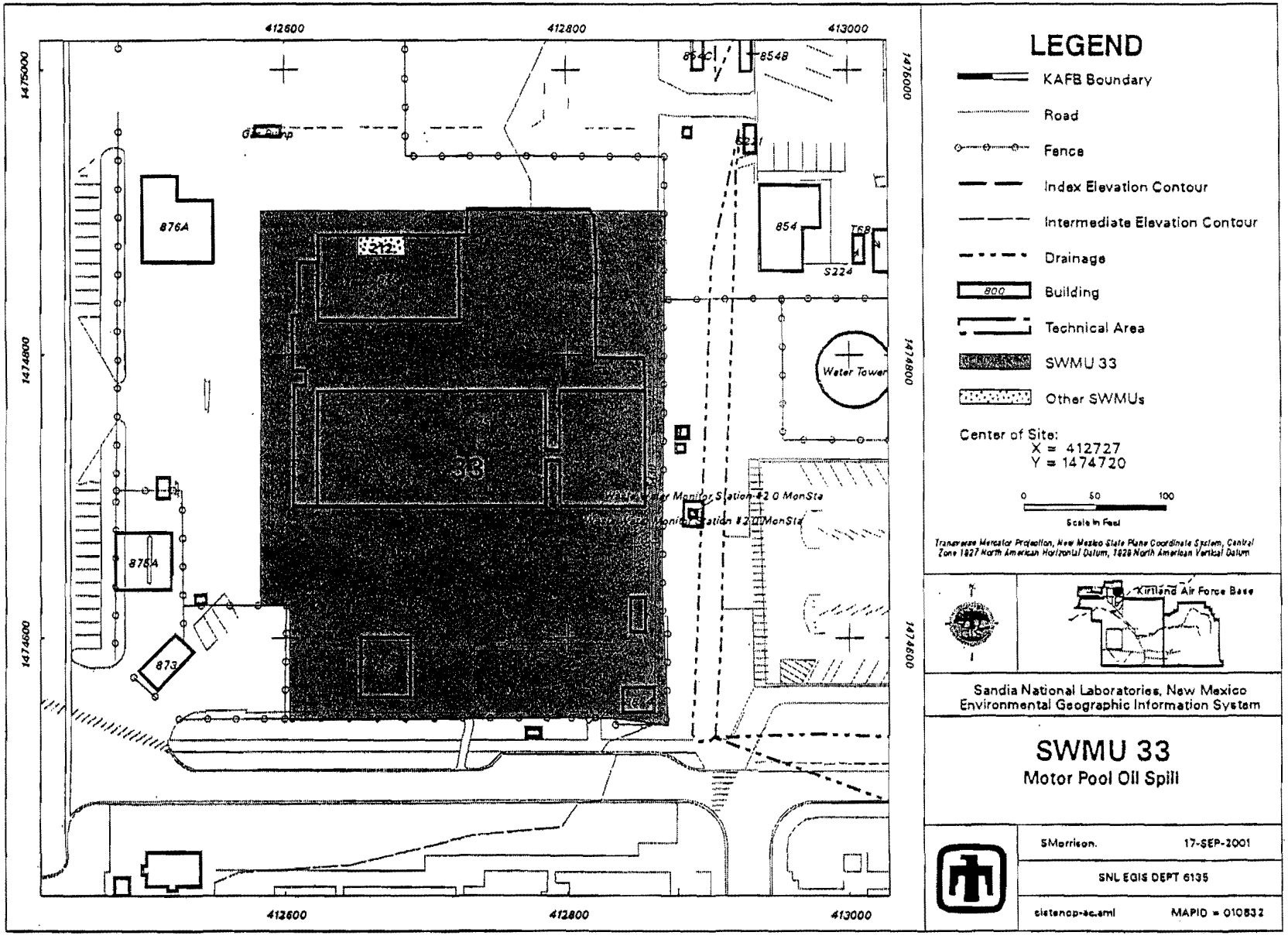
Future Work Planned

No further work is planned pending approval of the NFA proposal.

Waste Volume Estimated/Generated

A small amount of waste has been generated as a result of sampling.

Information for ER Site 33 was last updated Jan 21, 2003.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LEGEND
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Road
Fence
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Building
Technical Area
SWMU 33
Other SWMUs
Center of Site:
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Scale in Feet
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Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 33
Motor Pool Oil Spill
SMorrison.
17-SEP-2001
SNL EGIS DEPT 6135
cistencp-sc.aml
MAPID = 010832

ER Site No. 96: Storm Drain System

ADS: 1302
Operable Unit: Technical Area I

- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

ER Site 96, the Storm Drain System, was listed as Site 96 based on information obtained during the Comprehensive Environmental Assessment and Response Program (CEARP) Phase I interviews. The original ER site name was the Storm Drain System (Active). The ER site name was changed to the Storm Drain System during the development of the Technical Area (TA)-I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan .

The original storm drain system was constructed between 1948 and 1950. The system collects storm water runoff from TA-I, -II, and -IV. The majority of the storm water flows from east to west with the terrain across SNL/NM. For TA-I, the water is conveyed through a series of open channels and underground lines from north to south to the Tijeras Arroyo. The system was developed in three watersheds and is described in a drainage system analysis. ER Site 96 only covers the storm drain system in and around TA-I. The site boundaries are assumed to be the limits of areas where potential constituents of concern (COCs) have been detected near breaks in the lines or at the outfall locations. Any storm water flowing within the system is not addressed as part of ER Site 96. Storm water flow within the storm drain system is regulated under the National Pollution Discharge Elimination System (NPDES) amendments to the Clean Water Act.

During the CEARP Phase I interviews, the storm drain system was reported to have received contaminants from various activities. System discharges were reported to include nonpoint source surface runoff from TA-I, blowdown from an incinerator scrubbing system, and cooling tower blowdown water (possibly containing chromates and other antifoulants). There were several specific releases to the storm drains recorded in the CEARP report:

- An estimated 200 gal of 20 percent sodium hydroxide (NaOH) spilled from an above-ground tank at ER Site 42, Acid Spill Water Treatment Facility for discharges from Building 870, in 1984.
- An estimated 1000 gal of 30 percent hydrochloric acid (HCL) was released from an above-ground tank at the Acid Spill Water Treatment Facility near Building 870, ER Site 42, in 1983.
- A cooling tower on the roof of Building 806 caught fire in 1983 and wood slats that were believed to have been contaminated with chromium burned. Much of the debris was reported to have been washed down the drain.
- An estimated 500 gal of Number 2 fuel oil from a tank overflow was released to the storm drain system; the location of the tank was not reported.

Compilation of data that have been collected at this site is provided in the TA-I RFI Work Plan, submitted to the Environmental Protection Agency (EPA) in February 1995.

Constituents of Concern

The potential COCs identified for this site during its history include:

HCL,
NaOH,
Petroleum hydrocarbons,
Chromium,
Chlorinated organic compounds,
Alcohols,
Metals,
Polychlorinated biphenyls (PCBs), and
Radionuclides.

Current Hazards

There are some elevated levels of some metals (chromium, manganese, silver, and vanadium) at some outfalls. However, based on the concentrations of these metals found to date, an assessment of the risk under an industrial land-use setting indicates that this site does not have a significant potential to affect human health. There were slightly elevated levels of Pu 238, Pu 239/240, and tritium; however, the total effective dose equivalent was less than that allowed for a residential-use setting.

Current Status of Work

The TA-I RFI Work Plan was delivered to EPA for review in February 1995. Site characterization and field sampling activities began in June 1995. The surface (0-2 ft) and near-surface (2-10 ft) field investigations were completed in July 1995. Sampling data indicate that there are detectable amounts of PCB and semi-volatile organic compound (SVOC) contamination in the open storm drain channels. Final analysis indicates no detectable levels of contamination for radionuclides and metals.

Based upon the results of data collected in the Storm Drain System, a no further action (NFA) proposal with risk-assessment justification was prepared and submitted to the New Mexico Environment Department (NMED) for review in May 1997. NMED reviewed the NFA and returned a Request for Supplemental Information (RSI) in March 1998. SNL responded to the RSI in June 1998. NMED requested that additional sampling be done to further determine the nature and extent of contamination. Some additional soil sampling was completed at outfalls in late 1998.

NMED also requested additional sampling at Sites 187 and 226. Because of the close proximity of these sites to Site 96, and because the nature of contamination was similar, it was decided to combine further sampling at theses sites to reduce the amount of sampling needed.

In September 2001, SNL met with NMED to specifically define what additional sampling should be done at Sites 96, 187 and 226. A Sample and Analysis Plan was completed in November 2001 to document the results of the discussions. SNL agreed to collect soil samples at 22 locations in the vicinity of 9 original sample locations for Site 96; 4 samples were to be collected at the original sample location and the remaining 18 samples at locations offset from the original sample location. The constituents the samples were to be analyzed for varied but included VOCs, SVOCs, PCBs, RCRA metals, and isotopic plutonium. SNL also agreed to complete a systematic surface soil survey of plutonium concentrations in TAI.

The soil samples defined in the SAP were collected in January, May and June 2002. Twenty-two samples were collected in the vicinity of old sampling locations in January and May 2002 and 33 locations were sampled for the systematic plutonium survey in June 2002.

Future Work Planned

The final response to the NMED's March 1998 RSI request will be completed. The response will include a summary of the recent sampling results and a revised risk assessment.

Waste Volume Estimated/Generated

A small amount of waste was generated during the characterization conducted for the RFI.

Information for ER Site 96 was last updated Jan 21, 2003.

NO MAP ASSOCIATED WITH THIS SITE

ER Site No. 98: Bldg 863 TCA Photochemical Releases

ADS: 1302
Operable Unit: Technical Area I

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

ER Site 98 is in the north-central portion of Technical Area (TA)-I on the southwest corner of H and 10th streets. This was the site of former Building 863.

Building 863 was constructed in 1950 as a document vault. In 1951, the building became the site of the motion picture production and film processing division for SNL/NM. An addition was constructed in 1958 to expand film processing operations. A second addition was constructed for chemical storage in 1971.

Building 863 was listed as ER Site 98 because of release of trichloroethane (TCA) from a film cleaning machine installed in the early 1970s near the east side of the building, north of Equipment Room 6. TCA was piped to the machine from a 55-gal drum on the building exterior through holes drilled in the exterior wall. Waste TCA was piped through the wall to a second 55-gal drum adjacent to the TCA supply drum. Holes in the waste drum base allowed the TCA to drain to the underlying soil. The drum was used for waste TCA disposal until a new film cleaning tank was installed in 1986. Estimates of the volume of TCA discharged vary. A long-term film-processing employee estimated that TCA use ranged from 156 to 240 gal/year over the 14-year period from 1970 through 1983 and from 36 to 90 gal/year from 1984 until the practice ceased in 1986. Thus, the total volume of TCA discharged may have ranged from about 2300 to 3600 gal.

In addition to the historic release of TCA, there were several other areas of potential concern in Building 863. These areas had visible chemical residue and evidence of chemical spills within the building. The types of waste generated and the duration of use have caused severe corrosion of the piping and concrete foundation in several areas. The chemicals used in the building and the estimated volumes are listed by processor type in the ER Project files.

Film-processing activities in the building ceased in 1989, after nearly 40 years of activity. All equipment was cleaned. Some equipment was removed and building decontamination activities were completed in FY 1997.

Information obtained through employee interviews and visible deterioration of piping and concrete indicates that chemicals were spilled as a direct or indirect result of facility operations in several portions of the building. Additional building process information is provided in the TA-I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan that was submitted to the Environmental Protection Agency (EPA) in February 1995.

The TA-I RFI Work Plan was delivered to the EPA for review in February 1995. Site characterization and field sampling activities were completed as outlined in the work plan. They began in March 1995 and were completed in April 1995. Site characterization included collection of surface (0-2 ft) and near-surface (2-30 ft) soil samples to assess the potential for contaminated soils at the site. Based upon the results collected during the RFI, low levels of VOCs were detected in the soil vapors around the building but were not confirmed in soil samples collected at the site.

Building 863 was demolished and removed in FY 1998.

An additional field investigation was conducted in July/August 1999. The field activities included drilling one borehole to 140 feet below ground surface, collecting and analyzing soil gas and subsurface soil samples, and collecting and analyzing three surface soil samples. The investigation was centered at the TCA release area (east side of former Building 863).

Because there were only low concentrations in the soil gas samples and no detections of VOCs in the soil samples, the site was proposed for a risk-based NFA in September 2000; the risk for the site met standards for an industrial use.

Constituents of Concern

The potential COCs identified for this site during its history include:

TCA,
Trichloroethylene (TCE),
Sodium hydroxide (NaOH),
Acetic acid,
Sulfuric acid, and
Silver.

Current Hazards

There are no current hazards at this site related to contamination of the surface or subsurface soils. There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

This site was accepted for No Further Action by NMED under an industrial scenario on December 5, 2000.

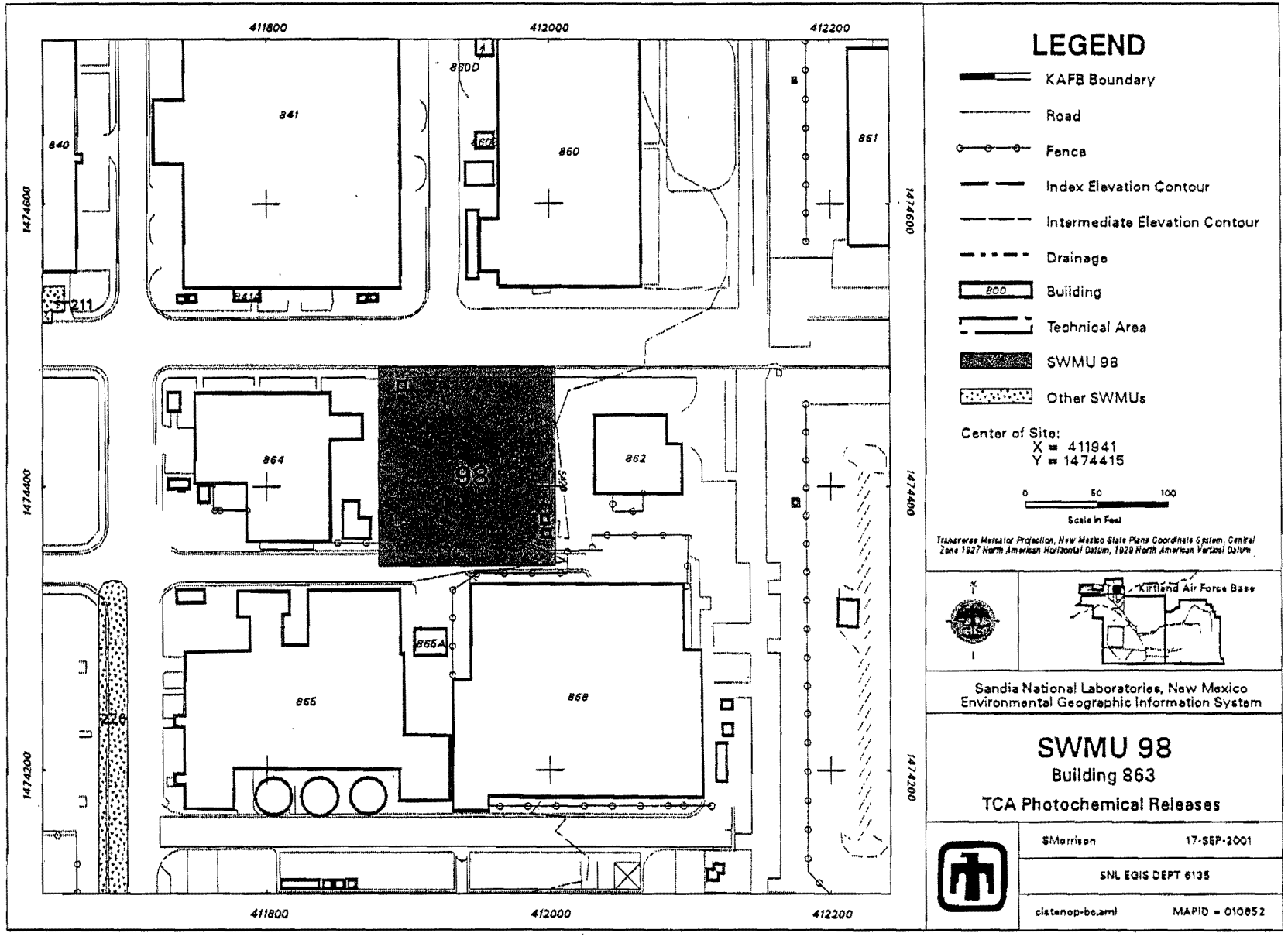
Future Work Planned

None.

Waste Volume Estimated/Generated

A small amount of waste has been generated at this site during sampling.

Information for ER Site 98 was last updated Jan 21, 2003.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Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
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Building 863
TCA Photochemical Releases
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SNL EGIS DEPT 6135
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MAPID = 010852

ER Site No. 187: TA-I Sanitary Sewer Lines

ADS: 1302
Operable Unit: Technical Area I

- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

The sanitary sewer system was constructed between 1948 and 1950. The sanitary line has been expanded and modified several times since then. The majority of the system is comprised of vitrified clay pipe ranging in diameter from 2 to 8 in. The system is designed to collect sanitary and industrial discharges from the buildings in Technical Area (TA)-I for treatment at the Albuquerque municipal wastewater treatment plant. It currently carries approximately 1 million gal/day of which approximately 60 percent is industrial waste; the remaining 40 percent is sanitary effluent.

For approximately 40 years, sanitary sewer system discharges included waste from photographic and printing shops, laboratories, and semiconductor processing, integrated circuit manufacturing, and plating facilities. The general nature of TA-I activities as a research and development laboratory provided a scenario for use of a multitude of chemicals in generally small quantities.

Employee interviews noted that during the 1950s, 1960s, and 1970s it was common laboratory practice to handle all hazardous and radioactive wastes in separate receptacles. Wastes deposited in these containers were disposed of at the Chemical Waste or Radioactive Waste Landfills located in TA-III. If organic compounds were disposed of in sewer line drains, the releases would have been in very small quantities, such as a 1 to 3 mL organic compound rinse to clean a circuit board. When the acid waste line (ER Site 226) was abandoned in the mid- to late-1960s, the portion of the line north of I Street was integrated into the sanitary sewer system. Any industrial discharges that had been routed to the northern portion of the acid waste line and that were not discontinued at that time became part of the sanitary system effluent.

The sanitary sewer system was listed as ER Site 187 in the Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Report because deterioration of the sanitary sewer system had been noted during the interviews conducted for the preparation of that report. Some system deterioration was assumed to be a result of normal use; other deterioration was attributed to industrial waste discharges. For example, a line was corroded between the northeast corner of Building 894 and the northwest corner of Building 870, possibly because of acid discharges from Building 870. Based on a verbal agreement between SNL/NM ER Project Management Office and the Environmental Protection Agency (EPA) Region 6, the ER site is limited to those portions of the system where breaks in the lines have been identified and potential contaminants of concern (COCs) have been detected.

Additional site history information and compilation of data that have been collected at this site are provided in the TA-I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan, submitted in February 1995.

Constituents of Concern

The potential COCs identified for this site during its history include:

Radionuclides,
Metals,
Volatile organic compounds (VOCs),
Semivolatile organic compounds (SVOCs), and
Polychlorinated biphenyls (PCBs).

Current Hazards

There are no surface contaminants of concern at this site. Possible contaminants associated with this site are greater than a foot below the ground surface. There are several contaminants in the subsurface; those that contributed to the non-radiological risk were manganese, nickel and benzene. However, based on the concentrations of these contaminants found to date, an assessment of the risk under an industrial land-use setting indicates that this site does not have a significant potential to affect human health. There were slightly elevated levels of Pu 238, Pu 239/240, and tritium; however, total effective dose equivalent was less than that allowed for a residential-use setting.

Current Status of Work

The TA-I RFI Work Plan was delivered to the EPA for review in February 1995. Field activities outlined in the work plan began in April 1995. The surface and near-surface site characterization investigations were completed in June 1995. Site characterization included collection of near-surface (2-16 ft) soil samples to assess the potential for contaminated soils at this site.

Based upon the analysis of soil samples collected near the sanitary sewer system, a No Further Action (NFA) proposal, based on a risk-assessment justification, was prepared and submitted to the New Mexico Environment Department (NMED) in May 1997.

NMED reviewed the NFA and returned a Request for Supplemental Information (RSI) in March 1998. SNL responded to the RSI in June 1998. NMED requested that additional sampling be done to further determine the nature and extent of contamination. NMED also requested additional sampling at Sites 96 and 226. Because of the close proximity of these sites to Site 187, and because the nature of contamination was similar, it was decided to combine further sampling at theses sites to reduce the amount of sampling needed.

In September 2001, SNL met with NMED to specifically define what additional sampling should be done at Sites 96, 187 and 226. A Sample and Analysis Plan (SAP) was completed in November 2001 to document the results of the discussions. SNL agreed to collect soil samples at 21 locations, 3 of which were originally sample locations for Site 187. The remaining 18 were planned to be taken at locations offset from the original sample locations. The constituents the samples were to be analyzed for varied but included VOCs, SVOCs, RCRA metals, isotopic plutonium and tritium.

All but 1 of the soil samples defined in the SAP to be collected near original sample locations were collected in May 2002; the sample that was not collected was on Air Force property, and, with the consent of NMED, was left uncollected.

Future Work Planned

The final response to the NMED's March 1998 RSI request will be completed. The response will include a summary of the recent sampling results and a revised risk assessment.

Waste Volume Estimated/Generated

A small amount of waste was generated as a result of characterization sampling conducted for the RFI.

Information for ER Site 187 was last updated Jan 21, 2003.

NO MAP ASSOCIATED WITH THIS SITE

ER Site No. 190: Steam Plant Tank Farm

ADS: 1302
Operable Unit: Technical Area I

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf or Mike Skelly
Office Phone: 284-2483

Site History

ER Site 190 is an active tank farm for the Steam Plant, located in the southwest portion of Technical Area (TA)-I on the northeast corner of the intersection of Hardin Boulevard and Wyoming Boulevard. The site is L-shaped, with a north-south leg measuring 180 ft by 460 ft that contains Tanks 1 through 4 (Tanks 1 and 4 are 250,000 gal each; Tanks 2 and 3 are 50,000 gal each). Tanks 1 through 4 have been emptied, and contain only residual fuel oil. The east-west leg is 220 ft by 210 ft and contains Tank 5 (500,000 gal). The fenced site's total area is approximately 3 acres. Tanks at the site are built on concrete pads and are surrounded by unpaved, native soil with berms of soil providing secondary containment.

A sixth tank, Tank 6 (1M gal), also serves the Steam Plant but is located outside the site boundaries on the south side of Hardin Boulevard. It is not considered to be part of the site. The Steam Plant (also known as Boiler Plant, Building 605) is located 1700 ft north of ER Site 190 at the northeast corner of Wyoming Boulevard and K Street.

The Steam Plant Tank Farm includes two pump houses. Pump House 1 is located south of Tank 4 and services Tanks 5 and 6. At one time it also serviced the truck and railroad tanker car off-loading station. Pump House 2 is located southwest of Tank 2 and, at one time, serviced Tanks 1 through 4.

The original Steam Plant Tank Farm, consisting of Tanks 1 to 4, Pump House 2, and associated pipe lines, was constructed in the 1940s and released to SNL/NM by Kirtland Air Force Base

(KAFB) in 1950. Tanks 5 and 6 and Pump House 1 were constructed later. All tanks contained #2 diesel fuel oil (hereafter referred to as "fuel oil") to be used as a back-up supply system for the Steam Plant when the primary fuel supply (natural gas) is unavailable. The back-up supply system has never been needed and the fuel oil currently in the tanks (residual in Tanks 1 to 4) is the original product delivered.

One documented release of fuel oil has occurred at this location. On or around June 4, 1991, the main valve of Tank 5 was inadvertently left open during a fuel oil sampling event and more than 5,000 gal (exact volume unknown) slowly drained through the pipe line and into underground storage Tank 605-8, located at the Steam Plant. This and other underground storage tanks at the Steam Plant were supposed to be empty. On June 25, 1991, maintenance workers noticed the concrete vault above Tank 605-8 was filled and overflowing with fuel oil.

Facilities personnel called a tanker trucking company to remove the fuel oil from the tank and to haul it to Tank 5. After one 5,000-gal load was transferred to Tank 5, workers discovered fuel oil up-welling to the land surface at an area outside the berm northwest of Tank 5. The remaining fuel oil in Tank 605-8 at the Steam Plant was removed and transported off-site by the tanker trucking company.

A few days later, the area northwest of Tank 5 was excavated and a leaking pipe was discovered, which was then cut and capped. Sometime in early August, facilities personnel continued excavating the soil to determine the full extent of fuel oil contamination. The excavation pit was 50 ft by 35 ft by 15 ft.

During excavation, it became evident that the fuel oil release was much greater than anticipated. Although the full horizontal and vertical extent of contamination was not determined, the excavation was discontinued and the pit backfilled with the original fuel-oil contaminated soil. On August 27, 1991, the Steam Plant Tank Farm was listed as ER Site 190.

Other potential releases have occurred at Site 190. In 1989, the Tiger Team observed a potential release at Pump House 2. This pump house is approximately 10 ft by 6 ft and the floor is 7 ft bgs. Pump House 2 contained pumps that distributed the fuel oil to and from Pump House 1 and Tanks 1 through 4. At the time of the Tiger Team review, there was a 3 to 4 inch accumulation of fuel oil from leaking pumps standing on the floor of the pump house. The floor of the pump house has a French drain which is thought to be connected to a buried gravel retention pit.

During a site visit in August 1991, ER personnel noticed an additional potential source of contamination immediately adjacent to the Steam Plant Tank Farm. A KAFB vehicle washing station northeast of the Steam Plant Tank Farm was located so that surface water from truck washing operations ran through the tank farm.

Plans are currently underway to remove the 4 original tanks (Tanks 1 to 4) and associated piping. Because of the capacities of Tanks 5 and 6, Tanks 1 to 4 are no longer needed, and have had all but a residual amount of fuel oil removed. Activities that may impact the ER Site 190 include rerouting existing pipelines, abandoning existing lines in place, installing lines, and removing the tanks.

Additional site history information and compilation of data that has been collected at this site is provided in the TA-I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan that was submitted to the Environmental Protection Agency in February 1995.

Constituents of Concern

The potential contaminants of concern (COCs) identified for this site during its history include:
Hydrocarbons,
Volatile Organic Compounds (VOCs), and
Semi-Volatile Organic Compounds (SVOCs).

Current Hazards

There are no current hazards at this site related to contamination of the surface soils. A remediation system is installed in the central part of the site (northeast of Tank 4) for the remediation of contaminated subsurface soils. These subsurface soils contain fuel oil (and component VOCs and SVOCs) with a composition similar to the product in the above ground storage tanks on site. The remediation sytem contains no structures or stored materials that could pose a potential hazard. Information on the hazards associated with the bulk storage facility (tanks, pump houses, and underground pipes) should be obtained from staff members at the Steam Plant (Building 605, 844-3842).

Current Status of Work

The TA-I RFI determined that #2 diesel-contaminated soils were present at the point of release in a 30-ft diameter area to a depth of less than 100 feet below ground surface. The concentration of Total Petroleum Hydrocarbons (TPH) was found to be as high as 52,100 ppm. There were very low levels (less than 0.3 mg/kg for each consituent) of the VOCs acetone, benzene, 2-butanone, ethylbenzene, toluene, and xylene, and there were low levels (less than 10 mg/kg for each constituent) of the SVOCs dibenzofuran, fluorene, and 2-methyl napthalene. Based upon the nature of contamination and the physical location of the site, it was decided that the best remediation option was in-situ bioventing.

The bioventing Voluntary Corrective Measure (VCM) started in FY99. The bioventing system has been monitored since June 1999.

A respiration test was conducted in August 2001. This test indicated that we had minimal biodegradation ongoing at the site. Thus other alternatives were evaluated to advance this site to removal from the HSWA permit.

Because depth to groundwater is much greater than the extent of contamination, it is unlikely that diesel-related contamination has migrated through the vadose zone to the shallow water-bearing zone that is at a depth of approximately 275-ft bgs. The regional aquifer is approximately 540 feet bgs at this location. A risk assessment was completed that used available TPH results and chemical constituent concentrations that would be associated with Diesel #2 fuel oil at the known TPH concentration. The risk assessment indicated that SWMU 190 had a human health and ecorisk that was acceptable for the proposed industrial land use. Thus in September 2002, a No Further Action (NFA) proposal was submitted to the NMED for SWMU 190.

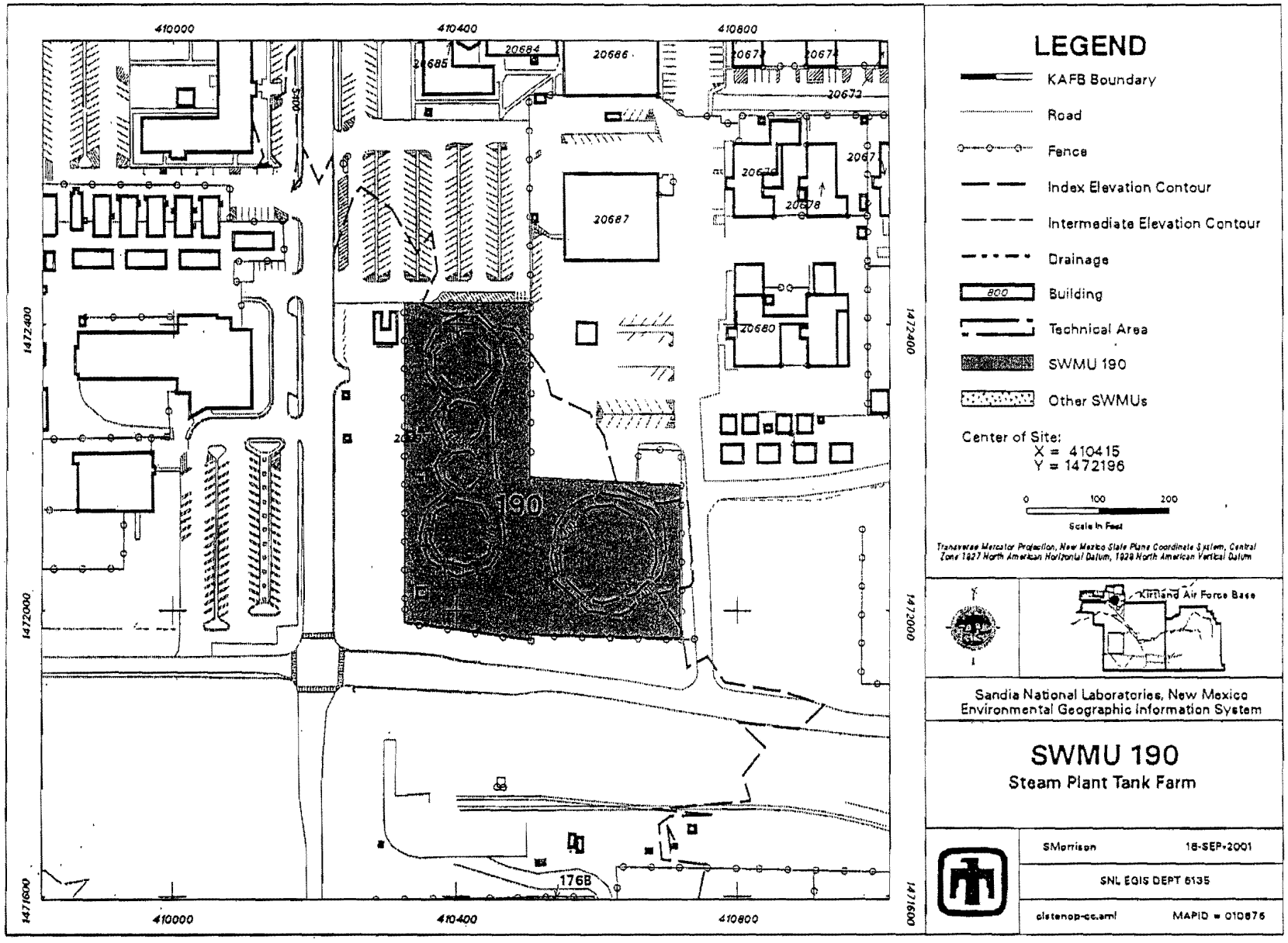
Future Work Planned

No future work is planned pending feedback from the NMED on the NFA proposal.

Waste Volume Estimated/Generated

A small amount of waste was generated as a result of sampling. Some nonhazardous waste was generated in FY99 from drilling the new boreholes for the bioventing project. This waste was left on site. Approximately 1/2 barrel of wastewater from operation of the bioventing system was also disposed of as waste.

Information for ER Site 190 was last updated Jan 21, 2003.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Environmental Geographic Information System
SWMU 190
Steam Plant Tank Farm
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ER Site No. 226: Old Acid Waste Line (TA-I)

ADS: 1302
Operable Unit: Technical Area I

- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

ER Site 226 is the Old Acid Waste Line. The old acid waste line outfall was listed as ER Site 46 based on information obtained during the Comprehensive Environmental Assessment and Response Program (CEARP) Phase I interviews. The old acid waste line was distinguished from the acid waste line outfall and was designated ER Site 226 in October 1992. The outfall is being investigated under ADS 1309, Tijeras Arroyo; the line is being investigated under ADS 1302, Technical Area (TA)-I. The original ER site name was the Acid Waste Line (TA-I). The ER site name was changed to the Old Acid Waste Line during the development of the TA-I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan Work Plan

ER Site 226 includes all of the abandoned line and soil near the abandoned line where potential contaminants of concern (COCs) have been detected as well as soil near those portions of the active line where breaks have been identified and potential COCs have been detected.

The acid waste line was installed between 1948 and 1950 and was constructed of 4- to 8-in. diameter vitreous clay pipe. The system extended from three origins in the north-central section of TA-I south to an outfall north of the Tijeras Arroyo. Lateral lines extended to buildings served by the line. The line remains in place and lies from 4 to 10 ft below grade and is an average of 8 ft below grade south of TA-I.

Based on a review of architectural and mechanical drawings of TA-I buildings and interviews with present and retired SNL/NM employees, waste was discharged into the acid line from the following buildings:

- Building 839, instrument repair and general research laboratory activities,
- Building 840, machine and ceramics shops,
- Building 841, a foundry and plating and coating shop,
- Building 860, environmental testing,
- Building 863, motion-picture film processing, and
- Building 892, weapons production.

It is assumed that discharges from the acid waste line ceased after 1967; the actual date that discharges ceased is unknown. Discharge from the line is evident in aerial photographs taken from 1964 to 1967. The line was separated at the intersection of I and 9th streets. The southern portion was capped at that intersection and was abandoned in place; all discharges to the line south of the intersection were discontinued. The portion of the line north of I Street was connected to the sanitary sewer system near the intersection. The acid effluent was then either discharged to the sanitary sewer or the waste was collected at the point of generation as chemical waste for off-site disposal.

Reportedly, the acid waste line received about 130,000 gal/day of discharge comprised primarily of cooling water blowdown, but also including chromates, ferric chloride, and liquids from etching, plating, and photographic film developing processes. An estimated 200 gal/day of spent chromic acid was discharged to the acid waste line. The exact duration of system use is unknown but was at least 17 years.

Additional site history information and compilation of data that have been collected at this site are provided in the TA-I RFI Work Plan that was submitted to the Evironmental Protection Agency (EPA) in February 1995.

Constituents of Concern

The potential COCs identified for this site during its history include:

Metals,
Volatile organic compounds (VOCs),
Semivolatile organic compounds (SVOCs), and
Polychlorinated biphenyls (PCBs).

Current Hazards

There are no surface contaminants of concern at this site. Possible contaminants associated with this site are greater than a foot below the ground surface. There are several contaminants in the subsurface; those that contributed to the non-radiological risk were manganese and barium. However, based on the concentrations of these contaminants found to date, an assessment of the risk under an industrial land-use setting indicates that this site does not have a significant potential to affect human health. There were slightly elevated levels of Pu 238, Pu 239/240, and U 238; however, the total effective dose equivalent was less than that allowed for a residential-use setting.

Current Status of Work

The TA-I RFI Work Plan was delivered to the EPA for review in February 1995. Field activities outlined in the work plan were completed in July 1995. Site characterization included collection of surface (0-2 ft) and near-surface (2-14 ft) soil samples to assess the potential for contaminated soils at this site.

Based upon the results of data collected at the Acid Waste Line and a risk assessment, a No Further Action (NFA) proposal has been prepared and was submitted to the New Mexico Environment Department (NMED) in May 1997.

NMED reviewed the NFA and returned a Request for Supplemental Information (RSI) in March 1998. SNL responded to the RSI in June 1998. NMED requested that additional sampling be done to further determine the nature and extent of contamination. NMED also requested additional sampling at Sites 96 and 187. Because of the close proximity of these sites to Site 226, and because the nature of contamination was similar, it was decided to combine further sampling at theses sites to reduce the amount of sampling needed.

In September 2001, SNL met with NMED to specifically define what additional sampling should be done at Sites 96, 187 and 226. A Sample and Analysis Plan was completed in November 2001 to document the results of the discussions. SNL agreed to collect soil samples at 8 locations in the vicinity of 3 original sample locations for Site 226; 2 samples were to be collected at the original sample locations and the remaining 6 samples at locations offset from the original sample locations. The constituents the samples were to be analyzed for varied but included VOCs, SVOCs and isotopic plutonium.

The soil samples defined in the SAP were collected in May and June 2002.

Future Work Planned

The final response to the NMED's March 1998 RSI request will be completed. The response will include a summary of the recent sampling results and a revised risk assessment.

Waste Volume Estimated/Generated

A small amount of waste was generated as a result of characterization sampling conducted for the RFI.

Information for ER Site 226 was last updated Jan 21, 2003.

NO MAP ASSOCIATED WITH THIS SITE

OU-1303
TA-II

ER Site No. 1: Radioactive Waste Landfill (TAII)

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Rick Dotson
Office Phone: 284-2507 or 845-8751

Site History

The Radioactive Waste Landfill (RWL), ER Site 1, and the Chemical Disposal Pits (CDP), ER Site 3, are located in the eastern portion of Technical Area II (TA-II), about 25 feet (ft) west of the eastern apex of the TA-II perimeter fence.

In 1987, a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) was performed for the entire Sandia National Laboratories / New Mexico (SNL/NM) installation. At that time, ER Site 1 was identified as solid waste management unit (SWMU) Numbers 32 through 37, and ER Site 3 was identified as SWMU Number 40. Both sites were described as having the potential for release of hazardous waste or constituents. A more comprehensive assessment was performed under Phase 1 of the Comprehensive Environmental Assessment and Response Program (CEARP), during which ER Sites 1 and 3 were assessed and, again, were found to require additional investigation. The scope of the Phase 1 assessment included a literature and records search, interviews with current and former employees, and, in some cases, visual site inspections. No samples and only limited background data were collected during both the RFA and CEARP Phase 1 assessment.

The regional aquifer in the vicinity of ER Sites 1 and 3 is within the upper unit of the Santa Fe Group. The depth to groundwater in the monitor well nearest to ER Sites 1 and 3 (TA2-NW1-595) is approximately 520 ft below ground surface (fbgs) or 4,889.3 ft above mean sea level. TA2-NW1-

595 has a total depth of 598 fbgs. A shallow water-bearing zone also exists in the vicinity of ER Sites 1 and 3. The depth to the shallow zone ranges from approximately 267 to 320 fbgs. Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Sites 1 and 3 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located immediately southeast of TA-II. The surface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains.

Surficial deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick.

The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongues with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from the Sandia and Manzanita Mountains. ER Sites 1 and 3 are near the easternmost limit of the ancestral Rio Grande deposits.

More detailed site history information is included below and it is subdivided between the two sites.

Radioactive Waste Landfill (ER Site 1)

Initial information about the RWL was based on employee interviews. The RWL had three pits and three trenches where low-level radioactive waste was disposed of from 1949 to 1959. Supposedly, after March 1959, all radioactive waste was disposed of at a separate facility in TA-III, although one item removed from the landfill was dated 1978.

The RWL pits were approximately 12 ft wide by 20 ft long by 25 ft deep. The trenches ranged from 5 to 15 ft wide, 25 to 50 ft long, and 15 ft deep. The pits and trenches were labeled as Pits 1, 2, and 7 and Trenches 3/4, 5, and 6. The majority of the waste was not containerized before disposal. The pits and trenches were unlined and did not contain leachate detection or collection systems. The pits and trenches were filled with debris, and then covered with native soil and capped with 3 ft of concrete.

No detailed records of material disposed of in the RWL are available. However, U.S. Department of Energy (DOE) Solid Waste Information Management System records showed that an estimated 11,110 cubic ft of radioactive material was buried in the landfill, with an estimated total activity of 2,847 curies.

Material disposed in the RWL mainly consisted of solids, although lesser amounts of liquids were present. Chemical hazards included lead, which was typically used for radioactive shielding, thermal batteries, and nitric acid.

The RWL primarily contained low-level materials, although a small amount of transuranic material was also present in the landfill. Most of the material buried in the RWL consisted of weapons components, irradiated and neutron-activated material, thermal batteries, and

radioactive sources. The weapons components and materials contained depleted uranium, thorium, tritium, cobalt, cesium, americium, and plutonium.

In 1954, tritiated material, mainly from booster cylinders, was reportedly buried in the RWL. Other items buried in the RWL included neutron generator parts, irradiated material from nuclear rocket tests, and radium-beryllium neutron sources. In addition, cobalt sources were buried in the RWL. Cesium-containing gap tubes and tracer materials collected on fallout plates were also buried in the landfill.

Other materials in the RWL were laboratory-generated, such as contaminated gloves, pipettes, absorbent pads, forceps, beakers, test tubes, paper, tools, clothing, and soil and bioassay samples. Some of the samples reportedly contained hydrochloric acid, toluene, and possibly other organic compoundsChemical Disposal Pits (ER Site 3)
Initial information about the CDPs was based on employee interviews. The CDPs reportedly were used in the late 1940s and 1950s to dispose of chemical waste. One former employee recalled that one disposal pit was approximately 10 ft by 30 ft with depth unknown. The pits were unlined and were not constructed with leachate containment or monitoring devices. No records were maintained regarding the exact locations of the pits, the types or volumes of chemicals disposed of in the pits, how chemicals were disposed of, how the pits were excavated, or the exact length of time the pits were actually used.

Constituents of Concern

Lead
Plutonium
Toluene
Neutron-active material
Depleted Uranium
Tritium
Radium
Cobalt-60
Nickel-63
Cesium-137
Strontium-90
Radium-beryllium neutron pellets

Current Hazards

Physical: The landfill excavation is approximately twelve feet deep with steep sides and is unfenced.

Chemical: None

Radiological: The landfill excavation is posted as a soil contamination area. As a precaution, do not walk or drive on any soil piles adjacent to the excavation due to low levels of radioactive material in soil.

Current Status of Work

ER Site 3, Chemical Disposal Pits (CDPs), and ER Site 1, the Radioactive Waste Landfill (RWL), were combined into one site in June of 1995. Investigations included passive soil vapor surveys, geophysical surveys, surface soil sampling, and surface radiation surveys.

Remediation of this site was completed voluntarily (as a Voluntary Corrective Measure, or VCM) in late 1996. The containerized wastes include mixed and radioactive debris and radioactive soil. The debris and radioactive soils that were accumulated during the VCM has been disposed. Approximately 9,400 cubic yards (cy) of soil were removed during excavation. Of this amount, approximately 400 cy were disposed as radioactive waste. Another 3,000 cy were slightly radioactive. The remaining 6,000 cy was clean overburden material. Subsequent to review and approval of a radiological risk assessment, the slightly radioactive soil will be placed at the bottom of the excavation, covered with the 6,000 cy of clean soil, then additional clean soil will be brought in (if necessary) to complete the backfill to grade.

A No Further Action (NFA) proposal was submitted to the New Mexico Environment Department (NMED) in September 1997. A Request For Supplemental information (RSI) was submitted in December of 2002 to NMED which should facilitate NFA final approval.

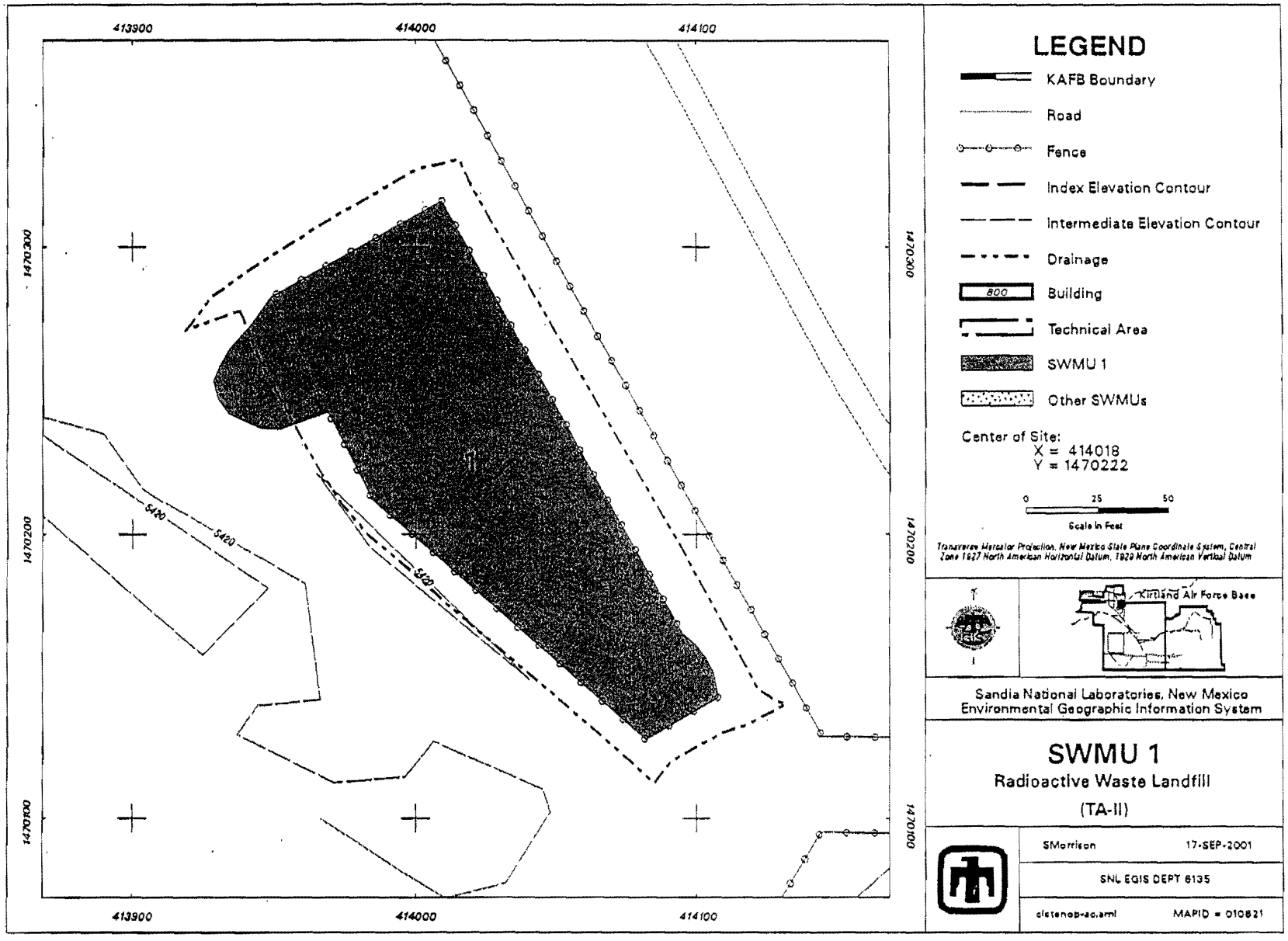
Future Work Planned

In June 1999, NMED indicated that the site may be appropriate for NFA petition pending review and approval of supplemental information, consisting of a revised risk assessment, new verification samples (collected in November 1999), and information on the material excavated. This information has been submittal. The site will be backfilled and revegetated in the spring of 2003.

Waste Volume Estimated/Generated

Approximately 96 cubic yards (cy) of debris were accumulated from the landfill excavation at the site, of which 80 cubic yards were radioactive and the rest mixed hazardous and radioactive waste. All of this debris and radioactive/mixed waste have been disposed off-site. Of the 3,400 cubic yards of radioactive soil, 400 cy were disposed off-site as radioactive waste. The remaining 3,000 cy of slightly radioactive soil will be returned to the excavation as backfill, based on a radiological risk assessment.

Information for ER Site 1 was last updated Jan 24, 2003.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Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
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Radioactive Waste Landfill
(TA-II)
SMorrison
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SNL EGIS DEPT 6135
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ER Site No. 2: Classified Waste Landfill (TA-II)

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Rick Dotson
Office Phone: 284-2507 or 845-8751

Site History

The Classified Waste Landfill, ER Site 2, covers approximately 1.5 acres in a 3.5 acre area of concern in the eastern portion of Technical Area II (TA-II), which is a 45 acre fenced area. Classified material is known to have been buried in the landfill from the early 1950s through 1987; however, disposals may have started as early as 1947. The last burial of classified material occurred on October 13, 1987.

The materials buried were surplus classified items that by shape or content contained information important to national security. Until 1958, no records were maintained for material disposed of in the landfill. An inventory of the classified material buried prior to June 1972 was apparently destroyed during file purging following a DOE paperwork reduction initiative. Information on ER Site 2 was compiled from interview notes, Delivery to Reclamation (DTR) records, a Burial Log Book, and the Nuclear Materials Management and Safeguard System (NMMSS) database (ORNL 1995).

The classified material was primarily buried in unlined, east-west oriented trenches that ranged from 8- to 16-ft wide and 12- to 15-ft deep. The trenches were not constructed with leachate containment or monitoring devices. During disposal operations, the trenches were backfilled one section at a time after waste emplacement, and each section was covered with native soil. Steel pipes were placed at the end of each section as it was filled; the pipes were labeled with reference to their location (e.g., Row 3, Pit 10). Based on the pit marker labels once visible at the site, eight trenches existed at the landfill (Rows A, B, C, D, E, 1, 2, and 3). Prior to 1972, the burials in the

Classified Waste Landfill were designated as 1, 2, and 3. The last pit in Trench 3 (Pit 10) was filled in June 1972. From that time to October 1987, the trenches were designated with letters (A through E).

A burial log for the materials buried in the trenches from June 1972 through October 1987 described the contents of Row 3, Pit 10, as well as the contents of Rows A through E. This existing inventory provided only limited assistance in identifying specific contaminants that may have been buried at the site. However, the DTR forms, which corresponded to the burial logbook listed some individual items disposed of in the landfill, cell by cell within the trenches.

An August 1959 Sandia Plant Engineering drawing showed the approximate locations of four burial pits and one cut-and-cover trench in the eastern portion of TA-II. Between May 1960 and April 1963, solid waste from the South Albuquerque Works Plant (a former American Car & Foundry [ACF] weapons plant established in 1952) was reportedly buried at these five locations. The ACF facility reportedly manufactured weapon case parts and weapon handling equipment. The ACF pits were reportedly 6- to 12-ft in diameter and 12- to 18-ft deep; the cut-and-cover trench was 12-ft by 6-ft by 10-ft. Upon excavation of these pits in March-April 1998, it was found that they contained primarily stainless steel items, thermal batteries, and other weapon components. The South Albuquerque Works Plant did not handle radioactive materials and disposed of its chemical waste at Kirtland Landfill #2.

Historical information suggested that some tubes (possibly glass) containing nickel and strontium radioisotopes may have been buried in the landfill, as well as other components that may have contained tritium. Lead, polychlorinated biphenyls (PCBs), depleted uranium (DU, U-238), beryllium, and chlorinated organic compounds, including trichloroethylene (TCE) and 1,1,1-trichloroethane (TCA), were among the potential COCs identified during interviews that may have been disposed in the Classified Waste Landfill. A review of inventory records (post 1972) identified the following specific hazardous or potentially hazardous items disposed in the landfill:

Thermal batteries (some unfired); an x-ray fixture and device holder; at least 20 items marked radioactive; expended tritium tubes; beryllium disks; a high-voltage power supply; components containing radioactive nickel and tritium; a liquid acceleration switch (possibly containing mercury); and items with potential high explosive (HE) compounds.

Other items buried in the landfill included: an assortment of weapon cases, artillery shells and related components, lasers, furnace parts, radar equipment, and aluminum parts. Radioactive calibration sources were also reportedly buried. Classified electronic components containing gold plating, silver, and platinum were also buried. Most items in the Burial Log for the Classified Waste Landfill were listed as security containers, hoppers, missiles, skids, and wooden boxes. The DTRs listed specific information on the quantity of a particular item (e.g., thermal batteries, neutron generators, weapon casings, etc.).

Between 1978 and 1987, all material was reportedly screened for radiation and chemicals prior to disposal in the landfill. However, sealed containers were not opened and the contents screened prior to disposal. No radioactive or hazardous materials, other than metals and plastics, reportedly were disposed of in the CWLF during its operation in the 1980s.

The regional aquifer in the vicinity of ER Site 2 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 2 (TA2-NW1-595) is approximately 520 feet (ft) below ground surface (fbgs) or 4,889.3 ft above mean sea level (famsl).

A shallow water-bearing zone also exists in the vicinity of ER Site 2. The depth to the shallow zone ranges from approximately 267 to 320 fbgs (5,081 to 4,889 famsl). Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 2 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial sedimentary deposits ranging from clay to gravel derived from the the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains. The surface deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick.

The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from the Sandia and Manzanita Mountains. ER Site 2 is near the easternmost limit of the ancestral Rio Grande deposits.

Several rift-bounding faults are located east of ER Site 2. The nearest is the Sandia fault-zone, characterized by north-trending, west-dipping normal faults. The westernmost fault is located approximately 1.2 miles east of the site.

Constituents of Concern

Radioactive nickel, radium, thorium, depleted uranium (DU, U-238), and tritium
Metals (lead, beryllium, cadmium, chromium)
PCBs
HE compounds
VOCs (TCE, 1,1,1-TCA, and possibly toluene and benzene)

Current Hazards

ER Site 2:
Site 2 operations involve specific areas in the eastern half of TA-II outlined below. The Site 2 excavation is open and unfenced, with steeply sloped sides. Do not walk or drive on any soil piles stored onsite, or in the roped-off area just east of the TA-II fence.

Trailers east of Bldg. 919:
Trailers may contain breathing air cylinders for self-contained breathing apparatus (SCBAs) or calibration gases, including isobutylene, pentane, nitrogen, and an argon/methane mixture.

Transportainers 92 and 93 Northeast of Bldg. 919:
Transportainers contain motor oil and gear lube and may also contain cans of engine starter fluid.

Room 2 in Bldg. 919:

Contains nickel/cadmium batteries for equipment and sealed radiological calibration sources, including Am-241, Pu-239, Tc-99, and Cs-137.

White Tent Structure Southeast of Bldg. 919:
A roped-off section inside the north end of the structure is posted as a Radioactive Contamination Area.

Fuel Storage Area North of Bldg. 920:
Two trailers with diesel fuel.

Operations Area East of Bldg. 907:
Storage area contains gas cylinders of breathing air, oxygen, nitrogen, and acetylene.

Propane Storage West of Bldg. 907:
Storage tank contains LPG. The shed next to the tank contains smaller LPG cylinders.

Secured and Sealed Transportainers and Bldg. 920:
Transportainers east, west, and south of Bldg. 920, east of Bldg. 907, and Bldg. 920 contain classified material that may present hazards from heavy metals dust, and may contain very small amounts of high explosives, as well as sealed radioactive sources including Ni-63, Ra-226, Am-241, and Cs-137. Drums may contain soil contaminated with U-238 or U-238 fragments. Components with liquid mercury or PCBs in small amounts may also be a hazard. Bldg. 920 may contain propane-powered forklifts and/or heaters.

Sample Storage Shed and Cabinets East of Bldg. 919:
Shed and cabinets contain soil samples that may be considered radioactive material.

Gas Cylinder Storage at Southeast Corner of Bldg. 919:
Gas cylinders contain argon/methane mixture.

Current Status of Work

Investigations to date have included:
Passive soil vapor surveys, geophysical surveys, surface radiation surveys, borehole drilling, and subsurface soil sampling and analysis. The geophysical survey conducted in 1997, identified 84 anomalies (trenches and pits within trenches).

A Voluntary Corrective Measure (VCM) to excavate the landfill began in March 1998 and was completed on February 17, 2000. Approximately 50,000 cubic yards of soil were excavated and more than 600 tons of artifacts were removed. More than 200 tons of materials have been recycled. It is estimated that approximately 70 percent of the classified materials will be recycled by the end of the project.

Additional sampling of the excavated soil was conducted at the request of the New Mexico Environment Department (NMED) to further justify the intent to use the excavated soil as backfill. In concurrence with NMED, a Sampling and Analysis Plan was developed to sample the stockpiled soil for VOCs, semivolatile organic compunds (SVOCs), PCBs, tritium, and gross alpha/beta. PCBs were detected in the majority of the soil piles. Most concentrations were below 1 milligram (mg)/kilogram (kg), and the maximum concentration was 5.56 mg/kg. An addendum to

the NFA was submitted in December of 2002 that contained the data from the additional characterization that was requested by NMED and a new risk assessment was performed. On January 17, 2003 NMED deemed site 2 appropriate for NFA pending an EPA approval of TSCA requirements.

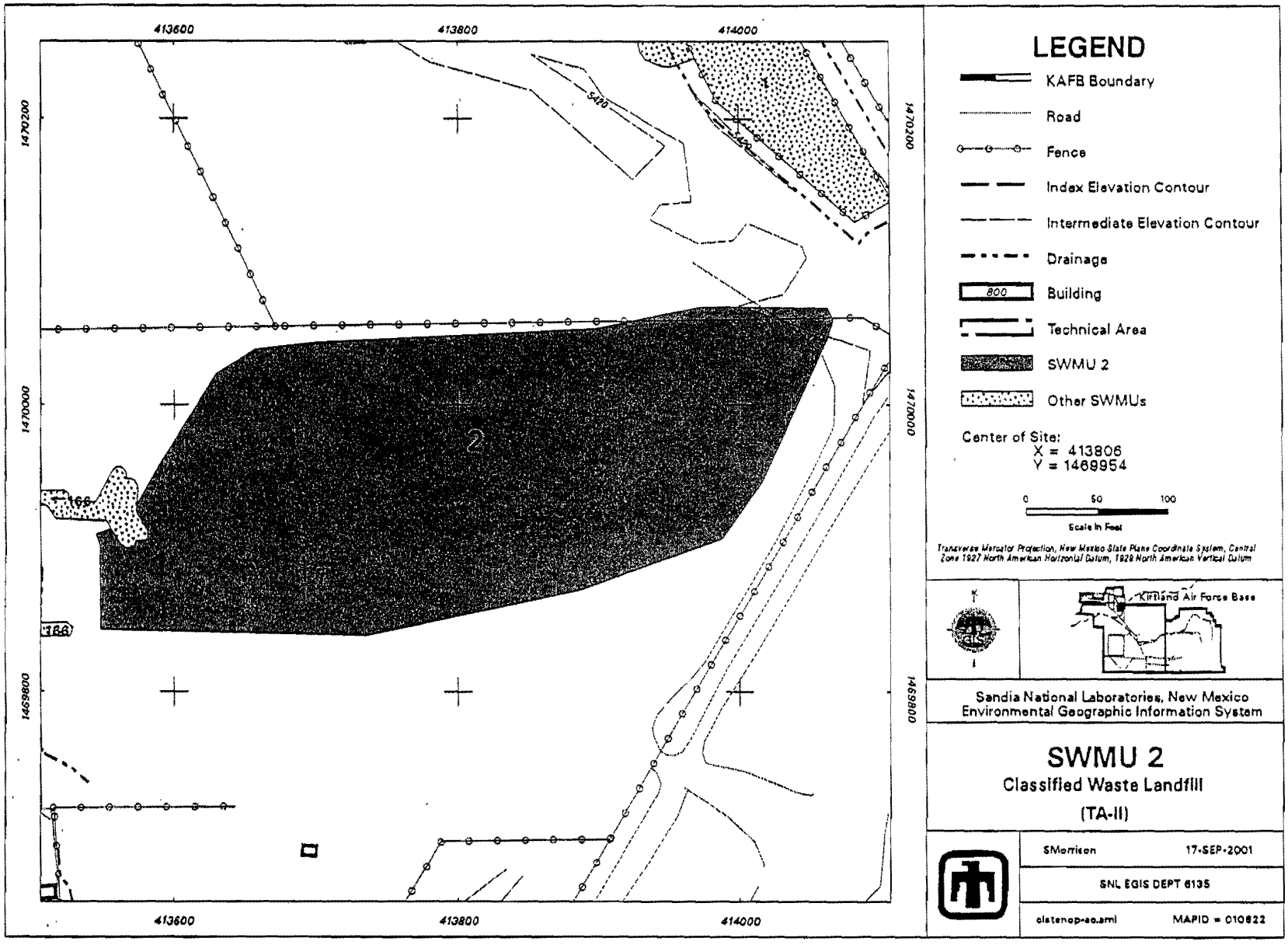
Future Work Planned

The VCM excavation of the landfill has been completed. It is anticipated that this will be the final measure for cleanup. The VCM activities yet to be completed include: demilitarization, recycling, and waste management related to material removed from the excavation; backfill and revegetation. Depending on decisions made by NMED, DOE and Sandia, there might be a future need for institutional controls for the backfilled VCM excavation area.

Waste Volume Estimated/Generated

Waste volumes estimated for ER Site 2 for the anticipated final VCM are 150 cubic yards (cy) of bulk hazardous waste requiring stabilization, 150 cy of radioactive waste, 35 cy of bulk mixed waste debris not requiring stabilization, 35 cy of bulk mixed waste debris requiring stabilization, and 2,500 cy of nonhazardous waste. The majority (~99 percent) of the 50,000 cy of excavated soil will be returned to the excavation as backfill.

Information for ER Site 2 was last updated Feb 14, 2003.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1469800
5400
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LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
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Building
Technical Area
SWMU 2
Other SWMUs
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Scale in Feet
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Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 2
Classified Waste Landfill
(TA-II)
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SNL EGIS DEPT 6135
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MAPID = 010822

ER Site No. 48: Bldg 904 Septic System (TA-II)

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Sue Collins
Office Phone: 284-2507 or 284-2546

Site History

From 1947 through 1992, two effulent systems served Building 904. One system handled sanitary (septic) water, and the other system (the High Explosive [HE] drain system) handled waste water. In 1993, the effulent systems were taken out of service when Building 904 was connected to the City of Albuquerque (COA) interceptor sewer line that runs along the floor of Tijeras Arroyo. Building 904 was constructed in 1947 and was intially used for the assembly of nuclear weapons. The building was demolished in late 2002. The building was located in the south central portion of Technical Area-II (TA-II) and covered approximately 10,000-square feet (ft). Building 904 was constructed with 1.5-ft thick concrete walls that separated the various weapon-assembly bays; the original floor plan was identical to that of Building 907.

The Building 904 septic system extends westward from the northwest corner of the building foundation and consists of a 900-gal concrete septic tank, a 5-ft-diameter by 13-ft deep seepage pit, and 150 ft of drainfield pipe. The bottom of the seepage pit is about 15 ft below grade. The drain field is located in the west-central portion of TA-II. Floor drains were located in each room in Building 904, including the HE assembly and packaging rooms. The floor drains, fume-hood drains, and sinks may have been cross-connected between the septic system and the HE drain system due to remodeling over the years. In 1995, waste from removed from the septic tank and samples were collected. The empty tank was inspected by New Mexico Environmental Department (NMED) in late 1995. Concrete samples of the septic tank also were collected. In 2000, the perimeter of the septic tank was excavated and soil samples were collected; a backhoe was used to trench across the drainfield for the purpose of mapping the drainfield. The tank and drainfield

were left in place.

The HE drain system extends southward from Building 904 to the northern rim of Tijeras Arroyo. Engineering drawings show that small research rooms in Buildings 913 and 914 also were connected to the HE drain system. The total length of the HE drain system was approximately 800 ft. While in service, a HE catch box collected HE particulates by mechanical filtration of the waste water. The HE catch box (also known as the solids retention tank) is still located approximatly 350 ft south of Building 904. The top of the catch box is 5 ft below grade. From the catch box, the HE drain system extends southward for approximately 500 more ft where the waste water discharged into a pair of outfall ditches (ER Site 227 and ER Site 229). These two sites are managed by the Tijeras Arroyo Operable Unit.

During nuclear weapons assembly operations in the early 1950s, eight to ten employees worked three 8-hour shifts per day. During assembly work, HE blocks were shaved or machined to fit into the nuclear weapons. During the assembly operations, HE shavings fell onto the floor, but sweeping was not permitted because the sweeping could generate static electricity resulting in an explosion. Floor debris and explosive materials, including Baratol, Compound B, and black powder were flushed down the assembly bay floor drains with large quantities of water and discharged into the HE drain system. The assembly bays were washed down daily; a mixture of waste and possibly kerosene may have been used to clean the floors. The floor drains appear to have been designed to capture large volumes of waste water possibly containing kerosene and small amounts of HE materials.

Between 1948 and 1951, weapons-assembly work areas and equipment were typically cleaned with carbon tetrachloride. This chemical was used liberally (up to 3 gal/month) until about 1951, when it was replaced with trichloroethylene (TCE) because the carbon tetrachloride vapors caused headaches. The TCE was reportedly "used like water" for cleaning and employees opened the building doors for ventilation.

In the late 1950s, nuclear weapons assembly operations were discontinued and the building was converted into an explosive testing and development facility; an HE chemistry laboratory also was added. Chemicals used in the laboratory may have included methyl ethyl ketone (MEK), acetone, carbon tetrachloride, hexane, xylene, Freon compounds, toluene, alcohols, TCE, and methylene chloride. The explosive testing and development operations involved mixing small quantities of explosives in separate handling areas. Residues were not flushed down the floor drains; however, small amounts of cleaning compounds may have been discharged to one or both of the effulent systems after cleaning the testing devices. Components were typically cleaned with toluene, petroleum distillates, isopropyl alcohol, nitromethane, acetone, and methanol.

Starting about 1968, Building 904 was used as an environmental and functional testing laboratory for weapon components. In 1969, Building 904 was enlarged with the addition of a darkroom for processing X-ray film. Photographic processing solutions, which may have contained cadmium, silver, chromium, and cyanide, may have been discharged to the Building 904 effulent systems.

During the 1970s, an explosive shock test facility was also located in the building, and in 1975, several rooms were converted for nuclear materials safeguards and security research with chemical deterrents using foams and smokes. Some organic compounds and cleaning agents were also used, including acetone, methylene chloride, ammonium hydroxide, titanium, and tetrachloride.

To summarize, the waste water contained:

- organic compounds including acetone, methylene chloride, trichloroethylene (TCE), methyl ethyl ketone (MEK), nitromethane, carbon tetrachloride, toluene, xylenes, Freon™ compounds, hexane
- various alcohols (methanol and isopropyl)
- metals (barium, cadmium, chromium, lead, silver, and titanium)
- HE compounds such as Baratol, Compound B, and black powder
- inorganic compounds including ammonium hydroxide and cyanide
- petroleum distillates such as kerosene
- and possibly traces of radionuclides such as cesium-137, uranium-235/238, plutonium-239, and tritium.

In 1992, the ER Project began conducting groundwater studies at TA-II. These studies along with other Solid Waste Management Unit related investigations were eventually incorporated into the Tijeras Arroyo Groundwater (TAG) Investigation. TA-II is located in the center of the TAG study area. The hydrogeologic setting of the study area is dominated by two water-bearing zones, the perched system and the regional aquifer, both of which are present within the upper Santa Fe Group. The perched system is not used for water supply. However, the COA, Kirtland Air Force Base (KAFB), and the Veterans Administration (VA) utilize the regional aquifer for water-supply purposes. At TA-II, the depth to the perched system is approximately 310 ft below ground surface (bgs). The perched system covers approximately 3.5 square miles in the central part of the TAG study area and may extend across the northern boundary of KAFB. The direction of groundwater flow in the perched system is to the southeast. Discontinuous, yet overlapping multiple lenses of unsaturated alluvial-fan sediments serve as a perching horizon beneath the perched system and above the regional aquifer. At TA-II, the depth to the regional aquifer is approximately 520 ft bgs. The direction of groundwater flow in the regional aquifer is principally to the northwest towards the KAFB, COA, and VA water-supply wells. Groundwater from the perched system merges with the regional aquifer southeast of Tijeras Arroyo. The regional aquifer extends across the entire TAG study area and the Albuquerque Basin.

Low levels of TCE and nitrate have been detected in perched-system groundwater samples collected at TA-II. The regional aquifer is not contaminated.

The vicinity of TA-II is essentially flat, with a gentle slope to the west of approximately 4 percent. The soil is poorly developed with high akalinity. The subsurface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These upper Santa Fe Group deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains. The depth to Precambrian basement beneath TA-II is approximatley 3,000 ft.

TA-II is situated approximately 50 ft in elevation above the floodplain of Tijeras Arroyo, which is the largest surface-water feature at KAFB. Site 48 is located approximately 1,700 ft west of the active channel of Tijeras Arroyo. Water flows in the active channel near TA-II several times per year.

Constituents of Concern

The COCs for ER Site 48 are volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), HE compounds, cyanide, RCRA metals, and radionuclides (gamma emitters and tritium).

Current Hazards

No hazards at the site are related to contamination of surface or subsurface soils.

Current Status of Work

The No Further Action (NFA) proposal for ER Site 48 was submitted to NMED in June 1995. Currently a RSI is being written.

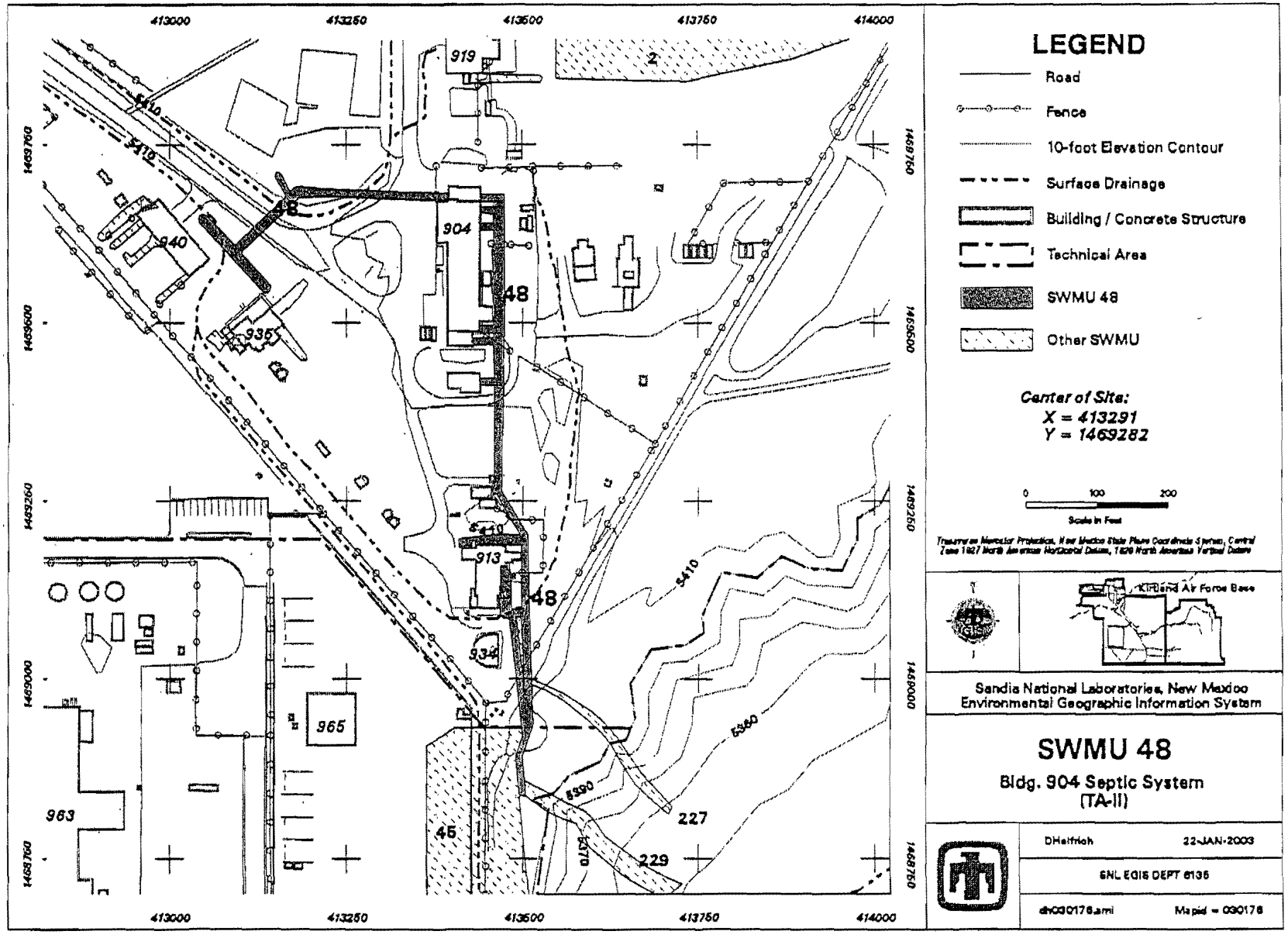
Future Work Planned

The RSI response will be submitted in 2003, and will include the 2000 sampling results and a revised risk assessment. In 2004, waste in the HE catch box will be removed and characterized for disposition.

Waste Volume Estimated/Generated

Five 55-gallon drums of mixed waste were removed from the septic tank in 1995, and have been disposed off-site.

Information for ER Site 48 was last updated Jan 24, 2003.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919
904
48
940
935
913
934
965
963
45
227
229
5410
5390
5370
LEGEND
Road
Fence
10-foot Elevation Contour
Surface Drainage
Building / Concrete Structure
Technical Area
SWMU 48
Other SWMU
Center of Site:
X = 413291
Y = 1469282
0
100
200
Scale in Feet
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 48
Bldg. 904 Septic System
(TA-II)
DHeffrich
22-JAN-2003
SNL EGIS DEPT 6135
dh030176.aml
Mapid = 030176

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ER Site No. 114: Explosive Burn Pit (TA-II)

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Rick Dotson
Office Phone: 284-2507 or 845-8751

Site History

The Explosives Burn Pit (EBP) area is located outside the western corner of Technical Area-II (TA-II), immediately south of the main access gate. The EBP was reportedly used from the late 1940s through the middle to late 1950s when weapons assembly was discontinued at TA-II. There are no visible indications of the site. Prior to field investigations conducted in 1992 and 1994, the location of the EBP was based on historical air photos and interviews with Sandia National Laboratories (SNL) personnel. It is not very clear from the interviews whether one or two pits were used at the site. Later investigations involved collecting soil samples on a grid to locate the EBP and assess constituents of concern (COCs).

The regional aquifer in the vicinity of ER Site 114 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 114 (TA2-NW1-595) is approximately 520 feet (ft) below ground surface. A shallow water-bearing zone also exists in the vicinity of ER Site 114. The depth of the shallow zone ranges from approximately 267 to 320 feet deep. Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 114 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and

quartzite from the Manzanita Mountains.

Surficial deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick. The piedmont-slope alluvium, which was deposited by the ancestral Tigeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from the Sandia and Manzanita Mountains. ER Site 114 is near the eastern most limit of the ancestral Rio Grande deposits.

Conflicting construction details have been reported for the EBP. One SNL/NM report states that the EBP consisted of a 4-ft diameter burn pit, surrounded by a 4- to 5-ft high culvert. However, some former SNL/NM personnel have stated that the site may have consisted of two 4-ft diameter burn pits; another SNL employee also recalled that there were two burn pits, each approximately 4-ft by 2-ft by 2-ft.

Aerial photos taken in 1959 show two disturbed areas in the vicinity of the EBP. After the site was decommissioned in the late 1950s, it was covered with soil by heavy equipment. The soil and heavy equipment left irregularly shaped scars on the surface in the vicinity of the pit area. Some former SNL personnel stated that the location of the two burn pits was 50 ft west of the TA-II perimeter fence, about 100 ft south of the TA-II guard gate. The actual number, dimensions, and exact location(s) of the EBP are not clear from interviews with former SNL/NM personnel. Results of the field investigation conducted in September 1992 and expanded in March 1994 show that at least one EBP was located between 60 and 70 ft southwest of the TA-II perimeter fence.

The exact types and amounts of high explosives (HE) compounds burned in the pit area are not known. During weapons assembly operations, some small blocks of HE that did not meet specifications and shavings of HE from the assembly process were produced as waste. The scraps of HE reportedly were less than one pound each and were disposed by burning in the EBP. Some of the scrap HE burned at the site reportedly contained barium, which is a component in baratol and compound B. The baratol (barium nitrate) commonly was mixed with 2,4,6 trinitrotoluene (TNT). Cyclotrimethylenetrinitramine (RDX) also was burned in the EBP. Other potential COCs that could be associated with the HE compounds include mercury, silver, cadmium, and lead.

Between September 3 and 22, 1992, 185 boreholes were drilled to 6 ft below grade on a 4-ft grid pattern in two locations. The two grid locations were selected by analysis of old aerial photographs of TA II. The two grids were informally named Burn Pit Y (BPY) and Burn Pit Z (BPZ). The 370 soil samples collected from both grids were analyzed for total Resource Conservation and Recovery Act (RCRA) metals and HE compounds. The samples collected in 1992 were not analyzed for volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCs). However, all samples were field screened for VOCs and for alpha, beta, and gamma radiation using alpha scintillation and GM radiation instruments.

Except at boreholes BPY10,4 and BPY10,5, soil samples collected in the vicinity of the EBP area did not contain metals in concentrations above background data. No mercury was detected in any of the soil samples collected in the vicinity of the EBP.

Soil samples collected from boreholes BPY10,4 and BPY10,5 contained elevated metals concentrations, probably associated with EBP activities.

All soil samples collected in the vicinity of the EBP area were analyzed for HE compounds. Only borehole BPY10,5 contained detectable concentrations of HE at 6 ft. At this location, RDX (also known as cyclonite; hexahydro1,3,5, trinitro 1,3,5 triazine; or cyclotrimethylenetrinitramine) was detected at a concentration of 5.9 mg/kg, and HMX (also known as octahydro1,3,5,7 tetranitro 1,3,5,7 tetrazocine) was detected at 3.1 mg/kg. No other HE compounds (i.e., nitroaromatics or nitramines) were detected in this or any other sample collected in the vicinity of the EBP area above the detection limits of 1 mg/kg.

Between November 11, and December 2, 1993, a passive soil vapor survey was conducted in the vicinity of the EBP area. Except for low levels of benzene, toluene, ethylbenzene, and xylene (BTEX), no other VOCs or SVOCs were identified from the SVS investigation. The BTEX levels are considered low and probably reflect vehicular traffic in the area.

On March 1, 1994, eleven additional shallow boreholes were drilled, extending the grid to the east. Nine boreholes were drilled to six ft; soil was sampled at three and six ft. Two boreholes were drilled to 12 ft; soil was sampled at 9 and 12 ft at existing locations BPY10,4 and 10,5. All samples were analyzed for HE compounds and metals. Three metals of concern, based on background information, were detected above laboratory reporting limits in the following concentrations (mg/kg):

- Barium from 45.9 to 636
- Cadmium from 0.52 to 9.6
- Lead from 10.2 to 45.8

No mercury or silver was detected above laboratory reporting limits in any of the borehole soil samples. Additionally, no HE compounds were detected in any of the borehole soil samples.

Results from the metals analyses indicate that barium levels are generally higher in the 3-ft soil samples than in the 6-ft soil samples. This suggests that no significant migration of the barium has reached depths greater than 3 to 4 ft below grade.

A VCM was completed in 1996. The VCM involved the excavation of a burn pit that was identified by charred debris and discolored soil. Excavated waste debris and soil were disposed as waste material. Additional sampling of the VCM excavations was conducted in 2000 at the request of the NMED to verify the absence of volatile organics and HE material. No anomalous concentrations of constituents of concern were identified. In March 2001, a bulldozer was used to scrape the site in 6-inch lifts to confirm or deny the existence of other unreported burn pits. The site was excavated to between 3 and 4 feet below grade. No further burn pits were located.

Constituents of Concern

HE compounds
VOCs
RCRA metals

Current Hazards

There are no hazards at this site related to contamination of surface or subsurface soils.

Current Status of Work

ER Site 114 was proposed for NFA in June 1996 after sampling events in 1992 and 1994 and VCMs in 1995 and 1996. Information requested by the NMED related to data submittals, additional sampling performed in 2000, and a risk assessment and intrusive investigation to search for other unidentified disposal areas in 2001 are complete. A response to the Request for Supplemental Information was submitted to NMED in December 2002.

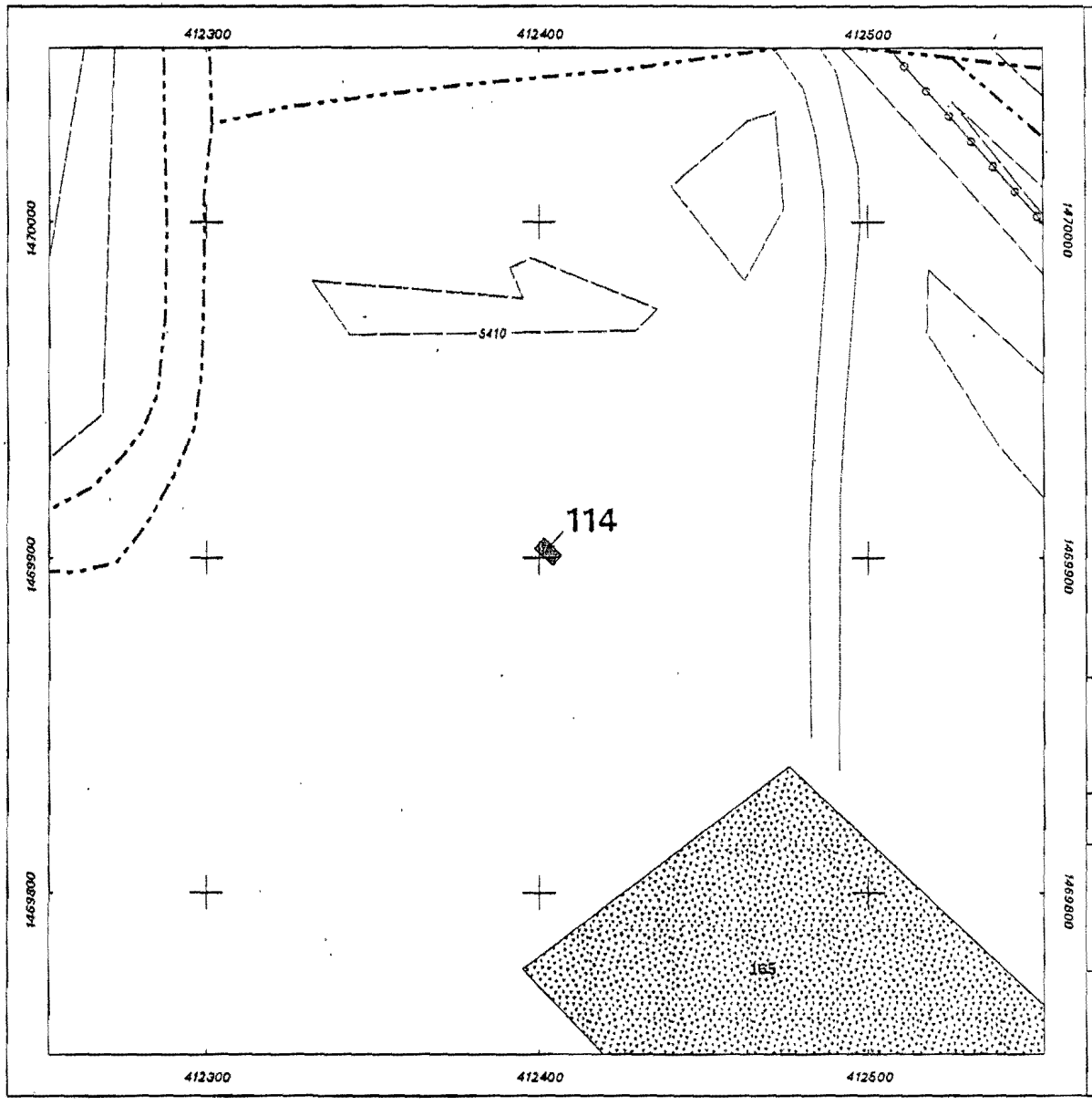
Future Work Planned

No additional work is planned for ER Site 114.

Waste Volume Estimated/Generated

Wastes generated at ER Site 114 include 1 cubic yard of non-regulated soil and debris and 2 cubic yards of hazardous soil. All wastes have been disposed off-site.

Information for ER Site 114 was last updated Feb 14, 2003.



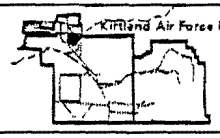
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 114
- Other SWMUs

Center of Site:
X = 412403
Y = 1469902

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 114

Explosive Burn Pit

(TA-II)

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

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Sandia National Laboratories

ER Site No. 135: Bldg 906 Drain System

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Sue Collins
Office Phone: 284-2507 or 284-2546

Site History

Building 906 was constructed in 1950 and was located in the central part of Technical Area-II (TA-II), about 125 feet west of Building 920. It was approximately 900 square feet and contained a fume hood sink and two floor drains, all of which are connected to a small drainfield. No toilet or septic tank was ever installed. The original system, on the west side of the building, consisted of a drywell that was connected to the laboratory drains. The newer leachfield, installed to replace the drywell, consisted of 4-in. perforated lines in two gravel-filled trenches; the trenches were approximately 2-ft by 2-ft by 20-ft long and cut through the original drywell. The drywell was used from 1950 to 1978, when the newer leachfield was installed to serve a shower installed in the north end of the building.

Little information regarding early operations at Building 906 and the types and amounts of hazardous materials that may have been used there is available. It is known that test materials returned from the Nevada Test Site were stored and cleaned in the building during the 1950s. These materials may have been contaminated with metals, including lead, zinc, and lithium, and radioactive constituents, including uranium, tritium, and fission products. High explosives (HE) compounds and hexafluorine also may have been stored in the building during this time. In the 1960s, paints and organic compounds, trichloroethylene, trichloroacetic acid, and acetone were stored there. Between 1978 and 1980, leaking transformers containing polychlorinated biphenyls (PCBs) may have been temporarily stored in the building. Herbicides also may have been used near the west side of the building. During the 1980s, the building was used as a chemical laboratory and for conducting electrical battery research and development. The building was

decontaminated and demolished in 1999.

In order to determine that no potential threats exist to human health or the environment at this site, environmental testing was conducted. Testing included a passive soil vapor survey, geophysical survey, and soil sampling.

From November 11 to December 3, 1993, a passive soil vapor survey (SVS) investigation was conducted in the area surrounding Building 906. No volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCs) were identified from the SVS investigation in the vicinity of the Building 906 leachfield.

The area surrounding Building 906 was part of a geophysical Surface Towed Ordnance Locator System (STOLS™) survey conducted in December 1993 and an electromagnetic (EM) survey conducted in December 1993. No anomalies related to buried material, other than underground utilities, were identified.

On March 7 and 8, 1994, a borehole (TA2BH01) was drilled west of Building 906, located in the area of the regional drywell and the center of the leachfield. The borehole was drilled to a total depth of 151 ft below grade. Soil samples were collected at depths of 3, 8, 14, 23, 30, 39, 52, 58, and 74.5 ft below grade. Analyses performed included: tritium for all samples; metals, HE compounds, radioisotopes, and total uranium for samples collected to a depth of 52 ft below grade; and VOCs and SVOCs for samples collected to a depth of 14 ft below grade.

Toluene was the only VOC detected, with concentrations of 6.2 parts per billion (ppb) (6.5 feet below grade) and 6.9 ppb (10.25 ft below grade). Fluoranthene and bis (2ethylhexyl) phthalate were the only SVOCs detected, fluoranthene at 370 (milligrams per kilogram) mg/kg (6 ft below grade) and bis (2ethylhexyl) phthalate at 530 mg/kg (11.6 ft below grade). Bis-(2ethylhexyl) phthalate is a common contaminant from latex gloves found as a result of sampling activities and is not usually considered an environmental contaminant. Additionally, bis-(2ethylhexyl) phthalate is not a constituent of concern at this site. No HE compounds were detected in any of the borehole soil samples.

Tritium results ranged from <210 pico curies per gram (pCi/g) to 340 pCi/g. A background tritium concentration has not been established for SNL/NM. However, results of a dose assessment using the RESRAD model indicate acceptable levels of tritium in soil based on DOE guidance. No other radioactive constituents were observed.

Comparison of analytical results to Resource Conservation and Recovery Act (RCRA) proposed Subpart S action levels shows that toluene and fluoranthene are both below the prescribed action levels of 20,000 mg/kg and 3000 mg/kg, respectively. The results of the surveys and soil sampling indicate that there was no significant release of hazardous constituents from this site which pose a threat to human health or the environment.

The regional aquifer in the vicinity of ER Site 135 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 135(TA2-NW1-595) is approximately 520 feet (ft) below ground surface (fbgs) or 4,889.3 ft above mean sea level (famsl). A shallow water-bearing zone also exists in the vicinity of ER Site 135. The depth to the shallow zone ranges from approximately 267 to 320 fbgs (5,081 to 4,889 famsl). Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 135 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains.

Surficial deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick.

The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from the Sandia and Manzanita Mountains. ER Site 135 is near the easternmost limit of the ancestral Rio Grande deposits. Several rift-bounding faults are located east of ER Site 135. The nearest is the Sandia fault-zone, characterized by north-trending, west-dipping normal faults. The westernmost fault is located approximately 1.2 miles east of the site.

Constituents of Concern

Lead
Lithium
Uranium
Tritium
Fission Products
HE
TCE
TCA
PCBs

Current Hazards

There are no hazards at this site related to contamination of surface or subsurface soils.

Current Status of Work

Investigations to date have included soil vapor surveys and soil sampling. ER Site 135 was proposed for NFA in August 1994.

Future Work Planned

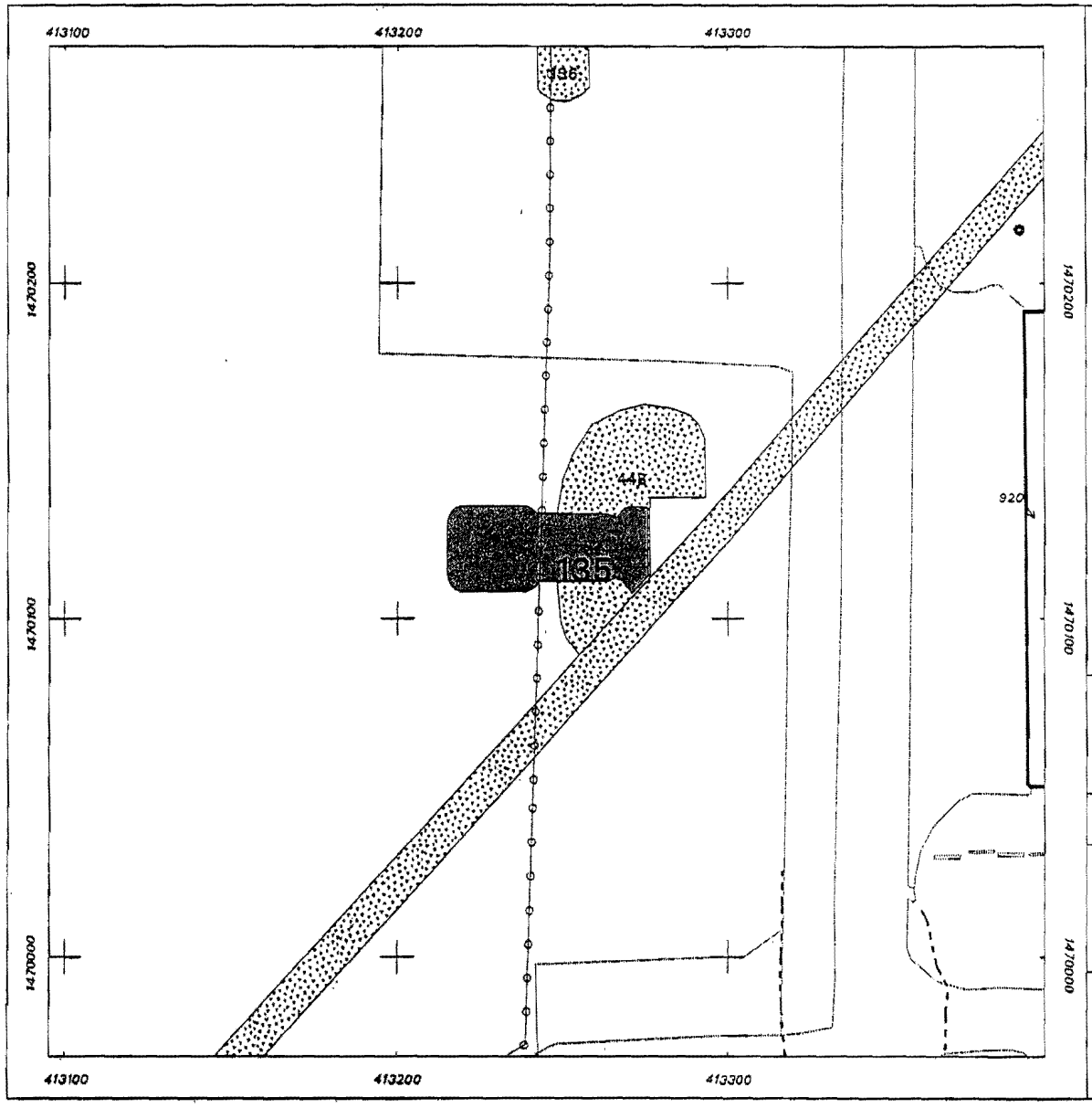
ER Site 135 was proposed for NFA in August 1994. Additional soil sampling was performed in FY 2000. An RSI data submittal with a revised risk assessment will be submitted to NMED. Any

future investigations will be at the discretion of NMED.

Waste Volume Estimated/Generated

None.

Information for ER Site 135 was last updated Jan 24, 2003.



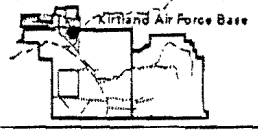
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 135
- Other SWMUs

Center of Site:
X = 413245
Y = 1470121

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 135
Building 906
Drain System

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

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ER Site No. 136: Bldg 907 Septic System

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Sue Collins
Office Phone: 284-2507 or 284-2546

Site History

Building 907 (ER Site 136) was constructed in 1948 and is in the northern portion of Technical Area II (TA-II). The building was initially designed for the final assembly of nuclear weapons and contains 1.5-ft-thick walls that separate the various assembly bays. An earthen berm on the south side of the building was originally built to isolate the building in case of an accidental detonation of high explosives (HE).

Building 907 was constructed with two effluent release systems: a septic system and an HE drain system. The HE system was designed and constructed to drain the assembly bays, and passes through a catch box about 200 ft south of Building 907. The catch box was designed to collect HE particulates by precipitation from the discharged water. Sometime in 1991 or 1992, the catch box collapsed. The HE system extends an additional 600 ft to the southwest, passing under Building 906. The discharge drains into a 200-ft-long, open ditch west of Building 919.

The septic system extends about 250 ft southwest from the southwest corner of Building 907, and consists of a 450-gal septic tank, two 1000-gallon septic tanks located downstream of the first for additional capacity, a 13-ft-deep by 5-ft-wide seepage pit, and approximately 400 ft of clay drainage tile in trenches.

During the early 1950s, eight to ten employees worked three 8-hour shifts per day assembling and packaging nuclear weapons. Floor sweeping was not allowed in Building 907 because it could generate static electricity discharges that could detonate the explosives. Therefore, any explosive

residue and dust were flushed into floor drains with a water hose and discharged into the HE drain system. A mixture of kerosene and water may have been used to clean the floors.

In the late 1950s, when bomb assembly operations were discontinued, the building was converted into an explosives testing and development facility. These operations involved mixing small quantities of explosives in separate handling areas. During this period, according to interviews, explosive residues were not flushed down the floor drains, but small amounts of cleaning compounds may have been discharged to the sanitary system.

Work areas and components in Building 907 were typically cleaned with organic compounds, including isopropyl alcohol, toluene, petroleum distillates, nitromethane, acetone, and methanol. Carbon tetrachloride was used to clean the work tables and components. Longtime employees indicated liberal use of carbon tetrachloride during operations. It was used (over 2 to 3 gal per month) until about 1951, when it was replaced by trichloroethylene (TCE) because the carbon tetrachloride caused headaches in personnel.

Between 1980 and 1985, Building 907 contained a darkroom for processing X-ray and high-speed black and white film. During this time, developing solutions and rinse water were discharged through a sink to the Building 907 septic system. After 1985, only rinse water was discharged from the darkroom to the septic system until closure of the system in 1992 when the building was connected to the City of Albuquerque sanitary sewer system.

From 1982 to 1992, cooling water from several lasers also was discharged to the Building 907 septic system. No contaminants are known to have been discharged with the cooling water. Based on aerial photographs, the vegetation over the 200-ft-long septic system ranges from 20 to 30 ft in width. In addition, the photographs show vegetation in the areas above the sanitary and HE drain lines southwest of Buildings 906 and 907. Between 1948 and 1992, an estimated 13 million gallons of effluent may have been discharged to the septic system.

The regional aquifer in the vicinity of ER Site 136 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 136(TA2-NW1-595) is approximately 520 feet (ft) below ground surface (fbgs) or 4,889.3 ft above mean sea level (famsl). A shallow water-bearing zone also exists in the vicinity of ER Site 136. The depth to the shallow zone ranges from approximately 267 to 320 fbgs (5,081 to 4,889 famsl). Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 136 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains.

Surficial deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick.

The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years

ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from the Sandia and Manzanita Mountains. ER Site 136 is near the easternmost limit of the ancestral Rio Grande deposits.

Several rift-bounding faults are located east of ER Site 136. The nearest is the Sandia fault-zone, characterized by north-trending, west-dipping normal faults. The westernmost fault is located approximately 1.2 miles east of the site.

Constituents of Concern

HE compounds: RDX, HMX, nitroguanidine, and nitrocellulose and, plastic bonded explosives: (PBX), nitromethane, and baratol

Cleaning compounds: methanol, acetone, isopropyl alcohol, toluene, petroleum distillates, TCE, and carbon tetrachloride

Photochemicals: include solutions with silver, cadmium, chromium, and cyanide

Metals: including arsenic, barium, lead, mercury, selenium, and silver

Possibly radionuclides

Current Hazards

There are no hazards at this site related to contamination of surface or subsurface soils.

Current Status of Work

Investigations have included passive soil vapor surveys, soil sampling, and surface radiation surveys. Waste was removed from the septic tank, and the empty tank inspected by the New Mexico Environment Department (NMED) in late 1995; concrete samples were collected to verify that no COCs remained.

Based on an absence of contamination, ER Site 136 was proposed for No Further Action (NFA) in June 1995. Regulatory approval of the NFA is pending results of the TA-II groundwater investigation.

Future Work Planned

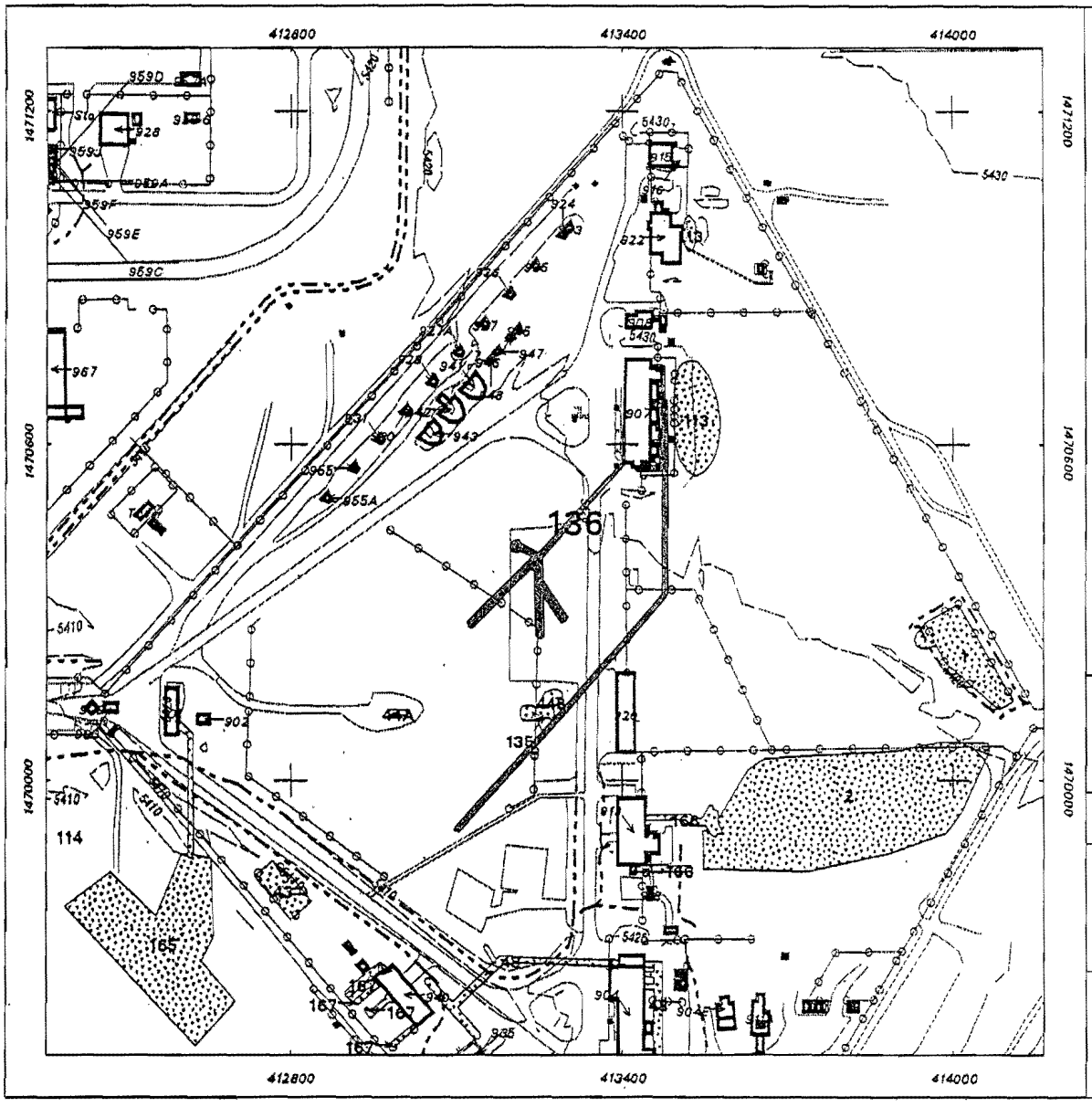
Additional soil sampling was performed in 2000. An RSI data submittal with a revised risk assessment will be submitted to NMED. Additional investigations will be at the discretion of NMED. The clean out of the HE catch pits is scheduled for 2004. Material from the HE retention pit will be removed and characterized for disposal in 2002.

Waste Volume Estimated/Generated

Eight drums of liquid radioactive septic waste were generated from the septic tank. Also one drum of radioactive PPE was generated from this activity. All waste has been disposed off-site.

Information for ER Site 136 was last updated Jan 24, 2003.

Information for ER Site 136 has been accessed 139 times since April 1998.



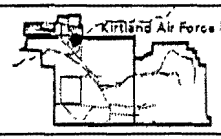
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 136
- Other SWMUs

Center of Site:
X = 413262
Y = 1470413

0 150 300
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 136
Building 907
Septic System

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

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ER Site No. 159: Bldg 935 Septic System

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Sue Collins
Office Phone: 284-2507 or 284-2546

Site History

Building 935 was constructed in 1963, and is located in the southwestern portion of Technical Area II (TA-II). It was a test facility for conducting experiments with electronic and explosive type neutron generators. The building is 1,875 sq. ft. and had space for an office, data acquisition and instrumentation, a machine shop, a restroom, a mechanical equipment room, an explosives assembly area, and three test cells. The building was originally designed with two test cells; a third was added in 1967. Engineering drawings also showed a darkroom sink; however, the darkroom never became operational. In addition to testing explosive type neutron generators, the facility supported other projects including preliminary packaging of neutron generators for environmental and systems tests; special weapon component testing using a centrifuge; and neutron measurements for Stockpile Integrated Laboratory Tests. Approximately 100 explosives test shots were conducted inside Building 935 each year, and electronic development work was occasionally conducted at the building. West of Building 935 was a 720-sq-ft trailer used for auxiliary storage and occasionally as a laboratory; two high explosives (HE) storage magazines (Buildings 936 and 937) are southeast of the building. These magazines housed explosive components used in the testing.

The neutron generator experiments were conducted in the test cells which have floor drains. Before the third cell was added in 1967, the drains discharged into a concrete-lined retention tank formerly located beneath the present location of the third test cell. The original retention tank was 27 cu ft and the liquid effluent discharged into an unlined, gravel-filled drywell west of the retention tank. During construction of the third test cell on the southwest side of Building 935, the

original retention tank and drywell were moved southwest of the building. The test cell addition was constructed over the original locations of the retention tank and dry well. The present concrete-lined retention tank is visible on the surface and contains a metal discharge pipe that discharges into a gravel-filled drywell.

As a result of the neutron generator experiments, some fragments, including HE compounds, tritium, and possibly polychlorinated biphenyls (PCBs), may have been discharged into the floor drains. In November 1989, the floor drains in the three test cells were sealed with metal plates and silicon sealant. Prior to sealing the test cell floor drain, standing water was observed in the drain trap. The origin of the water is not known.

The restroom and furnace room each contain floor drains; both drains discharged into the septic tank south of Building 935. The septic tank is a two-stage, below-grade, concrete tank with an estimated volume of 700 gallons, which discharged into a gravel-lined seepage pit. The seepage pit is 5-ft diameter by 13 ft-deep. In late 1991, the septic system for the building was shut down because potential contaminants were identified in the septic tank waste.

Experiments at Building 935 consisted primarily of explosively-activated neutron generators, which subsequently destroyed the test devices. The fragments were collected and disposed of offsite. Residual material from the experiments included metal that typically contained less than 100 microCurie activity of tritium. The amount of tritium released from an explosive neutron generator test was up to 4.8 microCurie. Building 935 was the largest single source of tritium waste (volume and total activity produced) at Sandia National Laboratories/New Mexico (SNL/NM).

The primary metals used in the neutron generator experiments included lead, zirconium, zinc, and lesser amounts of titanium, tin, niobium, and silver; and trace amounts of cobalt, bismuth, antimony, and manganese. Typical types of HE included hexanitrostilbene (HNS), hexanitroazobenzene (HNAB), TNT, and pentaerythritol tetranitrate (PETN). The amount of HE compounds used during these experiments was less than 2.5 grams. During an explosive test, carbon, water, nitrogen, and carbon monoxide were produced. Potting materials occasionally used with explosive neutron generators included epoxy resins, curing agents (diethanolamine hardener), and alumina (Al203).

The regional aquifer in the vicinity of ER Site 159 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 159(TA2-NW1-595) is approximately 520 feet (ft) below ground surface (fbgs) or 4,889.3 ft above mean sea level (famsl). A shallow water-bearing zone also exists in the vicinity of ER Site 159. The depth to the shallow zone ranges from approximately 267 to 320 fbgs (5,081 to 4,889 famsl). Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 159 and are screened in the shallow water-bearing zone. The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains. Surficial deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick. The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio

Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from the Sandia and Manzanita Mountains. ER Site 159 is near the easternmost limit of the ancestral Rio Grande deposits. Several rift-bounding faults are located east of ER Site 159. The nearest is the Sandia fault-zone, characterized by north-trending, west-dipping normal faults. The westernmost fault is located approximately 1.2 miles east of the site.

Constituents of Concern

HE compounds
Metals (silver, lead, niobium, cobalt, bismuth, antimony, and zirconium)
Radionuclides, primarily tritium
Organic compounds from potting materials such as epoxy resins and curing agents
PCBs and oils

Current Hazards

There are no hazards at this site related to contamination of surface or subsurface soils.

Current Status of Work

Investigations to date have included passive soil vapor surveys, soil sampling, and surface radiation surveys.

Waste was removed from the septic tank, and the empty tank was inspected by New Mexico Environmental Department (NMED) in late 1995. Tank concrete samples were collected to verify that no COCs remain.

Based on an absence of contamination, ER Site 159 was proposed for No Further Action (NFA) in June 1995. Regulatory approval is pending results of the TA-II groundwater investigation.

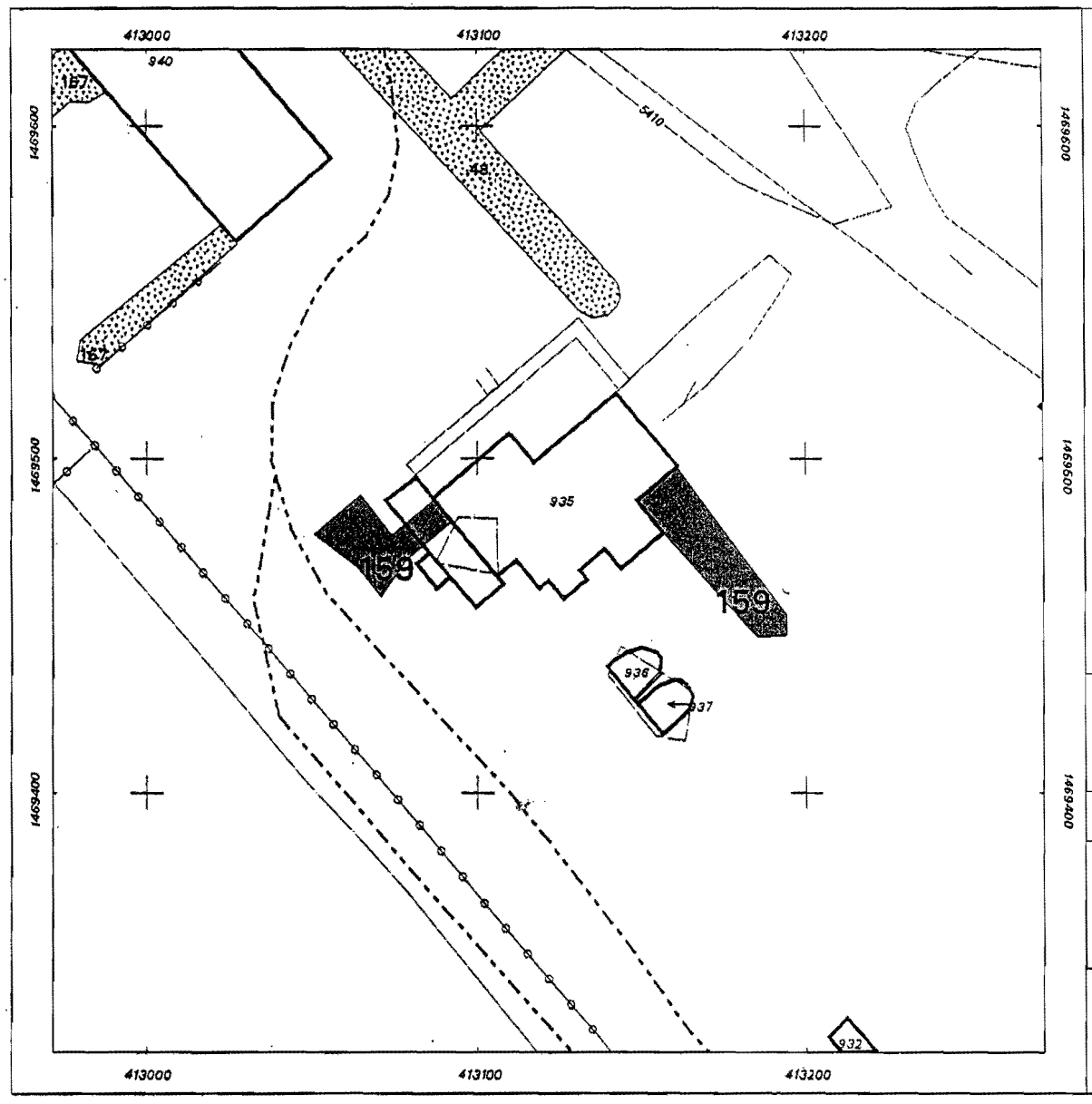
Future Work Planned

Additional soil sampling was performed in 2000. An RSI data submittal with a revised risk assessment will be submitted to NMED.

Waste Volume Estimated/Generated

Sixteen drums of septic waste were generated and disposed.

Information for ER Site 159 was last updated Jan 24, 2003.



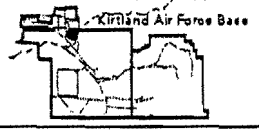
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 159
- Other SWMUs

Center of Site:
X = 413122
Y = 1469473

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 159
Building 935
Septic System

SMorrison 18-SEP-2001

SNL EGIS DEPT 6135

clstenop-cc.ami MAPID = 010870

ER Site No. 165: Bldg 901 Septic System

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Sue Collins
Office Phone: 284-2507 or 284-2546

Site History

Building 901, the Systems Analysis Facility, was constructed in 1948 and is located just west of the main entrance to Technical Area II (TA-II). In the late 1940s and early 1950s, Building 901 was an entry and exit checkpoint for personnel working on nuclear weapons assembly in TA-II. It was also an administration building, housing a shower facility, a laundry for worker coveralls and clothing, and office space.

In the early 1960s, after weapons assembly projects were terminated, the building reportedly was used as an high explosive (HE) synthesis laboratory. The laboratory was not used for production, but was used only as a secondary HE pressing facility for research and development. Since about the mid-1960s, the building has been used for office space and as a workshop. The building is slated for demolition.

The floor drains in Building 901 discharged into a 1000-gal septic tank which subsequently discharged into an extensive drainfield system. The sanitary leachfield lines consisted of 4-in. diameter vitrified clay; the infiltration area is located outside TA-II, southwest of the perimeter fence. The septic system was designed to handle the large volume of water generated by the employees that showered and washed their work clothes in the building.

During the late 1940s and mid-1950s, the amount of effluent discharged into the septic system was unknown, but it reportedly may have received millions of gallons of effluent. Because all floor and shower drains reportedly discharged into the septic system, the septic tank and leachfield

probably received contaminants, which may have included degreasing compounds, HE residue, and phosphate detergents generated by laundry washing and showering. Metal complexing may have occurred because of the formation of soluble phosphate complexes. However, radionuclides, such as depleted uranium and tritium, reportedly were not used. The septic system was shut down in late 1992 when the building drains were connected to the City of Albuquerque sanitary sewer system.

Although it was not a production-scale facility, HE compounds and other chemicals reportedly were used at the HE synthesis laboratory. The HE compounds included pentaerythritol tetranitrate (PETN), hexanitroazobenzene (HNAB), cyclotetramethylene tetranitramine (HMX), cyclotrimethylene trinitramine (RDX), Compound B, baratol, and black powder. Some mercury, used in manometers, may have been accidentally spilled on the floor. Other potential constituents of concern (COCs) that may have been discharged include lead azide, acetone, and heavy metals. Cobalt may have been used with the lead azide, but reportedly was not washed down the floor drains. Former Sandia National Laboratories/New Mexico (SNL/NM) employees also have stated that degreasers were typically used to clean the floors in the building.

In order to determine that no potential threats exist to human health or the environment at this site, environmental testing was conducted. Testing included a surface radiation survey, passive survey, septic tank sampling, and borehole drilling and soil sampling. Preliminary results indicated that further investigation was not necessary and that ER Site 165 should be removed from the ER site list.

Waste was removed from the septic tanks, and the empty tanks were inspected by New Mexico Environmental Department (NMED) in late 1995. Tank concrete samples were collected to verify that no COCs remained.

The regional aquifer in the vicinity of ER Site 165 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 165 (TA2-NW1-595) is approximately 520 feet (ft) below ground surface (fbgs) or 4,889.3 ft above mean sea level (famsl). A shallow water-bearing zone also exists in the vicinity of ER Site 165. The depth to the shallow zone ranges from approximately 267 to 320 fbgs (5,081 to 4,889 famsl). Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 165 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains.

Surficial deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick.

The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from

the Sandia and Manzanita Mountains. ER Site 165 is near the easternmost limit of the ancestral Rio Grande deposits.

Several rift-bounding faults are located east of ER Site 165. The nearest is the Sandia fault-zone, characterized by north-trending, west-dipping normal faults. The westernmost fault is located approximately 1.2 miles east of the site.

Constituents of Concern

Volatile organics:

acetone
dichloromethane (methylene chloride)
TCE
2butanone
tetrachloromethane (carbon tetrachloride)
toluene
xylene
hexane

Alcohols HE compounds:

PETN
HNAB
HMX
RDX
Compound B
Baratol
possibly black powder
phosphate detergents
mercury
lead azide
cobalt

Current Hazards

There are no hazards at this site related to contamination of surface or subsurface soils.

Current Status of Work

Based on the analytical sampling results, there appears to be no contamination resulting from the past use of the above chemicals. Therefore, this site has been proposed for an NFA determination.

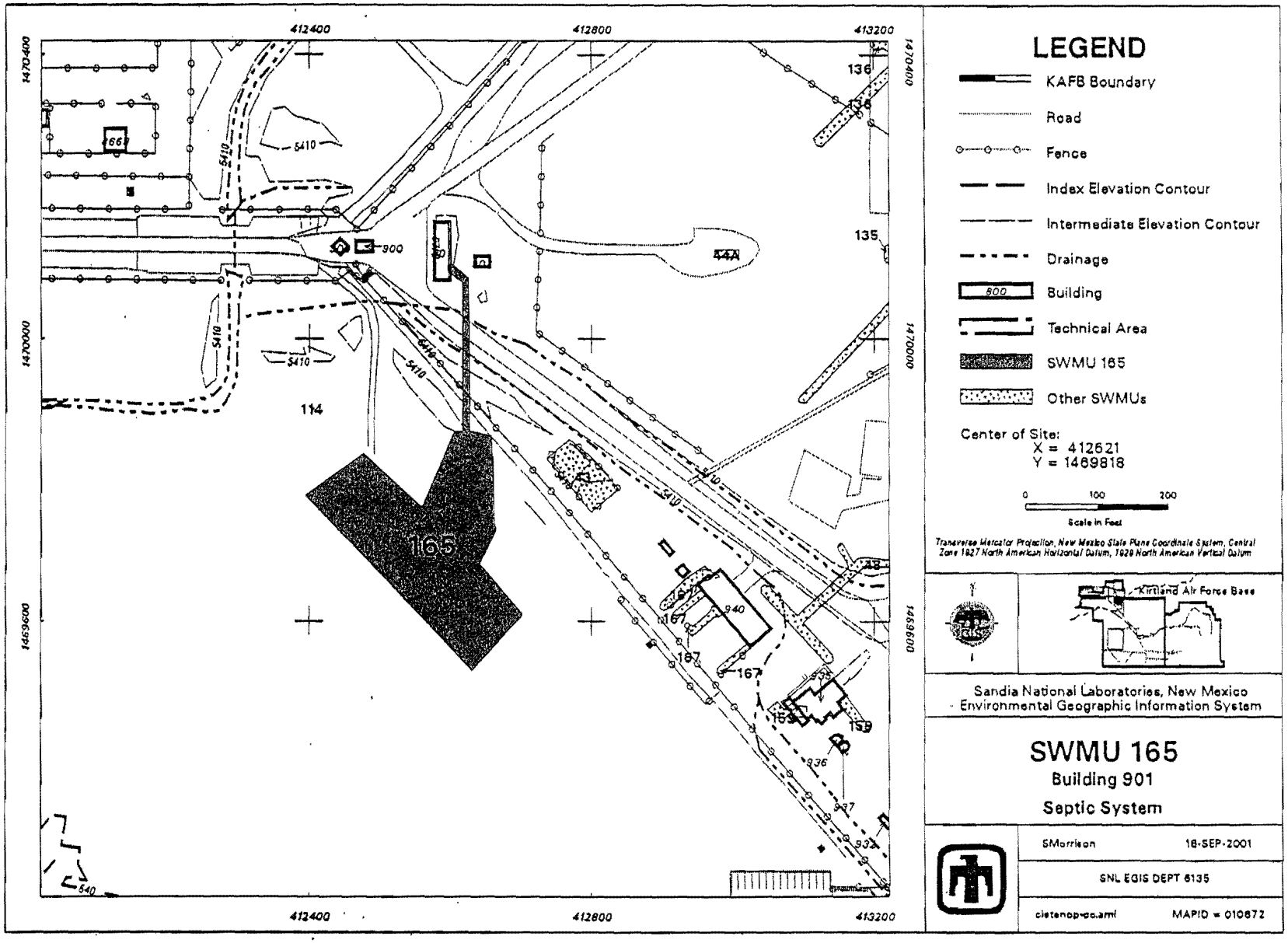
Future Work Planned

Additional soil sampling was performed in 2000. An RSI data submittal with a revised risk assessment will be submitted to NMED.

Waste Volume Estimated/Generated

Nine 55-gal drums of mixed waste were generated and all have been disposed off-site.

Information for ER Site 165 was last updated Jan 24, 2003.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44A
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940
936
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931
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167
5410
540
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 165
Other SWMUs
Center of Site:
X = 412621
Y = 1469818
0
100
200
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 165
Building 901
Septic System
SMorrison
18-SEP-2001
SNL EGIS DEPT 6135
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MAPID = 010672

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ER Site No. 166: Bldg 919 Septic System

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Sue Collins
Office Phone: 284-2507 or 284-2546

Site History

Building 919, the Explosive Devices Building, was constructed in 1969 and is located in the central part of Technical Area II (TA-II). The building is 6,530 sq. ft. and was used for testing thermal batteries, neutron generators, laser research, and disassembling HE devices. It also contained a chemistry laboratory, a darkroom for photo-processing, one bathroom, and offices. The wastewater from the building discharged to the building septic system which is east of the building and consisted of two 1250-gal septic tanks, a seepage pit, and a leachfield. The leachfield consists of four 2-ft-wide by 15-ft-long gravel-filled trenches in a herringbone containing 4-in. diameter PVC perforated pipes.

A small drywell southeast of the building may have served a sink or fumehood in the south end of the building. No information is available on constituents of concern that may have been discharged to the drywell.

The building was connected to the City of Albuquerque Sanitary Sewer System in 1990, and use of the septic and drain systems were discontinued at that time.

Little information is available regarding early operations and the types and amounts of potentially hazardous materials that may have been used at the building or discharged to the septic and drain systems. Limited indoor HE testing was conducted in the southeast corner of Building 919. HE components were removed from weapons using the organic compound n-methyl-pyrolidone. This compound, typically stored in a 55-gal drum, was biodegradable and was only used once every

three or four months. Other potential COCs may include metals related to work on thermal batteries or photo-processing and possibly tritium related to work on neutron generators.

The regional aquifer in the vicinity of ER Site 166 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 166 (TA2-NW1-595) is approximately 520 feet (ft) below ground surface (fbgs) or 4,889.3 ft above mean sea level (famsl). A shallow water-bearing zone also exists in the vicinity of ER Site 166. The depth of the shallow zone ranges from approximately 267 to 320 fbgs (5,081 to 4,889 famsl). Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 166 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial sedimentary deposits ranging from clay to gravel derived from the the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains. The surface deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick.

The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from the Sandia and Manzanita Mountains. ER Site 166 is near the easternmost limit of the ancestral Rio Grande deposits.

Several rift-bounding faults are located east of ER Site 166. The nearest is the Sandia fault-zone, characterized by north-trending, west-dipping normal faults. The westernmost fault is located approximately 1.2 miles east of the site.

Constituents of Concern

HE
Organic Compounds
Tritium
Metals

Current Hazards

There are no hazards at this site related to chemical or radioactive contamination of surface or subsurface soils. The open landfill excavation could be a hazard to carelessly operated vehicles. The shower and dress-out trailer east of Bldg. 919 contains cylinders of compressed breathing air and some instrument calibration gases. A shed on the southeast corner of Bldg. 919 and the trailer northeast of Bldg. 919 contain a few cylinders of P-10 calibration gas. Bldg. 919 contains some radioactive instrument calibration sources but they are secured and properly posted.

Current Status of Work

Investigations have included passive soil vapor surveys and soil sampling. Waste was removed from the septic tanks, and the empty tanks were inspected by a New Mexico Environment Department (NMED)inspector in late 1995. Tank concrete samples were collected to verify that no COCs remain.

Based on an absence of contamination, ER Site 166 was proposed for No Further Action (NFA) in June 1995. Regulatory approval of the NFA is pending results of the TA-II groundwater investigation. In May 2000, the leachfield and drywell were excavated to accurately map their configuration and depth for future sampling. In September 2000, the leachfield and drywell were resampled to verify that no constituents of concern remain in concentrations that pose a risk to human health or the environment.

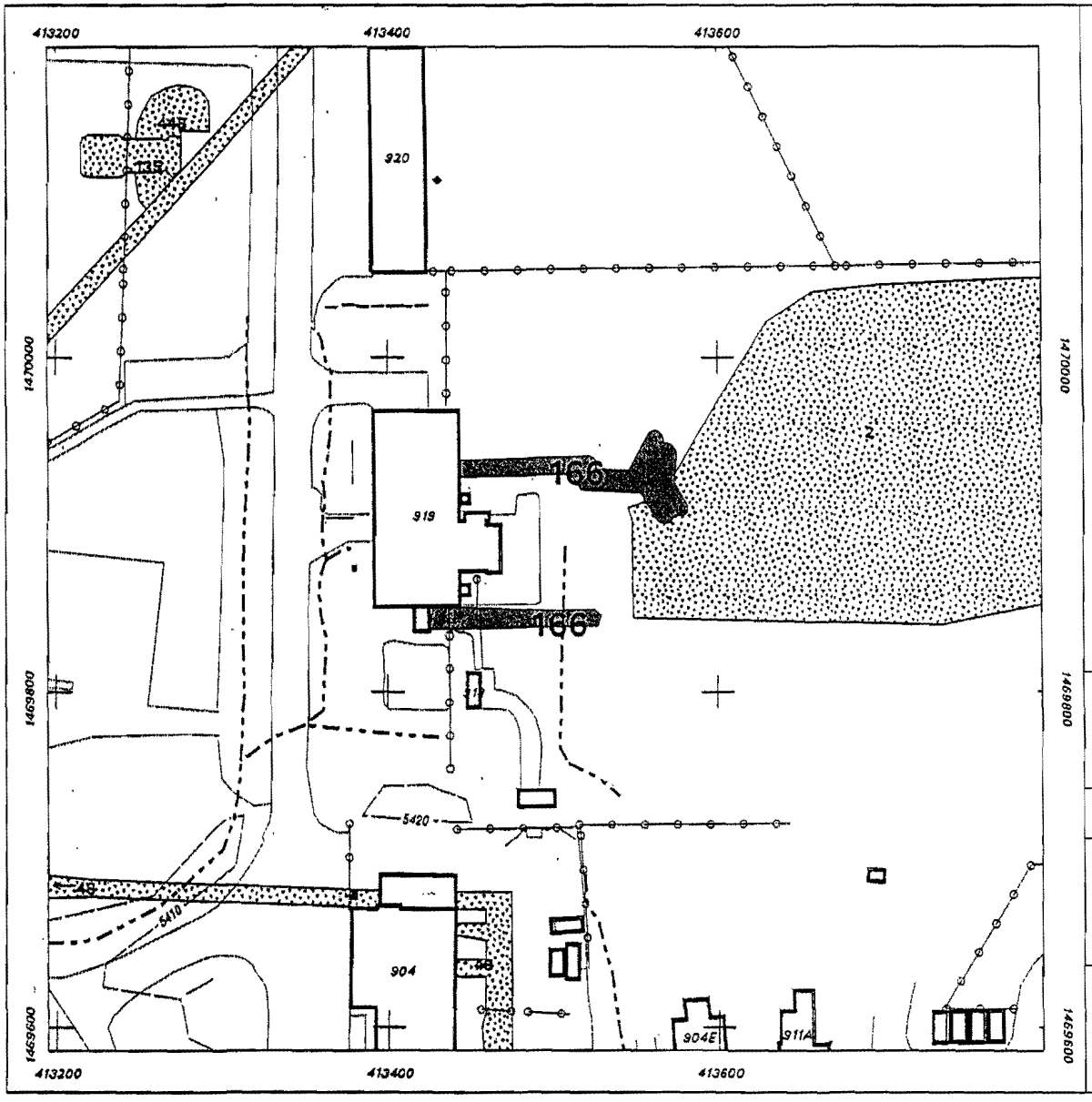
Future Work Planned

Additional sampling results from 2000 and a revised risk assessment will be submitted to NMED once evaluation and documentation is complete. Further investigations may be necessary at the discretion of NMED.

Waste Volume Estimated/Generated

Twelve drums of very mildly radioactive septage were generated. All waste has been disposed off-site.

Information for ER Site 166 was last updated Jan 24, 2003.



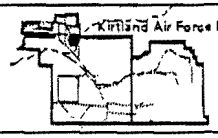
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 166
- Other SWMUs

Center of Site:
X = 413495
Y = 1469886

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 166
Building 919
Septic System

SMorrison	18-SEP-2001
SNL EGIS DEPT 5135	
cistenop-cc.aml	MAPID = 010873

ER Site No. 167: Bldg 940 Septic System

ADS: 1303
Operable Unit: Tech Area II

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Ernest Vinsant or Sue Collins
Office Phone: 284-2507 or 284-2546

Site History

Building 940, the Explosive Testing Laboratory, is located on the southwestern side of TA-II and was constructed in 1965. During explosive testing in the 1960s, the building was contaminated with lead, which could have entered the septic system. The septic system also served fume hoods in a chemistry lab. The building was connected to the City of Albuquerque sanitary sewer system in 1990, and use of the septic system was discontinued at that time. The septic system consists of a 900-gal septic tank and an associated seepage pit. In addition, a high explosives (HE) drain system discharged effluent from the building floor drains. The HE drain system was designed to discharge wash water used to hose down the floors after HE assemble procedures into three 16-ft deep seepage pits, located southwest of the building. Part of the HE drain system consisted of a concrete trench that discharged to a catch box where a cloth filter removed the large particles of HE before the liquid drained to a seepage pit. This HE drain system reportedly was never used. Two other seepage pits received effluent from other floor drains and sinks.

The regional aquifer in the vicinity of ER Site 167 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 167 (TA2-NW1-595) is approximately 520 feet (ft) below ground surface (fbgs) or 4,889.3 ft above mean sea level (famsl). A shallow water-bearing zone also exists in the vicinity of ER Site 167. The depth to the shallow zone ranges from approximately 267 to 320 fbgs (5,081 to 4,889 famsl). Monitor wells RA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 167 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at Sandia National Laboratories / New Mexico (SNL/NM), is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains.

Surficial deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick.

The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years ago. and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from the Sandia and Manzanita Mountains. ER Site 167 is near the easternmost limit of the ancestral Rio Grande deposits.

Several rift-bounding faults are located east of ER Site 167. The nearest is the Sandia fault-zone, characterized by north-trending, west-dipping normal faults. The westernmost fault is located approximately 1.2 miles east of the site.

Constituents of Concern

HE
Lead
Organic compounds

Current Hazards

There are no hazards at this site related to chemical or radioactive contamination of surface or subsurface soils.

Current Status of Work

Investigations have included passive soil vapor surveys and soil sampling. Waste was removed from the septic tank, and the empty tank was inspected by New Mexico Environmental Department (NMED) in late 1995.

Based on an absence of contamination, ER Site 167 was proposed for No Further Action (NFA) in June 1995. Regulatory approval of the NFA is pending results of the TA-II groundwater investigation.

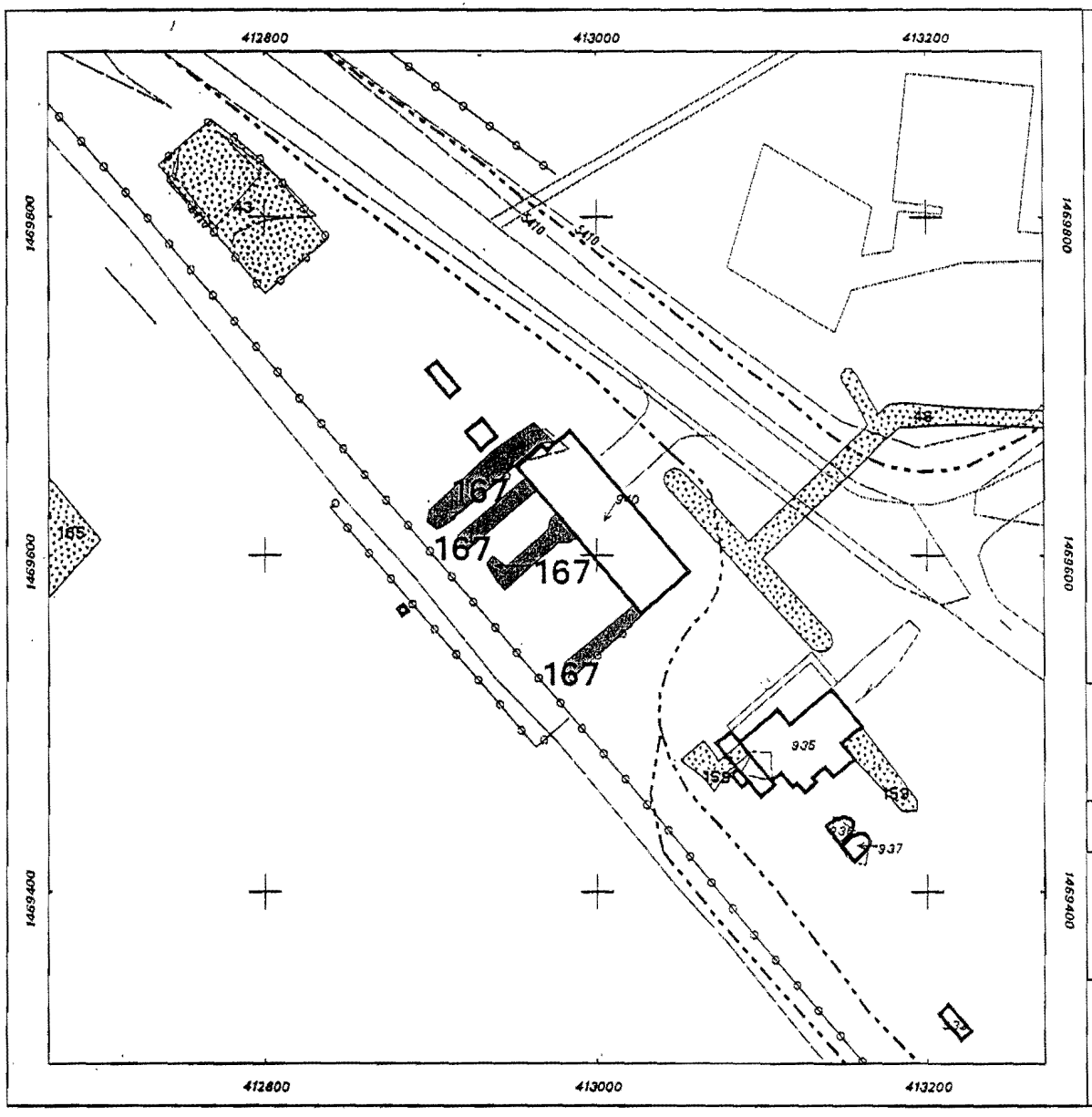
Future Work Planned

Additional sampling of the seepage pits was completed in September 2000. The results from this sampling and a revised risk assessment will be reported as an RSI to NMED once documentation is complete.

Waste Volume Estimated/Generated

Two 55-gal drums of hazardous waste were generated when cleaning out the septic tank. All waste has been disposed off-site.

Information for ER Site 167 was last updated Jan 24, 2003.



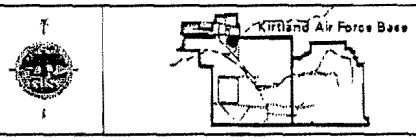
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 167
- Other SWMUs

Center of Site:
X = 412970
Y = 1469598

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 167
Building 940
Septic System

SMorrison 18-SEP-2001

SNL EGIS DEPT 6135

clstenop-cc.aml MAPID = 010674

OU-1306
TA 3/5

ER Site No. 18: Concrete Pad

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

Site 18 includes a 400-ft by 125-ft 8-in thick concrete surface and a five foot strip of soil surrounding the concrete pad. It is located south of the Short Sled Track. The concrete pad is used to store scrap material and equipment from Technical Area III (TA-III) sled track and other testing operations. The site is still in use.

Oil staining was observed on the pad in two areas. Several light stains, less than a foot (<0.3 m) in diameter, were observed in the northwest quarter of the pad. A transformer was reportedly stored at this location. An oil stain was also observed in the northeast corner of the pad where reportedly a locomotive used at the sled track was dismantled. No evidence was found to indicate any significant spills on or off the concrete pad; however, the probable transformer and locomotive dismantling locations were identified as Areas of Concern for further investigation.

Constituents of Concern

Petroleum hydrocarbons (hydraulic fluid)
High Explosives (HEs)
Polychlorinated Biphenyls (PCBs)
Metals: Cd, Cr, Zn
Radioactive materials: Co-60 and Depleted Uranium (DU)

Current Hazards

The site has been fully investigated and sampled. There are no current hazards at this site related to contamination of the surface or subsurface soils. There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

The site was surveyed for surface radioactive contamination in 1994. The radioactive soil anomalies around the pad were removed during the ER Project-Wide Surface Radiation Voluntary Corrective Measure (VCM) activities in 1996.

In April 1994, surface soil samples were collected for analysis of the following constituents: total petroleum hydrocarbons (TPH), PCBs, HEs, total metals, radionuclides via gamma spectroscopy, and isotopic uranium. The majority of the samples showed no levels above background. Some samples, however, did indicate small localized areas of metals, PCBs, and TPH around the northern corners, and east and west sides of the pad.

In January 1995, subsurface samples was collected in these areas at 2-ft intervals to a depth of 6 ft using a power auger; no contamination was detected below 3 feet. The Technical Areas III and V Resource Conservation and Recovery Act (RCRA) Facility Investigation report contains the data analysis, interpretation, and recommendations for action on ER Site 18. The report was submitted to the NMED in June 1996. The RCRA Facility Investigation (RFI) report identified one contaminent of concern, PCBs, as requiring corrective action.

A voluntary corrective measure (VCM) was conducted in October 1996 to remove the PCB-contaminated soil. Thirteen cubic yards of PCB-contaminated soil were excavated from the site. Confirmatory sampling showed the remediation was successful in cleaning the site to below 10 ppm PCBs. The cleanup and sampling were documented in the Site 18 VCM Report and NFA proposal, submitted to NMED in September 1997.

New Mexico Environmental Department (NMED) Notice of Deficiency (NOD) comments were received on the TA-III/V RFI Report in August 1997. Additional comments on the site were received in a second NOD in April 1998. In the second NOD, NMED required additional sampling to confirm that the extent of contamination had been adequately defined. In March 2001, additional samples were collected as agreed to with NMED and analyzed for VOCs, SVOCs, PCBs, metals and radionuclides. Also, radioactive anomalies on the concrete pad were removed.

Most of the remaining contamination at the site can be related to locomotive dismantling work conducted at the northeast end of the site and transformers that were stored along the northwest edge of the pad. Cadmium concentrations exceeding background remain within 5 feet of the edge of the pad at several locations. All but one PCB concentration are below the current regulatory limit of 1 mg/kg. The Environmental Protection Agency (EPA) reviewed the PCB concentrations that remained at the conclusion of the 1996 PCB VCM, including one location with a concentration of 2.1 mg/kg. They determined that, based upon the agreements at the time, the PCB cleanup that was done is appropriate and no further actions are necessary to address PCB contamination at SWMU 18.

A supplemental response to the 2nd NOD that documented the 2001 sampling and briefly summarized all sampling was submitted to the NMED in June 2002. The human health and ecological risk assessment indicated that this site is appropriate for industrial use.

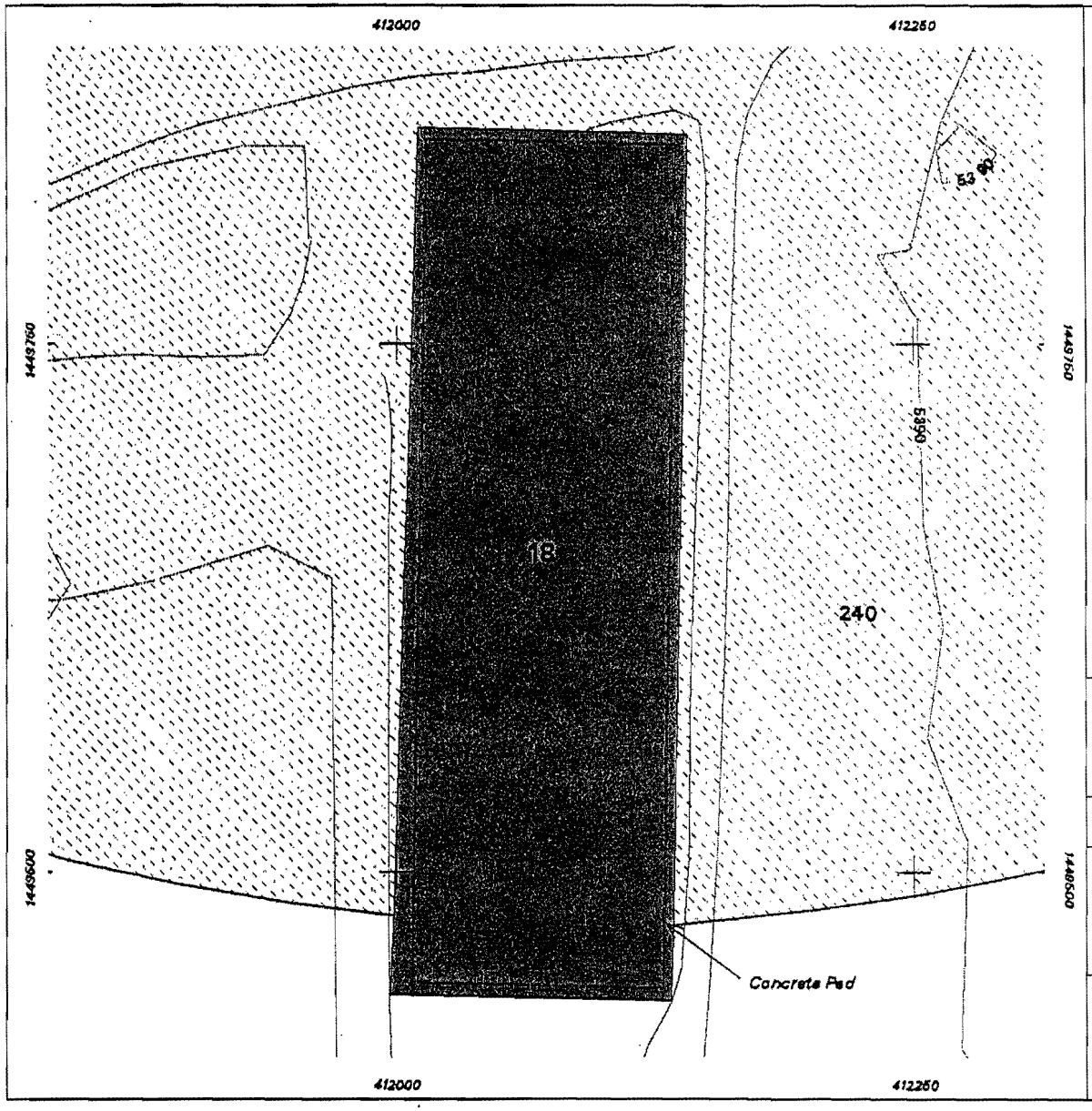
Future Work Planned

No further work is planned.

Waste Volume Estimated/Generated

Thirteen cubic yards of PCB-contaminated soil were generated as a result of the 1996 PCB VCM and two drums of radioactive waste were generated when radioactive anomalies on the concrete were removed in March 2001.

Information for ER Site 18 was last updated Jan 23, 2003.



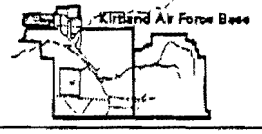
LEGEND

- Road
- Fence
- 10-foot Elevation Contour
- Surface Drainage
- Concrete Pad
- Technical Area III
- SWMU 18
- Other SWMU

Center of Site:
X = 412069
Y = 1449646

0 40 80
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 18

Concrete Pad
(TA-III)

DHeitrich 23-JAN-2003
SNL EGIS DEPT 6135
dh030178.ami Mapid = 030178

ER Site No. 26: Burial Site (Western Part of TA-III)

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

Based on reports of materials possibly buried south and west of the Long Sled Track in TA-III, ER Site 26 was designated as a Solid Waste Management Unit (SWMU). This site is co-located within the boundary of the active ER Site 83 (The Long Sled Track).

Constituents of Concern

Radioactive materials
Metals (Pb, Be)

Current Hazards

Potential depleted uranium could be found in the near-surface (>1 ft) ground on the south end of the site due to impact testing done at the Long Sled Track.

Current Status of Work

Four geophysical surveys (1992, 1994, 1999, and 2000) were completed to locate possible burial areas at the site. Although several anomalies were identified, they were small and scattered, and no evidence of a significant quantity of buried materials was found.

The TA-III/V Resource Conservation and Recovery Act (RCRA) Facility Investigation Report of June 1996 recommended that this site be investigated after the Long Sled Track (ER Site 83) had been decommissioned. Comments in the New Mexico Environment Department (NMED) Notice of Deficiencies (NODs) (August 1997 and April 1998) required additional investigation of this site prior to decommissioning of ER Site 83.

In the late summer of 1999, exploratory trenching was done in the northern portion of the site to determine if hazardous or radioactive materials were buried. The trenches were located where the geophysical anomalies were found. No hazardous or radioactive materials were uncovered, only scrap metal debris.

Heavy equipment and armored tanks are located at the southern portion of the site, which impeded complete geophysical surveying and exploratory trenching. An agreement was made with the NMED in summer of 2000 to investigate two large geophysical anomalies that were found in the south, the locations of which were accessible without having to move the heavy equipment and armored tanks. The two anomalies were investigated in the same manner as was done for the anomalies in the north. Soil samples were collected and analyzed and no hazardous or radioactive material were found. NMED agreed that the remaining southern anomalies can be investigated as part of the Long Sled Track investigation (ER Site 83).

A supplemental NOD response report was prepared to document the 1999 and 2000 investigations' results. The report was submitted for NMED's review in July 2001.

On October 1, 2001, the NMED/HWB accepted ER Site 26 for NFA petition. On March 14, 2002, the NMED/HWB sent another letter indicating that ER Site 26 is appropriate for NFA petition under a residential risk scenario.

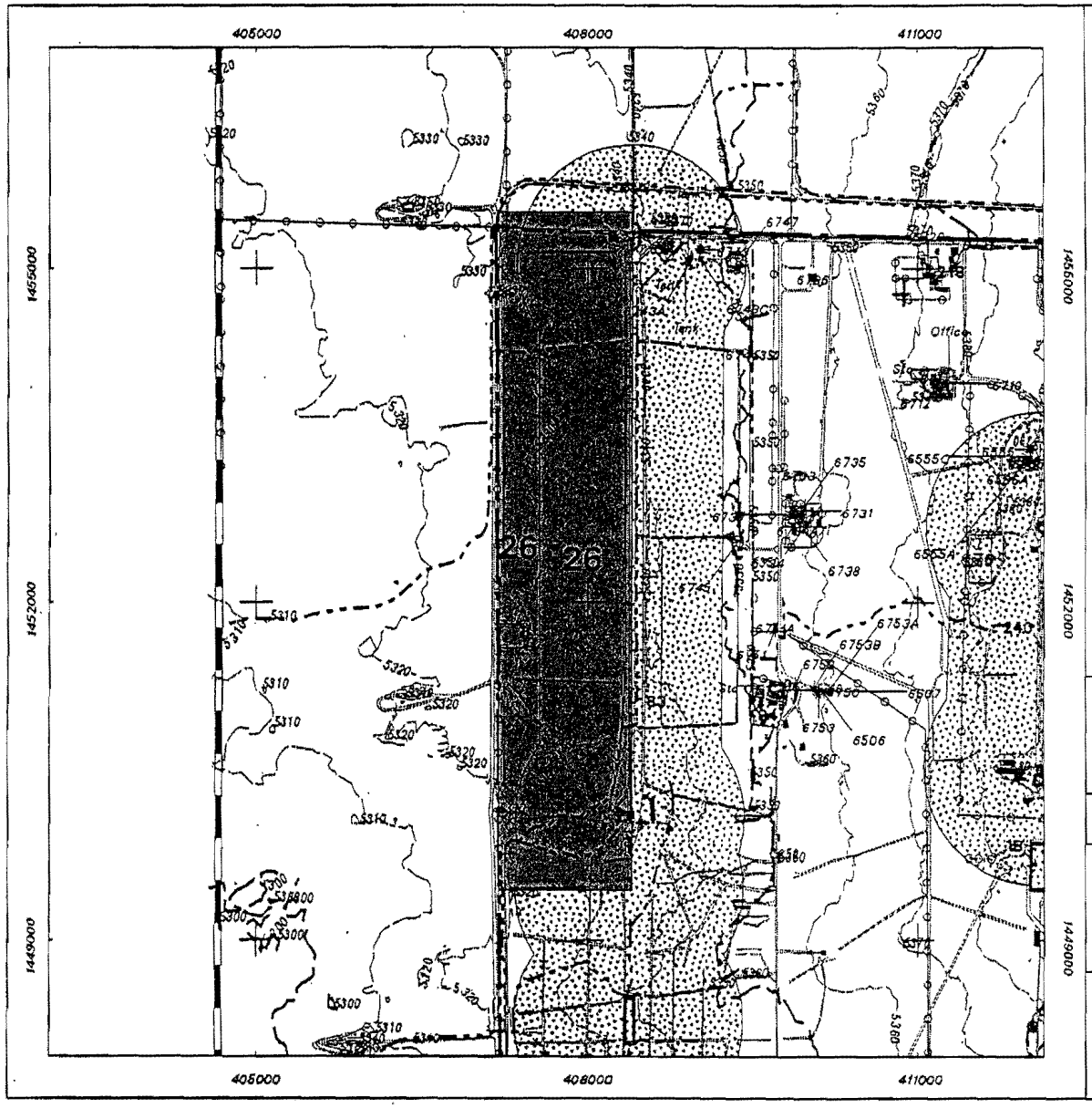
Future Work Planned

No further work is planned for the site.

Waste Volume Estimated/Generated

To date, no waste has been generated.

Information for ER Site 26 was last updated Jan 21, 2003.



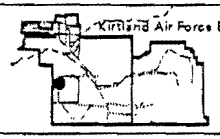
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 26
- Other SWMUs

Center of Site:
X = 407626
Y = 1452468

0 750 1500
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 26

Burial Site

(Western Part of TA-III)

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
cletenop-ac.aml	MAPID = 010829

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ER Site No. 35: Vibration Facility Oil Spill (TA-III)

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

During the 1989 Resource Conservation and Recovery Act (RCRA) Facility Assessment, an oil spill reportedly occurred at the Vibration Facility, Building 6560, in TA-III. The Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment conclusion for this site was uncertain and further investigation was needed.

The Vibration Facility is located in the central portion of TA-III, approximately 1 mi (1.6 km) south of the technical area entrance gate. The facility was constructed in several phases between 1956 and 1968. It is used to test the ability of various instruments and equipment to withstand vibrations. The system contained approximately 200 gal of hydraulic fluid in a closed-loop system, meaning the fluid remains in the hydraulic system at all times, never coming in contact with instruments or components of the various tests.

According to interviews with SNL personnel, an unknown quantity of waste hydraulic oil from the shakers in the Vibration Facility was poured onto the ground surface near the southeast corner of Building 6560, adjacent to the old fence line. One interviewee reported that the oil had been absorbed onto Sorbol, a highly absorbent clay, before being deposited on the ground outside the building and that the reported dumping consisted of this non-liquid mixture. The date of this action is not known, but it is believed to have occurred prior to 1970 and to have been less than 15 gal in volume. Another interviewee indicated that the contamination at this site may have been the

result of several small oil spills. The oil was believed to be either Dialex or Tellus brand oil; both are nontoxic hydrocarbon-based oils.

The oil-stained soil was reportedly excavated sometime in the late-1970s and moved to a location on the east side of the eastern boundary fence, where it was temporarily stored for an undetermined length of time. Fill material was placed in the original excavated location. The temporary storage location of the oil-stained soil was reportedly adjacent to the utility pole located near the eastern fence, and from this location it was reportedly removed for disposal by SNL sometime prior to 1987. Prior to construction of the addition to Building 6560, the east fence was moved approximately 30 to 40 ft (9 to 12 m) to the east. The southern part of the original fenceline is under the building addition; however, the utility pole adjacent to the area where the oil-stained soil was reportedly stored is still in its original location.

Constituents of Concern

Mineral-based hydraulic fluid
containing petroleum hydrocarbons Polychlorinated biphenyls (PCBs)

Current Hazards

There are no current hazards at this site related to contamination of the surface or subsurface soils.

Current Status of Work

Surface soil samples were collected and analyzed for total petroleum hydrocarbons (TPH) and PCBs. Some samples indicated elevated TPH levels, so subsurface sampling with a geoprobe was conducted. Results of the geoprobe sampling (to depths of 15 ft below grade) indicated adequate definition of horizontal and vertical extent; no TPH results were in excess of 100 ppm at depth. Soil contamination appeared to be confined to a small area less than 2 ft deep. Data analysis, interpretation, and recommendations for No Further Action (NFA) on this site were presented in the RCRA Facility Investigaton (RFI) Report, which was submitted for regulatory approval in July 1996.

Two Notice of Deficiencies (NODs) were received from the New Mexico Environment Department (NMED) for the RFI Report with comments on this site, and a response was submitted to NMED. NMED requested sampling for volatile and semi-volatile organic compounds (VOCs and SVOCs) in the soil.

In 1999 and 2000, samples were taken for VOCs, SVOCs, and PCBs from the surface and subsurface soils. Non-regulated hydraulic oil and low concentrations of detected VOCs were found. Areas of high-TPH soil were removed to below regulatory guidelines established by the New Mexico Oil Conservation Division. Confirmatory soil samples were collected and the levels of detected VOCs and SVOCs were below risk levels. No PCBs were found in the samples.

A supplemental NOD response report documenting the 1999 and 2000 investigations was

submitted to NMED in July 2001. An NFA proposal was also included in the report.

On March 5, 2002, NMED found Site 35 to be acceptable for No Further Action (NFA) petition.

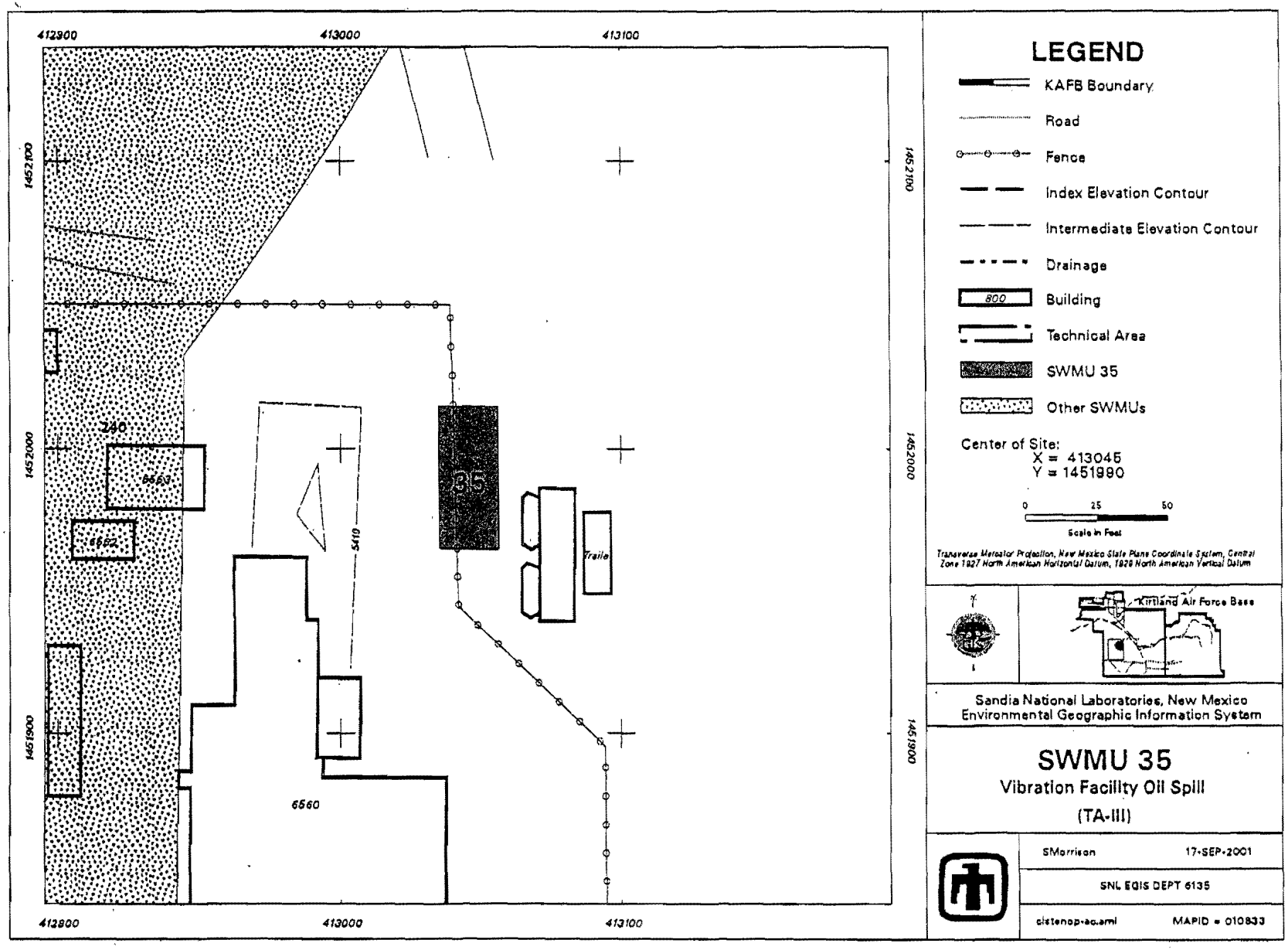
Future Work Planned

No further work is planned for the site.

Waste Volume Estimated/Generated

ER removed 8 cubic yards of TPH-contaminated soil to clean up the site.

Information for ER Site 35 was last updated Jan 21, 2003.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5419
35
Trailer
6560
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 35
Other SWMUs
Center of Site:
X = 413045
Y = 1451990
0
25
50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 35
Vibration Facility Oil Spill
(TA-III)
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
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MAPID = 010833

ER Site No. 78: Gas Cylinder Disposal Pit (TA-III)

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

ER Site 78 (Gas Cylinder Disposal Pit) was identified during the 1987 Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) as SWMU Number 31. At that time, the potential for ongoing releases on contaminants to the air and soils was concluded to be high. The findings of the subsequent CEARP investigation were uncertain; therefore, additional investigation was deemed necessary.

The Gas Cylinder Disposal Pit was located in the southeast corner of TA-III, east of the Chemical Waste Landfill (CWL). At one time the excavated pit area of approximately 80 by 180 ft was surrounded by a fence. The fenced area was approximately 100 by 200 ft. The original depth of the pit is not known. Prior to Environmental Restoration's (ER's) investigation, the pit was 10 ft deep and had a 3-ft-high berm around the edges. The south, east, and west faces were steep, whereas the north side of the pit was gently sloped, affording access by truck.

The pit was reportedly dug in 1963, but its use before 1980 is not well documented. Prior to its excavation, the site may have been used to dispose of HE residues by detonation, and in the 1960s and 1970s following the excavation, the pit was used for the disposal of lithium hydride and other reactive chemicals from various SNL laboratories. From 1980 to 1984, the disposal pit was used for the disposal of gas cylinders by detonation with shaped-explosive charges. Some empty cylinders may have been opened longitudinally with a cutting tool and then buried. The cylinders

reportedly contained a variety of gases, including some toxic materials and unknown materials that could not be shipped off site. The last reported use of this pit was in 1984. At that time, up to 400 lecture bottles (2-inch-diameter by 15-inches long) were detonated in the pit, although some cylinders were not punctured. This site had also been used occasionally for temporary storage of potentially explosive chemicals. Picric acid, which is highly shock-sensitive in its crystalline form, had also been found inside this disposal pit.

The original sampling scheduled at the site as defined in the RCRA Facility Investigation (RFI) was determined to be too dangerous for worker safey. The primary safety concern was the presence of gas cylinders that could pose a threat of spontaneous release, resulting in possible explosion and/or the potential for exposure of site workers to toxic compounds. Thus a VCM was conducted to mitigate hazards and complete characterization of the site.

The VCM included two phases. Phase I activities were performed for initial site assessment purposes. A geophysical survey was completed within the Gas Cylinder Disposal Pit (GCDP) and the surrounding area to identify buried metallic objects. Radiological surveys were conducted to collect background information and identify radiological hazards. (The radiological surveys identified an area of thorium-contaminated surface soil near the southern end of the Gas Cylinder Disposal Pit.) Surface soil samples were collected in the pit area to identify chemical and radiological hazards while soil samples were collected outside and surrounding the pit area to establish background, constituent levels.

The primary objectives of the Phase II field activities were the removal, examination and segregation of the GCDP contents, identification of the contaminants of concern, disposal of hazardous, radioactive, mixed and solid wastes, and backfilling the pit with clean materials. A combination of intact and breached gas cylinders and other hazardous materials were excavated and removed. Thorium- and chromium-contaminated soil was drummed and disposed off-site. Contents of cylinders were analyzed and waste was disposed.

A total of seven boreholes were advance in the GCDP for verification sampling. Two boreholes were advanced in the chromium-impacted thermal battery mound. Two were advanced in the area of the thorium-contaminated soil. And one borehole was advanced in each of the following areas: the suspect burn area, the cylinder mound and an uncontaminated area. The boreholes were advanced to a depth of 5 ft below the pit bottom (which itself was approximately 15 ft bgs), and soil samples were collected at depths of 15 to 16 ft bgs and 19 to 20 ft bgs. The samples were analyzed at an off-site laboratory; the analyses completed, although not inclusive for each sample, were VOCs, SVOCs, HEs, RCRA metals and isotopic uranium, thorium and plutonium.

Arsenic, beryllium, chromium, lead, and silver were detected at concentrations exceeding their respective background concentrations. Only three detections of lead and silver, two detections of arsenic, and one detection of beryllium (in the backfill sample only) and chromium exceeded background. Acetone, methylene chloride, and toluene were the only VOCs detected in the confirmatory samples. All detections were at very low levels, below their respective reporting limits. In addition, both acetone and methylene chloride were detected in the aqueous trip and field blank samples, suggesting they were laboratory-introduced contaminants. Eight SVOCs were detected in the three samples from the off-site backfill material, and one SVOC was detected in two confirmatory samples from the same borehole. All detections were very low concentrations, below their respective reporting limits for the nine SVOCs. No radionuclides were detected above their respective background activities in the gamma spectroscopy data set; however, the minimum detectable activities (MDAs) for uranium-235 and uranium-238 were typically higher than the respective background activities. Cesium-137 was not detected in any of the samples and the MDA

was below the background activity of 0.079 picocuries per gram (pCi/g). Thorium, the main radionuclide of concern at the site, was detected in all gamma spectroscopy samples below the background activity of 1.01pCi/g. In the isotopic thorium, uranium, and plutonium data set, there were two detections of thorium-232 that slightly exceeded the background activity of 1.01 pCi/g. The detections were 1.1 pCi/g (+/- 0.25 pCi/g) and 1.7 pCi/g (+/- 0.31 pCi/g). The duplicate sample at one of these locations had thorium-232 activity that was below the background activity (0.71 pCi/g +/- 0.14 pCi/g).

The confirmatory data were used to support a No Further Action Proposal in the TA-III&V Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report. This report was submitted to the Environmental Protection Agency (EPA) and New Mexico Environment Department (NMED) in July 1996.

Constituents of Concern

High explosive (HE) residues.
Hazardous and toxic gases and liquids.
Radionuclides.
Solid debris.

Current Hazards

All cylinders were removed during the Voluntary Corrective Measure (VCM) excavation. Confirmatory sampling revealed some elevated metals and radioactivity but at concentrations below risk levels. Additional sampling is planned for the site at the request of NMED, but any potential remaining contamination would be located at 10 ft below ground surface.

Current Status of Work

Two Notice of Deficiencies (NODs) were received from NMED, one in July 1997 and the other in March 1998. SNL responded to both of them. NMED has requested that additional sampling and a geophysical survey be completed. A field implementation plan (FIP) containing a sampling and analysis plan was created and presented to NMED for review in July 2001. NMED reviewed and approved the plan.

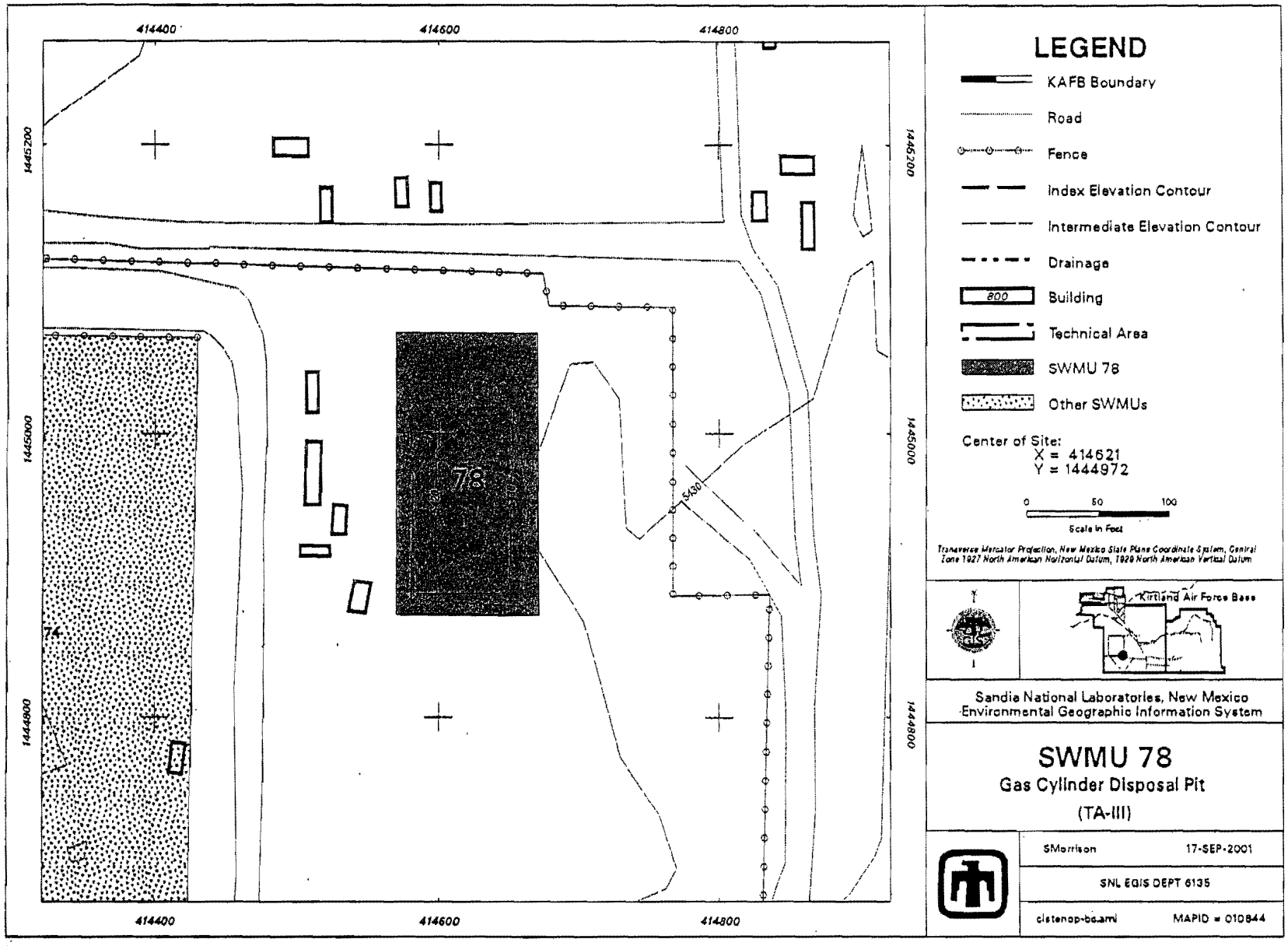
Future Work Planned

Currently, SWMU 78 has been used as part of the soil-staging area for the Chemical Waste Landfill (CWL) excavation. The additional work as described in the FIP will be implemented after the CWL soil is removed from the site.

Waste Volume Estimated/Generated

About 1300 lbs of hazardous waste and 140 cubic yards of radioactively-contaminated soil were generated as a result of the VCM at Site 78.

Information for ER Site 78 was last updated Jan 23, 2003.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Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 78
Other SWMUs
Center of Site:
X = 414621
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50
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Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 78
Gas Cylinder Disposal Pit
(TA-III)
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ER Site No. 83: Long Sled Track (TA-III)

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

The sled track was identified as an Area of Concern I during the 1987 SNL Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA). The site was designated ER Site 83 during the Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment. The findings of the CEARP Assessment were uncertain, and further investigation was recommended.

Because ER Site 83 is an active site, its assessment will be deferred into the future. At that time, additional investigations will be conducted.

The first 5,000-ft of the Long Sled Track was built in 1966 to replace the 2,000-ft Short Sled Track. Later in 1985, another 5,000 ft of track was added on to the north end of the existing 5,000 ft for a total of 10,000-ft of sled track. The sled track consists of "railroad" type track supporting rocket-powered sleds and free-flight boosters used to accelerate test articles or targets. The track is utilized to test rocket motor performance and the high-velocity impact of mock nuclear ordnance and ordnance containers. The Long Sled Track is capable of generating velocities up to or greater than Mach 6 (6500 fps). Tests performed at the sled track use a variety of rocket motors to horizontally propel a test vehicle from the northern end of the track down toward the southern end of the track where it impacts a concrete or water-brake target, or the test vehicle is launched into a free-flight airborne trajectory to a parachute-aided impact. Some of these airborne tests have included nose cones weighted with depleted uranium (DU). For many tests, after the test unit impact or ejection occurred, the rocket sled and remaining test equipment were impacted against an earthen berm located at the south end of the track to terminate the sled's run and to contain fragmentation. For other tests, a water-braking system controls sleds to a safe stop. High-velocity impact tests that hurtled test vehicles into berms at the south end of the Long Sled Track are known to have released fragments of DU and other metals, such as beryllium and lead, to soils in this area. SNL assumes that almost all the dispersed metals, including DU, that are released from

these impact tests are contained within a 1400-ft radius of the south end of the Long Sled Track.

Prior to 1994, about 350 rocket motors were fired in a year at the Long Sled Track. However, during 1986-1987, a total of more than 600 rocket motors were fired at the Long Sled Track. Since then, testing frequency has diminished substantially. In the period 1994 to 1998, about 20 to 30 rocket motors were fired in a year, and since 1998 about 80 rocket motors per year have been fired. Most frequently used are small rockets such as Zuni and High Velocity Aircraft Rockets (HVAR). Firings can include small quantities of large rockets such as Nike, Sprint, Javelin, Simoon, and Mach 46S.

Following each test, visible debris is collected and removed by SNL Health Physics Department personnel. According to SNL Investigative Reports, hazardous constituents found during early cleanup activities after impact tests include DU, tritium, lithium (Li), niobium (Ni), lead (Pb), mercury (Hg), and high explosives. Recent tests (those within about the last 15 years) have been designed to essentially eliminate the release of hazardous materials.

Testing of transportation containers has also been conducted at the Long Sled Track. Mock ordinance has been included within the transportion container. There are two hazardous materials (other than explosives) contained inside the mock ordnance: beryllium (Be) and DU. Both of these materials are in solid form. They are hazardous when in the form of finely divided particles or dust that may be inhaled. Previous impact testing of similar transportation containers has confirmed the containment capabilities of the containers to protect the mock ordnance. According to the Coyote Canyon Test Complex (CCTC) Environmental Assessment, there is no evidence that hazardous materials were released during testing of transportation containers.

SNL's Industrial Hygiene Services performed two separate airborne exposure samplings to document personal exposure during operations conducted at Site 83. The first personal air monitoring was conducted in September 1993. Personal breathing zone samples were collected and analyzed for lead, beryllium and depleted uranium (DU). The exposure levels measured for all employees were well below established limits. Personal air monitoring was also conducted in November 2002. Air samples were collected and analyzed for lead, beryllium, lithium, mercury, niobium and uranium. The personal breathing zone exposure measurements indicated that airborne elemental levels during digging operations were less than the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) for an 8-hour time-weighted average (8-hr TWA) and less than the OSHA Action Levels.

Constituents of Concern

Depleted uranium
Unexploded ordnance and high explosives
Tritium
Metals (Pb, Be, Li, Hg, Nb)
Perchlorate

Current Hazards

On the surface and in the near-surface soil: Depleted uranium
Unexploded ordnance and high explosives

Tritium
Metals (Pb, Be, Li, Hg, Nb)

The Site History section above contains information regarding personal airborne exposure levels for many of these constituents during routine operations at the site.

Current Status of Work

A radiation survey of the south end of the sled track and surrounding areas was completed in 1994. The south end is the area of impact for the tests and where DU would most likely be found. Approximately 1400 anomalies (in excess of background radiation) were located, mostly DU. Removal of all but one of the anomalies was completed as part of the ER Project-Wide Surface Radiation Removal Voluntary Corrective Measure (VCM). The one anomaly remaining is a large soil area that is posted as a radiological area. Site workers are required to have the appropriate level of radiological training to perform work in this area. Posting and training are conducted to reduce potential worker exposure.

It should be noted that the surface radiation survey was not intended to located deeply buried radioactive materials at the sites. It is possible that, because of the nature of the penetration and impact tests conducted at the sled track, other radioactive materials are located at depths greater than the 6 to 18 inches investigated during the survey.

The radiation survey results were presented in the TA-III&V RFI report. The report also included the proposal that the complete site investigation be postponed until the test site becomes inactive. This report was submitted to the Environmental Protection Agency (EPA) and the New Mexico Environment Department (NMED) in July 1996. The NMED issued two Notice of Deficiencies (NODs) for the TA-III&V RFI report, one in August 1997 and the other in March 1998, but only the first included a request for additional information about Site 83. SNL's submittal of July 1997, in response to the 1st NOD, included some additional information about Site 83.

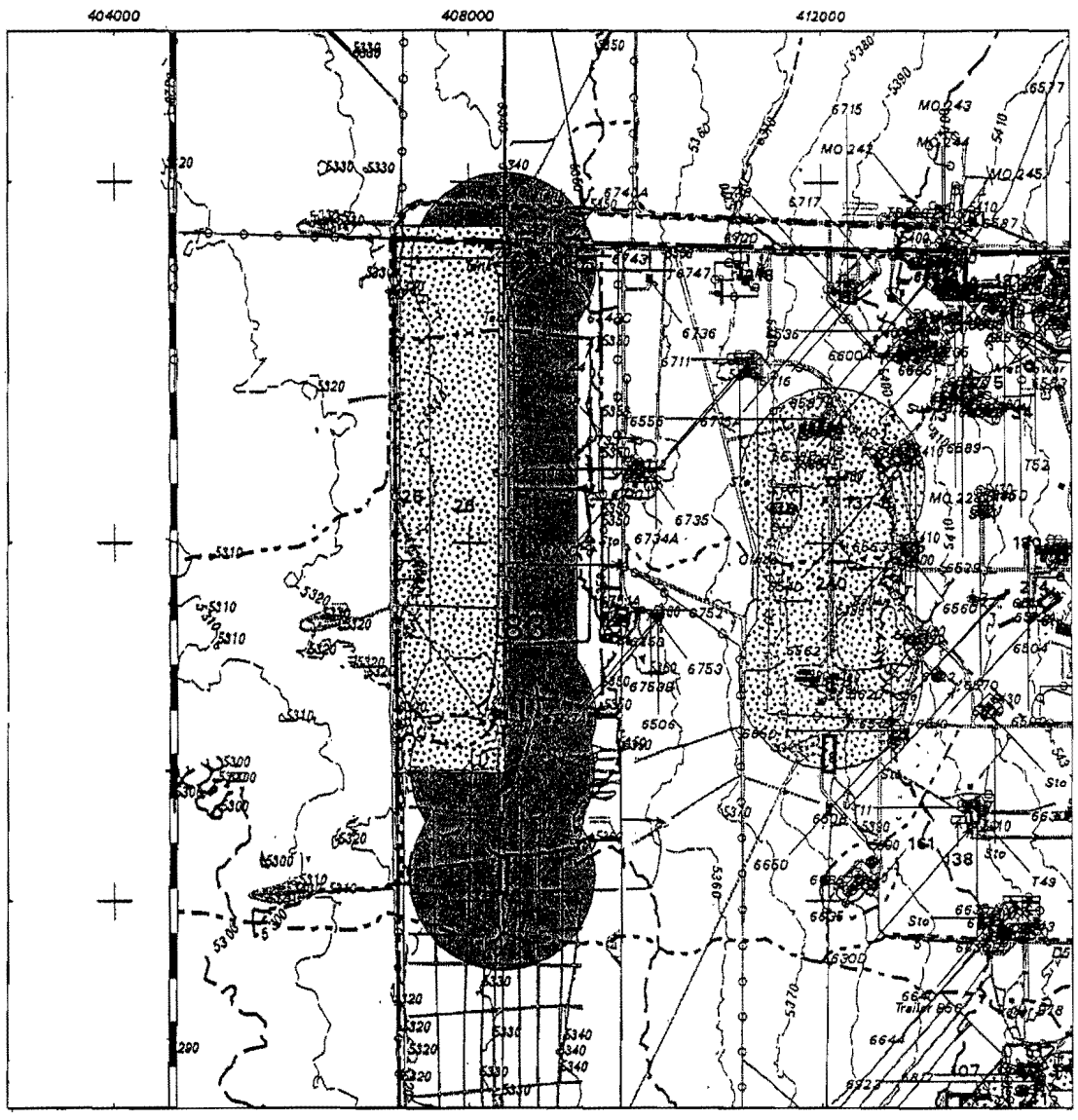
Future Work Planned

Upon decommissioning of the site, full sampling and analysis according to the RFI Work Plan will be performed. No schedule for decommissioning was available as of January 2003.

Waste Volume Estimated/Generated

The surface radiation VCM removed 54 drums of radioactive waste.

Information for ER Site 83 was last updated Mar 6, 2003.



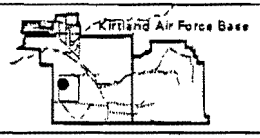
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 83
- Other SWMUs

Center of Site:
X = 408805
Y = 1451668

0 1000 2000
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 83
Long Sled Track
(TA-III)

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

cistenop-bc.aml MAPID = 010645

ER Site No. 84: Gun Facilities (TA-III)

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

The TA-III Gun Facilities at SNL are located in the west-central portion of TA-III in and adjacent to Building 6750. The facilities consist of both an indoor (Building 6750) and an outdoor test area used for studying impact phenomena. Building 6750 was originally constructed in 1965. Berms were constructed around the building in about 1972. Indoor and outdoor projectile tests reportedly used lead (Pb) and depleted uranium (DU) as both projectile and target materials. Building 6750 is believed to have been used for plutonium tests before these tests were transferred to Los Alamos. The Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment states that there was shrapnel found in the outdoor test area at the Gun Facilities, but no toxic materials were found. The finding of the 1987 CEARP Phase I Installation Assessment indicated that there were no hazardous waste that would be regulated under the Resource Conservation and Recovery Act (RCRA).

The outdoor testing facilities consist of a 75-mm gun to shoot various projectiles into the southern portion of TA-III and earth penetrators directly into the ground. The projectiles were primarily conventional projectiles made of solid steel, although some outdoor tests used lead and DU as both projectiles and targets. According to interviewees, as of May 1990 four outdoor test series had been performed:

- Series 1: Between 1983 and 1985 approximately six shots of DU were fired into DU targets. Each projectile weighed approximately 5 to 10 lb (2 to 5 kg). Information collected from several sources suggests most of the DU was recovered. The exact location of the shot impact

area is not known.

- Series 2: Between 1985 and 1987, 30 to 50 shots of DU each weighing approximately 14 lb (6.4 kg) were fired into steel targets located approximately 300 ft (91 m) south of Building 6750. The total DU fired from these tests is between 450 to 750 lb (204 to 340 kg). The steel targets reportedly were destroyed and the DU vaporized at the impact area.
- Series 3: 50-lb (22 kg) Earth Penetrators were shot vertically into the ground at 4-ft^2 (0.4-m^2) underground targets. The tests were performed in 6 to 10 boreholes drilled to targets buried between 5 to 12 ft (1.5 to 3.7 m) below grade. Although the boreholes or buried targets were said to be located along the asphalt just south of where the pavement ends or under the pavement south of Building 6750, the exact locations of the borings or buried targets are not known. Approximately 300 lb (136 kg) of DU was unaccounted for following the tests. According to one interviewee, all the DU was eventually recovered.
- Series 4: Four 30-lb (13.6-kg) weapons containing DU were shot with bullets at two berms in the southern part of TA-3. The DU was reportedly mostly vaporized. Video recordings were made of these tests. The location of the impact area for these tests has not been verified.

Observations made during a site visit (March 20, 1992) and information collected from an interviewee indicate the existence of a buried pit immediately south of a berm containing a concrete bunker approximately 300 to 400 ft (91 to 122 m) south of Building 6750. This pit, believed to be from Series 2 testing, may contain DU, lead, and iron fragments. Field measurements produced low-level readings when the area was monitored for beta/gamma radiation at the ground surface. Surface DU fragments have been collected by SNL personnel from this area in the past. A subsequent site visit in November 1992 discovered that heavy equipment removed all the soil from the concrete bunker at the test pit and disturbed surface soils over a large area. A portion of the disturbed area is within the survey region of previous site assessment work.

The primary focus for investigation at the site will be sampling to assess the Series 2 test pit and Series 3 penetrator test areas. In addition, an attempt will be made to obtain additional archive or interview information on the specific locations of Series 1, 3, and 4 test areas. The planned work is defined in greater detail in the RCRA Facility Investigation (RFI).

Constituents of Concern

Depleted Uranium
Unexploded Ordnance and High Explosives
Metals (Pb)

Current Hazards

At <1 ft and >1ft below ground surface:
Depleted Uranium
Unexploded Ordnance and High Explosives
Metals (Pb)

Current Status of Work

A geophysical survey of Site 84 was conducted in two pieces during 1994 and 1995, and encompassed approximately 11 acres. An initial survey extended 500 ft to the south of Building 6750. A second survey was conducted based on the indications in the first survey that buried objects extended farther south and concentrated around an impact berm; the 2nd survey doubled the initial area of investigation and included the impact berm. Several areas of potential burials were located.

A radiation survey of the gun facilities and surrounding areas was completed in 1994 as part of the ER Project-wide surface radiation survey and removal VCM. Approximately 60 anomalies (in excess of background radiation) were detected. Removal of the anomalies was completed in 1996 as part of the ER Project-Wide Surface Radiation Removal Voluntary Corrective Measure (VCM).

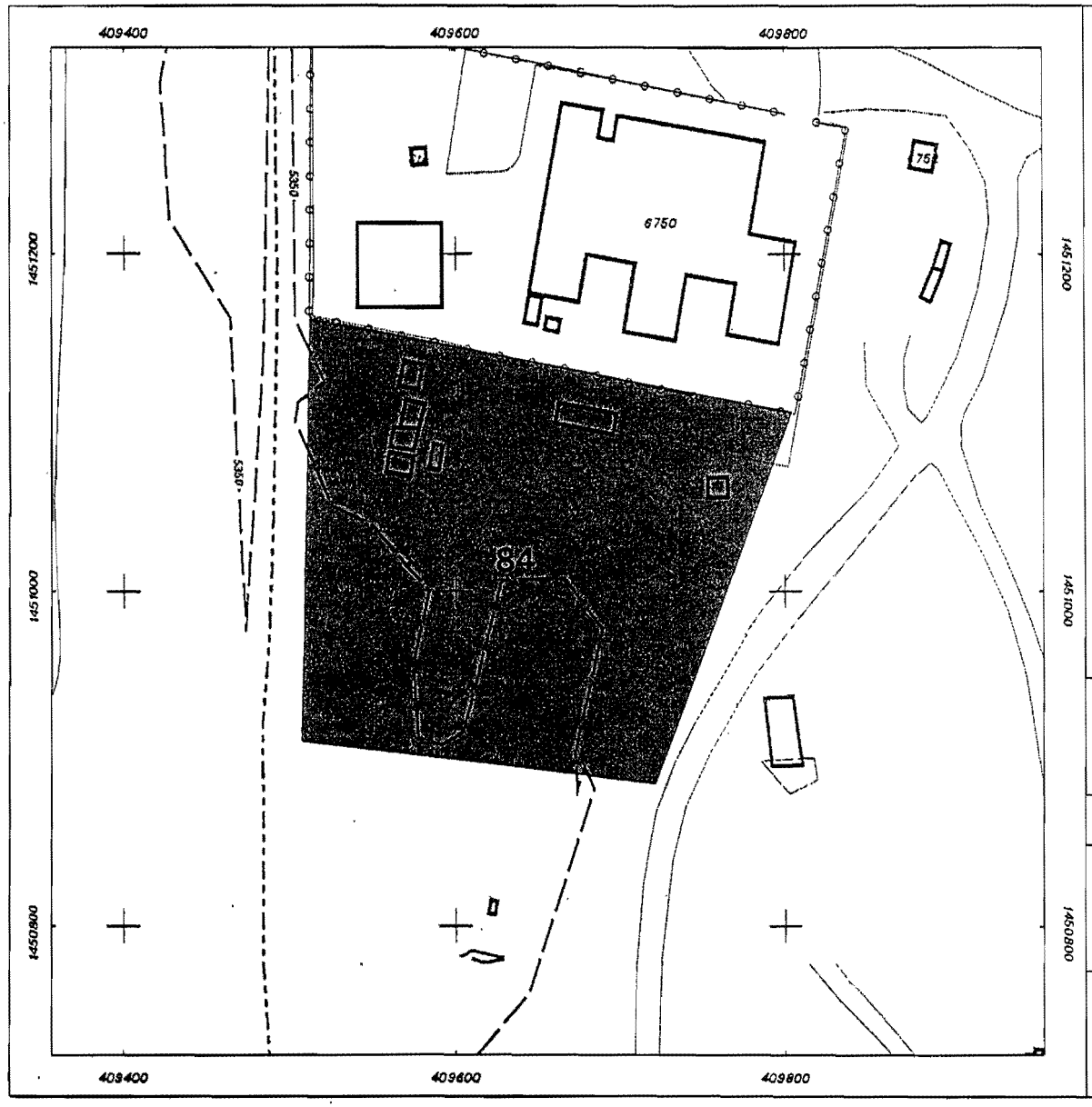
Future Work Planned

Upon decommissioning of the site, full sampling and analysis according to the RFI Work Plan will be performed. The schedule for decommissioning is not available as of January 2003.

Waste Volume Estimated/Generated

The ER Project-Wide surface radiation removal VCM generated 230 55-gallon drums of radioactive waste between FY94 and FY96.

Information for ER Site 84 was last updated Jan 21, 2003.



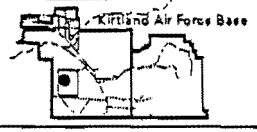
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- 600 Building
- Technical Area
- SWMU 84
- Other SWMUs

Center of Site:
X = 409656
Y = 1451023

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 84
Gun Facilities
(TA-III)

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

sistenop-bs.aml MAPID = 010846

ER Site No. 107: Explosives Test Area (SouthEast TA-III)

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

Site 107 is a triangular-shaped area located to the west of the Chemical Waste Landfill (CWL) near Building 6920 along the southern boundary of TA-III. The site was used for shock-wave high explosives (HE) testing from the 1950s until 1972. Metal-clad explosives containing silver (Ag) or lead (Pb) might have been used during the tests.

Building 6920, the Radioactive and Mixed Waste Management Facility (RMWMF), was built on a portion of this site in 1989. In 1997, construction of the EPA-permitted Corrective Action Management Unit (CAMU) began on another portion of this site. The CAMU will receive, store, and treat soils and debris contaminated with hazardous waste from the CWL.

Constituents of Concern

HE
Metals (Pb, Ag)
Radioactive materials
Nitrates/nitrites

Current Hazards

There are no current hazards at this site except for the potential hazards associated with the activities at the Chemical Waste Landfill (CWL), CAMU, and Radioactive Waste Management Facility (RMWMF).

Current Status of Work

In 1992, ten composite soil samples were collected and analyzed for HE, metals, nitrates/nitrites and radionuclides. No HE compounds were detected and low levels of nitrate/nitrite were detected. Some metals were detected, but none exceeded the approved background levels. Data analysis, interpretation, and a no further action recommendation for this site were presented in the TA-III&V Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report. This report was submitted to the Environmental Protection Agency (EPA) and the New Mexico Environment Department (NMED) in June 1996.

Two sets of notice of deficiency (NOD) comments were received and responses submitted. NMED requested that the site be resampled using discrete soil samples for site characterization. An agreement was reached on the resampling to be done including the number of samples, the locations, and the analyses to be performed.

In March 1999, nine discrete soil samples were collected and analyzed for HEs, metals, nitrate/nitrite, and radionuclides via gamma spectroscopy. No HEs were detected and low concentrations of metals and nitrate/nitrite were found. There were no activity levels of radionuclides above the approved background. However, the minimum detectable activity for Uranium-235 was greater than the backgound level in all but 2 samples. The risk assessment performed on these detected constituents indicated that the concentrations posed insignificant risk to human health and the environment.

A supplemental NOD response report was prepared to document the 1999 sampling and results. The report also included a proposal for No Further Action (NFA) at the site. The report was submitted to NMED in July 2001.

NMED found Site 107 acceptable for NFA petition on September 28, 2001.

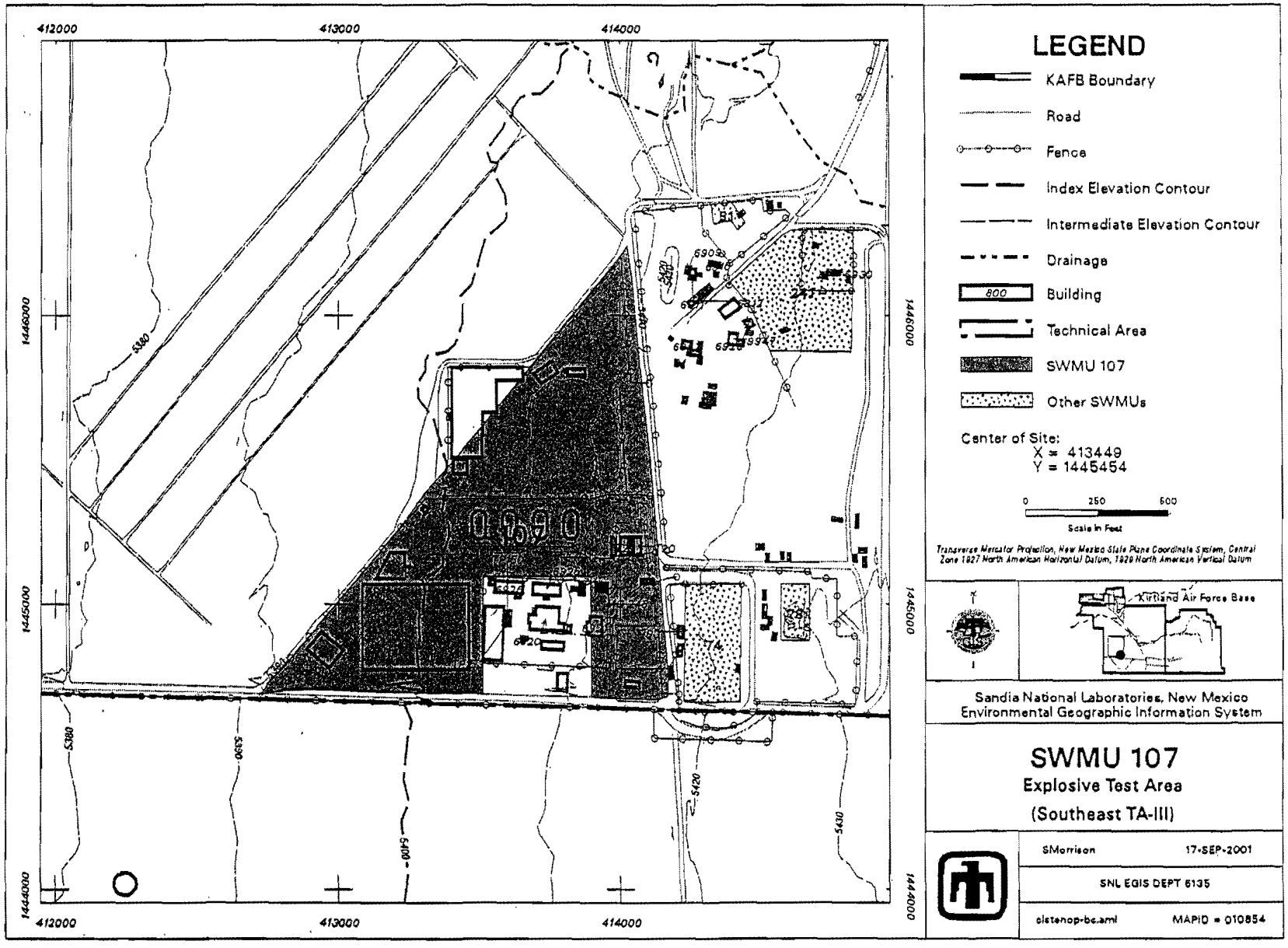
Future Work Planned

No further work is planned.

Waste Volume Estimated/Generated

No waste was generated.

Information for ER Site 107 was last updated Jan 21, 2003.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413000
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1446000
1445000
1444000
5380
5390
5400
5420
5430
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 107
Other SWMUs
Center of Site:
X = 413449
Y = 1445454
0
250
500
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 107
Explosive Test Area
(Southeast TA-III)
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
cistenop-bc.aml
MAPID = 010854

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ER Site No. 196: Bldg 6597 Cistern (TA-V)

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

The Building 6597 Cistern is located in TA-V approximately 30 ft west of Building 6597, which housed the PROTO I facility until it was shut down in 1989. It is a concrete-lined cylinder that is 25 ft in diameter, extends from about 3 ft above ground surface to 25 ft below the ground surface (bgs), and has no concrete base (open at bottom). It was designed as a temporary storage container for tranformer oil from the PROTO I facility. It is reported that occasional, small quantities of transformer oil contaminated with water (and possibly Freon ™) were discharged into the cistern. An estimated 5 gallons of waste oil per week were produced at the PROTO I facility during the period of its operation and discharged into the cistern. Waste oil was reportedly routinely removed from the cistern by a contractor. There have been no discharges into the cistern since the PROTO I facility was closed in 1989.

The Building 6597 Cistern was identified during the initial 1987 Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) investigations of the PROTO I Facility and the 1987 Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment, but was not designated as a Solid Waste Management Unit (SWMU) or an Area of Concern separate from the PROTO I facility. In 1992, the Building 6597 Cistern was recommended for designation as an ER site and became SWMU 196.

Investigation of SWMU 196 was performed as part of the RCRA Facility Investigation (RFI) of Technical Areas III and V. The results of this investigation were reported in June 1996 in the RFI

report. Investigation of the cistern revealed the absence of a concrete base, indicating that the potential for release of contaminants to the subsurface was higher that previously believed in the RFI Work Plan. For the RFI work, several phases of work were performed to determine the depth of the sludge in the bottom of the cistern and to collect subsurface samples once it was found that no concrete base existed. Three subsurface boreholes were augered in the cistern: two to a depth of approximately 13 ft below the cistern bottom and one to approximately 5 ft below the cistern bottom. Soil samples were collected from each borehole at approximately 2-ft intervals and were submitted for on-site and off-site analysis of TPH and VOCs. In addition, a soil vapor sample was collected at the total depth of each borehole and analyzed on site for VOCs. Total petroleum hydrocarbon (TPH) levels ranged from 4,000 to 40,000 mg/kg to a depth of 13 ft beneath the cistern (38 ft bgs). The vertical extent of TPH contamination was not determined. Sampling verified that radionuclides and polychlorinated biphenyls (PCBs) were not present. Only trace levels of volatile organic compounds (VOCs) were detected in the samples.

The site was proposed for no further action (NFA) because the only contamination of concern found was transformer oil, which is considered nonhazardous. The New Mexico Environment Department (NMED) requested further characterization of the site to determine the vertical extent of contamination in the cistern. NMED issued this request in two notice of deficiencies (NODs), one in July 1997 and the other in March 1998.

Constituents of Concern

Petroleum hydrocarbons (TPH)
Metals (RCRA list)
VOCs
Semi-volatile organic compounds (SVOCs)
PCBs

Current Hazards

Petroleum hydrocarbons are found at 20 ft below ground surface (bgs) at the cistern's bottom and beyond. Low levels of VOCs and metals were detected in the same depth interval.

Current Status of Work

Additional subsurface soil sampling was performed in August 1999. Samples were sent to an off-site laboratory for VOCs, SVOCs, TPH, and metals.

Two soil borings were drilled adjacent to the cistern. One borehole was drilled vertically to 100 ft bgs and one borehole was drilled at an angle to permit sampling directly beneath the cistern. The vertical borehole was located 5 ft from the edge of the cistern. The angled borehole was drilled 90 linear feet and could not be advanced further due to limitations in the drill rig. The last sample taken in the angled borehole was at 75 linear feet, a depth of 65 bgs, nearly directly beneath the center of the cistern; it had a TPH concentration of 25,500 mg/kg. The last sample taken in the vertical borehole at a depth of 100 ft bgs had a TPH concentration of 48 mg/kg. The results were discussed with NMED and further investigation is planned to address the issue of extent of

contamination.

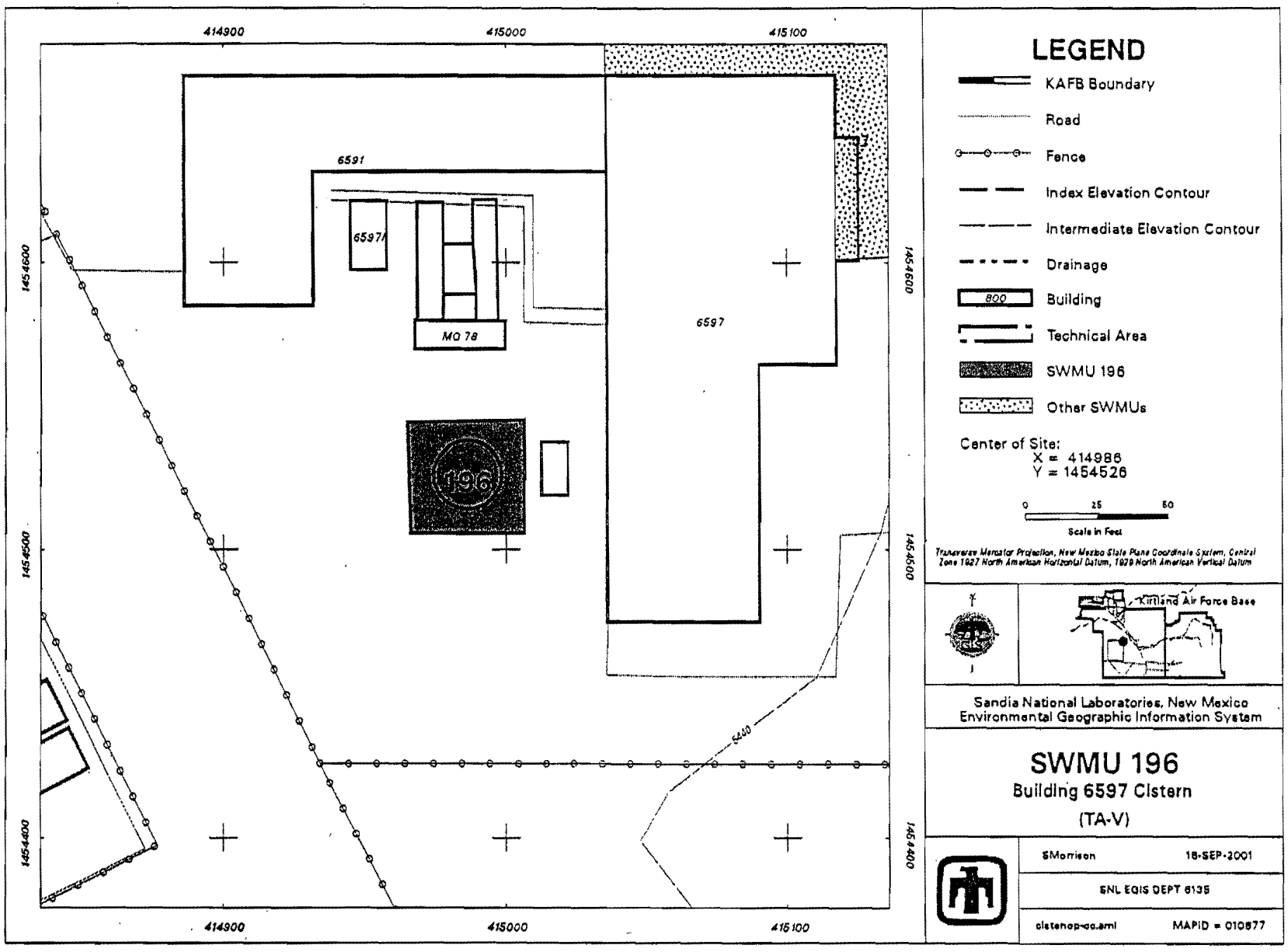
Future Work Planned

Determination of VOC and SVOC levels has been difficult due to matrix interference from the high TPH concentrations. Cleanup procedures that can be used by the analytical laboratory to eliminate matrix interference problems will be researched. Once an appropriate analytical cleanup method has been determined, additional subsurface soil samples will be taken to determine the extent of contamination beneath the cistern. During this work, the potential impacts to groundwater (at 480 feet bgs) will be evaluated. However, based on other sites with similar conditions, TPH contamination from this site has probably not migrated to groundwater.

Waste Volume Estimated/Generated

One 55-gallon drum of non-regulated waste was generated during the RFI investigation.
The 1999 drilling operation generated approximately 7 cubic yards of TPH-contaminated soil.

Information for ER Site 196 was last updated Jan 23, 2003.


414900
415000
415100
1454600
1454500
1454400
6591
6597A
MO 78
6597
196
5400
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
800
Building
Technical Area
SWMU 196
Other SWMUs
Center of Site:
X = 414986
Y = 1454526
0
25
50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 196
Building 6597 Cistern
(TA-V)
SMorrison
18-SEP-2001
SNL EGIS DEPT 6135
cistenop-co.aml
MAPID = 010877

ER Site No. 240: Short Sled Track

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

The short sled track was identified as an Area of Concern I during the 1987 SNL Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA). The site was designated ER Site 240 during the Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment. The findings of the CEARP Assessment were uncertain, and further investigation was recommended.

The 2,000-ft Short Sled Track was built in 1951. The sled track consists of "railroad" type track supporting rocket-powered sleds and free-flight boosters used to accelerate test articles or targets.

Documentation of the tests performed at the Short Sled Track is not currently available. However, in general, greater mass, lower velocity tests than those performed at the Long Sled Track,are conducted at the Short Sled Track. The dispersion of debris from impacts would, therefore, be over a smaller area at the Short Sled Track than at the Long Sled Track.

The Short Sled Track was decommissioned for a short period of time but was reactivated in 1995.

SNL's Industrial Hygiene Services performed an airborne exposure sampling in November 2002 to document personal exposure during operations conducted at Site 240. Air samples were collected and analyzed for lead, beryllium, lithium, mercury, niobium and uranium. The personal breathing zone exposure measurements indicated that airborne elemental levels during digging operations were less than the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) for an 8-hour time-weighted average (8-hr TWA) and less than the OSHA Action Levels.

Constituents of Concern

Depleted Uranium
Unexploded Ordnance and High Explosives
Metals (Pb, Be, Li, Hg, Nb)
Perchlorate

The Site History section above contains information regarding personal airborne exposure levels for many of these constituents during routine operations at the site.

Current Hazards

On the surface and in the near-surface soil:
Depleted Uranium
Unexploded Ordnance and High Explosives
Metals (Pb, Be, Li, Hg, Nb)

Current Status of Work

A surface radiation survey of the impact area (south end) of the sled track and surrounding areas was completed in 1994. Depleted uranium anomalies (260 of them) were located and removed; this effort was completed in May 1996. It should be noted that the surface radiation survey was not intended to locate deeply buried radioactive materials at the sites. It is possible that, because of the nature of the penetration and impact tests conducted at the sled track, other radioactive materials are located at depths greater than the 6 to 18 in. investigated during the survey.

Surface soil samples (201 of them) were also collected. The samples were analyzed in two phases. In the 1st phase, four to five samples were composited and field-screened for metals using x-ray fluorescence and for HEs using immunoassay kits. Based on the results of the field screening, the second phase of sampling was conducted to collect discrete samples for laboratory analysis. These samples were analyzed for select metals (beryllium, lead, lithium, mercury, niobium, and uranium), HEs, and gamma spectroscopy. No HEs were detected above the method detection limits (MDLs). No mercury was detected above its MDL. Niobium and lithium were found only in very low concentrations (0.2 to 0.4 mg/kg for niobium and 5 to 8 mg/kg for lithium). Most of the lead values were below background; all but one concentration was in the range 3.7 to 14.2 mg/kg. The highest concentration of lead (104 mg/kg) was found at the north end of the track. No action was taken to remediate the lead-contaminated area because the concentration was well below the proposed RCRA Subpart S soil action level of 2,000 mg/kg.

A more complete investigation summary, data analysis and interpretation for this site are presented in the TA-III&V RFI report. During the course of the RFI, the Short Sled Track was reactivated for testing. Thus, geophysical surveys to locate more deeply buried radioactive materials will be postponed until final site decommissioning.

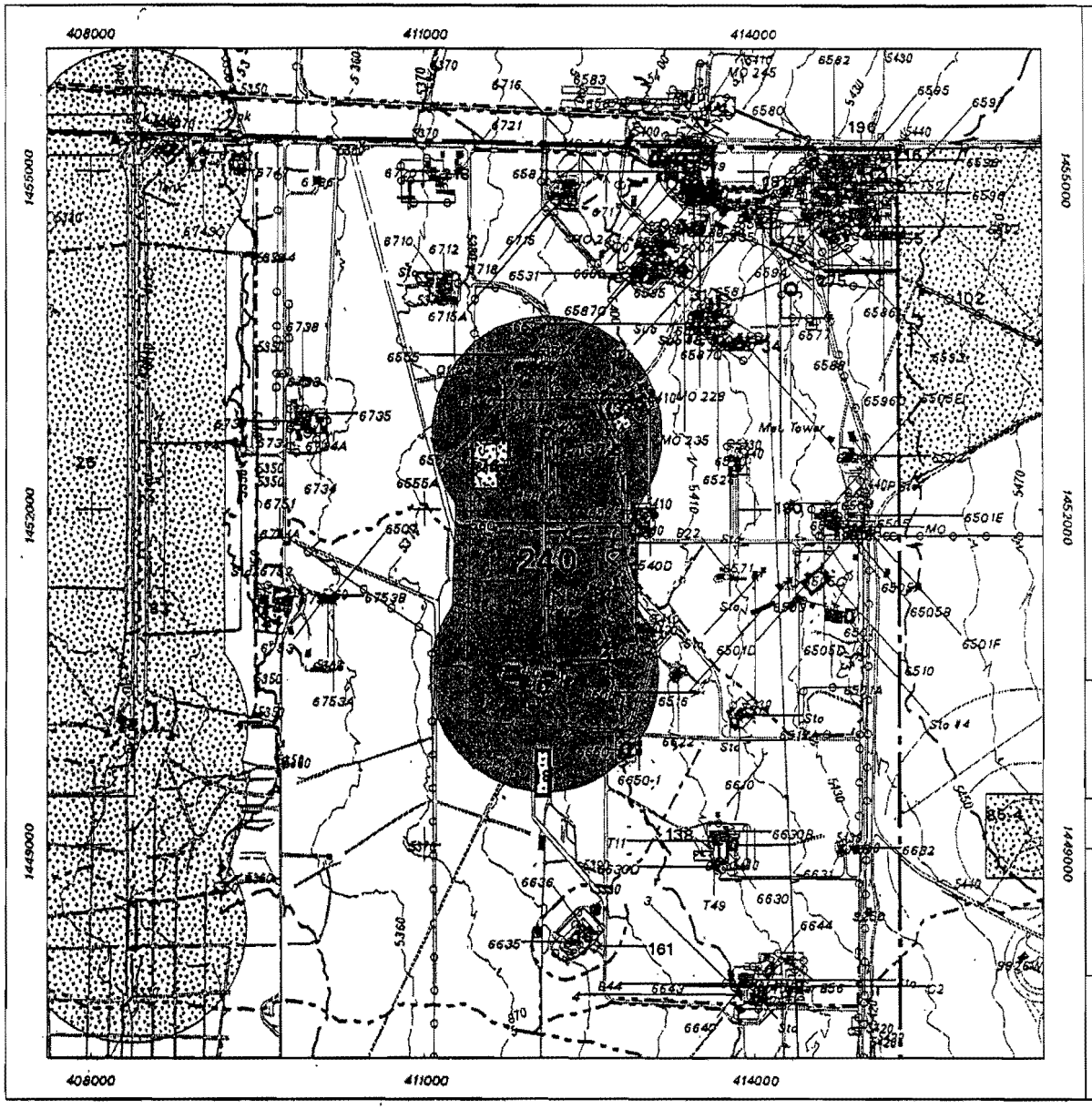
Future Work Planned

Upon decommissioning of the site, full characterization according to the RFI Workplan will be performed. No schedule for decommissioning was available as of January 2003.

Waste Volume Estimated/Generated

Thirty-one drums of radioactive waste were generated by the RUST/Geotech Radiation VCM at this site.

Information for ER Site 240 was last updated Mar 6, 2003.



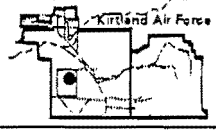
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 240
- Other SWMUs

Center of Site:
X = 412105
Y = 1451598

0 750 1500
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 240
Short Sled Track

SMorrison 18-SEP-2001

SNL EGIS DEPT 6135

cistenap-cc.aml MAPID = 010886

ER Site No. 241: Storage Yard

ADS: 1306
Operable Unit: Tech Area III & V

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

The Storage Yard is located in the southeastern portion of TA III. The site includes a fenced area (180-ft by 230-ft) and areas to the west and south where scrap materials and equipment from TA V were stored.

Some equipment and materials was left in these areas for years, and the actual owners were unknown. Furthermore, some of the equipment and materials stored at these locations were surficially contaminated with radioactive, chemical, and high explosive (HE) residues.

The 1987 Comprehensive Environmnetal Assessment and Response Program (CEARP) Phase 1 Installation Assessment recommended collecting additional information on the site.

Material stored at this site was removed and disposed of in mid-1994. Immediately following this removal, surface and near-surface soil samples were collected at areas thought to be contaminated from previously-stored material.

Constituents of Concern

HEs
Metals

Tranformer oil that may have contained Polychlorinated biphenyls (PCBs)
Asbestos
Radionuclides

Current Hazards

PCB concentrations occur in the near-surface soil at levels that pose an acceptable human health risk under industrial land-use conditions.

Current Status of Work

A radiation survey of the site was completed in April 1994. Three anomalies (in excess of background radiation) were detected and were determined to be "shine" from nearby activated materials stored in area. All material stored in the area was removed. A follow-up radiation survey was conducted, and no radioactive anomalies were found in the soil.

Approximately 29 surface soil samples were field-screened for HE and metals. Sixteen soil samples were analyzed for HEs, 13 soil samples were analyzed for metals and TPH. One soil was collected for PCBs and asbestos. Twenty-nine soil samples were collected for radionuclide analyses. PCB, lead and zinc contamination was noted, but at levels that were well below the Resource Conservation and Recovery Act (RCRA) Subpart S Soil Action Level. Other constituents were below background levels or not detected. Data analysis, interpretation, and a no further action (NFA) recommendation for this site were presented in the TA-III&V RCRA Facility Investigation (RFI) report. This report was submitted to the Environmental Protection Agency (EPA) and the New Mexico Environment Department (NMED) in July 1996.

Two notices of deficiency (NODs) were received from NMED in 1997 and 1998. Additional sampling was requested at the site. In 1999, eighteen discrete surface soil samples and two duplicate samples were collected and analyzed for VOCs, SVOCs, PCBs, metals, and radionuclides using gamma spectroscopy. Low levels of VOCs, SVOCs, metals and PCBs were found, but the maximum concentrations passed industrial landuse scenario risk limits. The radionuclide Uranium-235 had potential activity levels above the background activity in some of the samples, and in some samples the minimum detectable activity was greater than the background. Risk screening of nonradiological and radiological constituents concluded that the site posed an insignificant risk to human health under an industrial land-use scenario.

A supplemental NOD response report was completed and submitted to NMED in April 2001 showing the results of the additional investigation. An NFA proposal for the site is included in the report.

On October 4, 2001, NMED/HWB accepted ER Site 241 for a risk-based NFA petition under an industrial scenario.

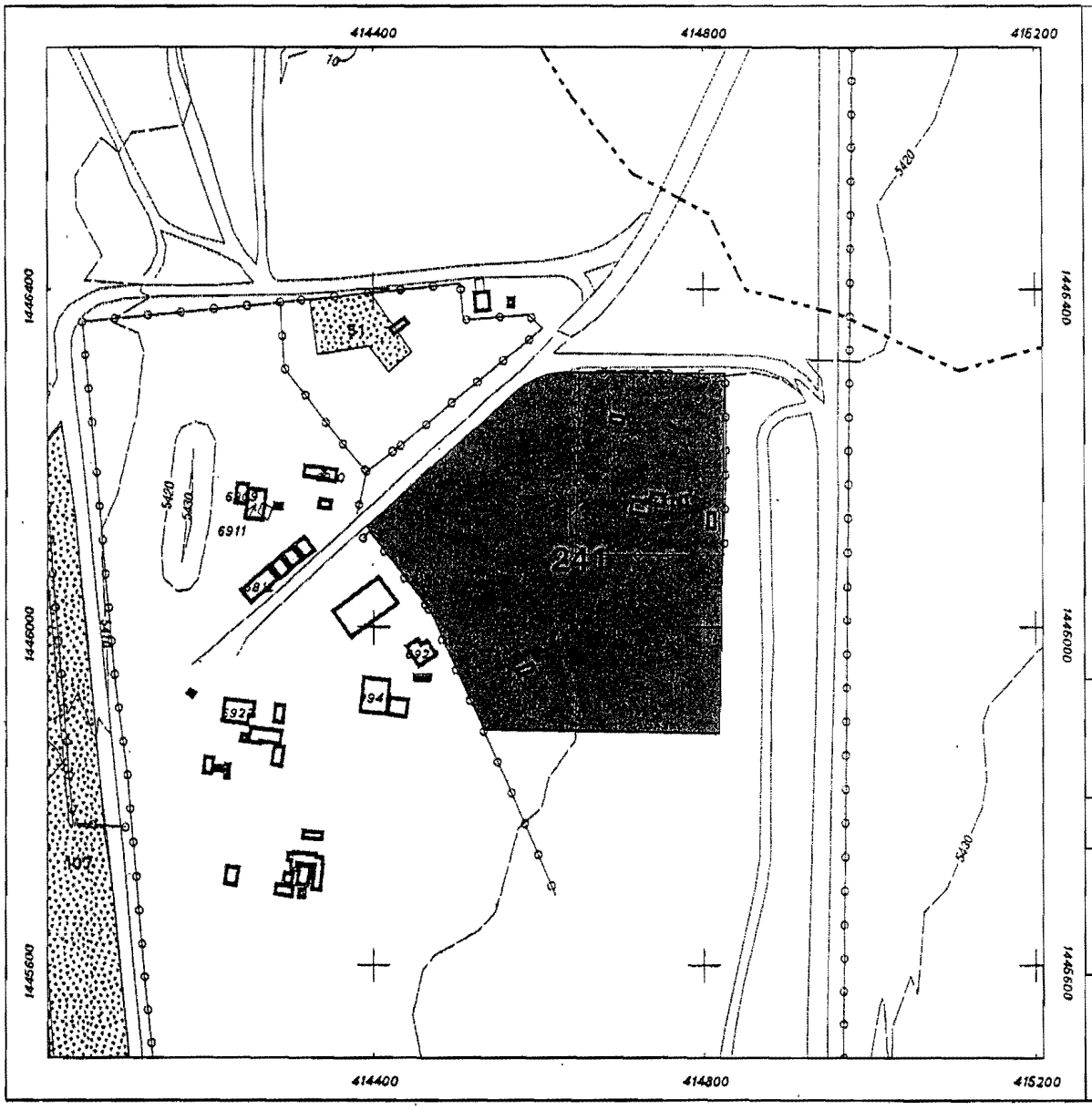
Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

No waste was generated at the site.

Information for ER Site 241 was last updated Jan 23, 2003.



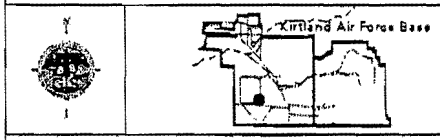
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 241
- Other SWMUs

Center of Site:
X = 414608
Y = 1446088

0 100 200
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 241
Storage Yard

SMorrison	18-SEP-2001
SNL EGIS DEPT 6135	
ckenap-co.aml	MAPID = 010887

OU-1307
LIQUID WASTE DISPOSAL SYSTEM

ER Site No. 4: LWDS Surface Impoundments

ADS: 1307
Operable Unit: Liquid Waste Disposal System

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

The Liquid Waste Disposal System (LWDS) was designed to receive, monitor and discharge radioactive effluent from the Sandia Experimental Reactor Facility in Technical Area-V (TA-V). The system consists of three individual Environmental Restoration (ER) sites: Site 52, LWDS Holding Tanks; Site 5, LWDS Drainfield; and Site 4, LWDS Surface Impoundments (located outside of TA-V). Site 4 consists of two surface impoundments, both of which are unlined. Starting in 1963, radioactive discharges drained to the holding tanks where they were monitored and then pumped to the drainfield. When the drainfield collapsed in 1967, discharges were directed to the impoundments. Radioactive discharges continued until 1970, and in 1971, the Sandia Experimental Reactor was decommissioned. Non-radioactive discharges continued until 1992. From 1967 until 1970, the impoundments received approximately 12 million gallons of waste water containing approximately 14 curies of measured radioactivity. It is assumed that the majority of the radioactive discharges were deposited in Impoundment 1 because Impoundment 2 was not installed until 1970, near the end of time in which radioactive discharges occurred.

Constituents of Concern

Radionuclides from the discharge of reactor cooling water.
Organic Compounds/Heavy Metals from various industrial process in Technical Area V.
Polychlorinated Biphenyls (PCBs)

Current Hazards

Elevated values of metals above background were found for barium, beryllium, cadmium, chromium-6, copper, lead, mercury, silver, and zinc from the ground surface to around five feet below the surface.
Low levels of cobalt-60, cesium-137, tritium, lead-210, radium-226, thorium-232 and uranium-235, and were also detected in the same depth interval. The highest PCB concentration was 0.071 mg/kg.

Current Status of Work

The investigation of the LWDS ER sites proceeded "at risk", before U.S Environmental Protection Agency (EPA) approval of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Workplan. The investigation, as originally scoped, was completed in March 1994. Contamination was detected at all three LWDS sites.

The EPA approved the RFI Workplan in June 1994. In addition to the original investigation, the EPA required a borehole in each of the LWDS Surface Impoundments. These boreholes were completed in calendar year 1994. No additional contamination was found.

Although trichloroethene has been detected in the LWDS Drainfield ground-water monitoring well (LWDS-MW1), it was not detected in any of the soil associated with LWDS ER sites. Investigation of the groundwater is on-going.

The LWDS RFI Report was completed and submitted to the EPA in September 1995. No Further Action is recommended for all three sites of the LWDS. A Request for Supplemental Information (RSI) was received from the New Mexico Environmental Department (NMED) in October 1997, and a response was submitted to NMED in January 1998.

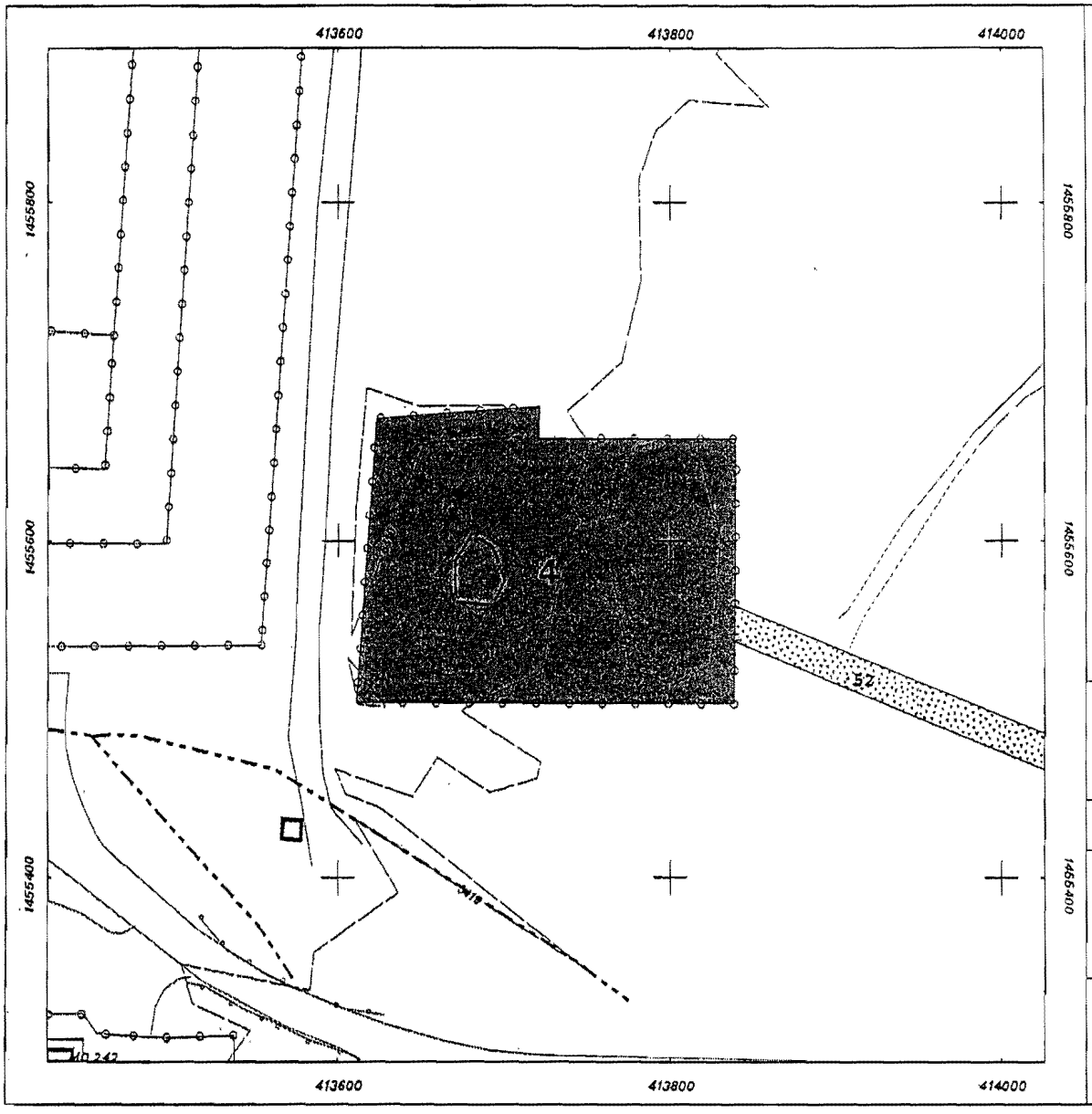
Future Work Planned

No further work is planned.

Waste Volume Estimated/Generated

No waste has been generated at this site.

Information for ER Site 4 was last updated Jan 27, 2003.



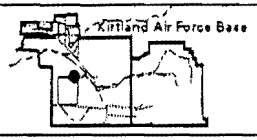
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- 900 Building
- Technical Area
- SWMU 4
- Other SWMUs

Center of Site:
X = 413725
Y = 1455591

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 4

LWDS Surface Impoundments

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

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ER Site No. 5: LWDS Drainfield

ADS: 1307
Operable Unit: Liquid Waste Disposal System

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

The Liquid Waste Disposal System (LWDS) Drainfield (Site 5) was designed to receive liquid wastes discharged from the LWDS Holding Tanks, Site 52. The below-grade drainfield was operational from 1963 until it collapsed in 1967. The drainfield is buried approximately 30 ft below ground surface and located approximately 30 ft south of the LWDS holding tanks. The reported capacity of the drainfield is ~12,000 gallons.

Constituents of Concern

Radionuclides from the discharge of reactor cooling water.
Organic Compounds/Heavy Metals from various industrial process in Technical Area V.

Current Hazards

Slightly elevated values of barium, cadmium, chromium, copper, lead, nickel, and zinc were detected at the site at >30 ft below ground surface. Risk to on-site workers is very minimal to non-existent.

Current Status of Work

The investigation of the LWDS Environmental Restoration (ER) sites proceeded "at risk", before U.S. Environmental Protection Agency (EPA) approval of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Workplan. The investigation, as originally scoped, was completed in March 1994. The EPA approved the RFI Workplan in June 1994.

Although low levels of trichloroethene has been detected in the LWDS Drainfield ground-water monitoring well (LWDS-MW1), it was not detected in the soil associated with any of the LWDS ER sites. Investigation of the groundwater is on-going.

The RFI Report was completed and submitted to the EPA in September 1995. No Further Action (NFA) was recommended for all three sites of the LWDS. A Request for Supplemental Information (RSI) from the New Mexico Environment Department (NMED) was received in October 1997, and responses were subsequently returned to NMED in January 1998 and October 1998.

In 2001, the TAV-MW6 borehole was put in to a depth of 500 ft bgs within the boundaries of Site 5. The soil sampling results from this borehole were included in the October 2001 document, "Summary of Monitoring Well Drilling Activities TA-V Groundwater Investigation."

In October 2002 a document was submitted to the NMED that briefly summarized all the information available for Site 5 and pointed to the documents that contained more detailed information. It also included cross sections, a revised risk assessment, and tables of analytical results.

Concentrations of several metal and radionuclide constituents from soil samples collected from SWMU 5 exceed their respective background concentration and background activity. The comparison of the metal concentrations to the background values reveals that most of the concentrations are only slightly above the background. The distribution of metals in the soil samples do not appear to be consistently distributed throughout the soil column, although there is a zone directly beneath the drainfield that appears to contain the majority of the highest levels of metals. This zone is approximately 38 feet below ground surface and can be seen in the laboratory results for LWDS-05-BH12.

The radionuclide uranium-235 was detected above the background activity. Additional samples had a nondetect uranium-235 result, but the minimum detectable activity for these samples exceeded the background activity and, therefore are considered detections at the given minimum detectable activity. Detections of other radionuclides that exceeded background activities include cesium-137, thorium-232, and tritium. The distribution of these radionuclides in the soil samples does not appear to be consistently distributed throughout the soil column, although a zone at approximately 30 to 50 feet below ground surface does contain the highest levels of thorium-232, cobalt-60, and cesium-137. Cobalt-60 does not have a background activity but was considered a constituent of concern due to historical activities at TA-V.

VOCs and SVOCs do not have background concentrations for comparison, but any value that is above the method detection limit is evaluated. The VOCs detected are either associated with common laboratory contaminants (acetone, di-n-butyl-phthalate, methylene chloride, and toluene) or were detected at very low levels (2-butanone, 4-methyl-2-pentanone, and trichloroethene) and do not appear to be significant.

The source of TCE in groundwater in the TA-V area is assumed to be from contaminated water released from the LWDS drainfield during the 1960s. The monitoring wells TAV-MW6, TAV-MW7, TAV-MW8, and TAV-MW9 were installed in March and April 2001 in order to further investigate vadose-zone and groundwater contamination in the TA-V area. The monitoring wells TAV-MW6 and TAV-MW are located within the SWMU 5 boundary (soil samples were collected in the borehole for TAV-MW6). Monitoring wells TAV-MW8 and TAV-MW9 were located downgradient of the of SWMU 5.

Based on the evaluation of the results of the soil and soil-vapor samples collected during the drilling activities, the relatively low levels of all potential contaminants (metals, VOCs, tritium, and radionuclides) indicate no significant residual soil contamination exists in the vadose-zone. The suspected contamination source (waste water from the LWDS drainfield) was not readily identified in the vadose-zone by soil moisture analyses. The results do show that there is not a front of contaminated water beneath the LWDS drainfield that is moving through the vadose-zone toward the groundwater. The presence of such a front would be of concern as it may cause a future increase in the levels of contamination found in the groundwater. It is now suspected that all release water from the LWDS has moved through the vadose-zone and there is no longer an active source of contamination adding to the levels currently seen in groundwater.

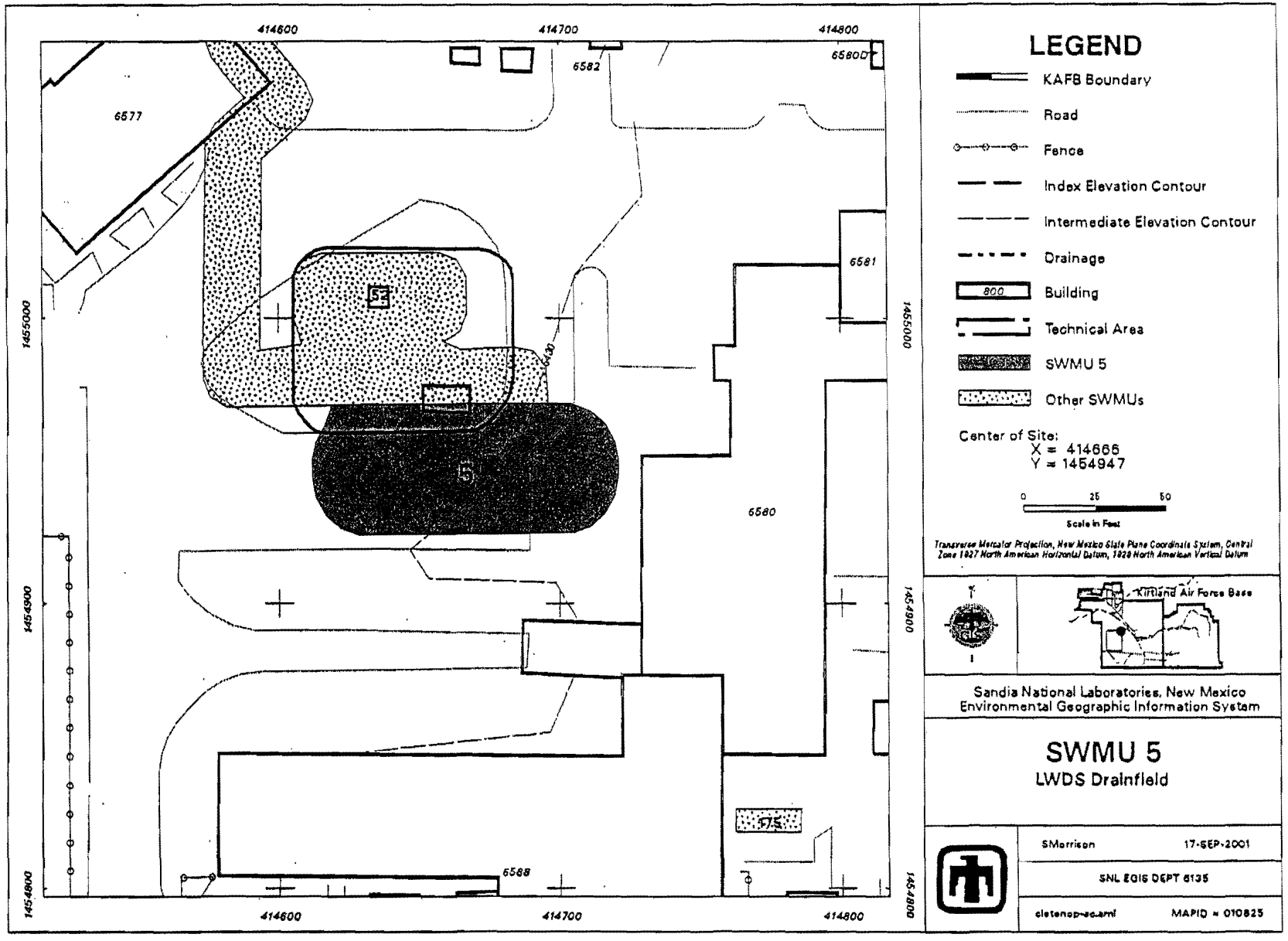
Future Work Planned

Assuming Sandia National Laboratories / New Mexico (SNL/NM) recommendations on final site disposition are followed, no future work is planned at the drainfield.

Waste Volume Estimated/Generated

No waste has been generated at this site.

Information for ER Site 5 was last updated Jan 27, 2003.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6577
6582
6580D
6581
6580
6588
5E
5F
5G
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 5
Other SWMUs
Center of Site:
X = 414666
Y = 1454947
0
25
50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 5
LWDS Drainfield
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
MAPID = 010825

Sandia National Laboratories

ER Site No. 52: LWDS Holding Tanks

ADS: 1307
Operable Unit: Liquid Waste Disposal System

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

The three Liquid Waste Disposal System (LWDS) holding tanks were designed to receive liquid wastes from the Sandia Engineering Reactor Facility main reactor, experimental facilities, and support facilities in Technical Area V (TA-V). The reactor operated from 1962 to 1971 and the tanks received liquid wastes from the facility during this entire period. The tanks served as holding tanks to allow short-lived radionuclides to decay before discharging to the LWDS drainfield (Site 5) until the drainfield collapsed in 1967. The discharge was later diverted to the LWDS surface impoundments (Site 4) from 1967 to 1992.

Constituents of Concern

Radionuclides from the discharge of reactor cooling water.
Organic Compounds/Heavy Metals from various industrial process in TA-V.

Current Hazards

Slightly elevated detections of chromium, beryllium, cadmium, barium, and arsenic were found when sampling the holding tanks. These metals are limited to the inside of the tanks.

Current Status of Work

The investigation of the LWDS Environmental Restoration (ER) sites proceeded "at risk", before U.S. Environmental Protection Agency (EPA) approval of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Workplan. The investigation, as originally scoped, was completed in March 1994. Contamination was detected at all three LWDS sites.

The EPA approved the RFI Workplan in June 1994. The tanks were disconnected from the original piping and connected to the new Liquid Effluent Control System (LECS), which was contructed in 1994 to allow wastewater to be held and sampled before discharging to the City of Albuquerque publicly-owned treatment works.

Although trichloroethene has been detected in the LWDS Drainfield ground-water monitoring well (LWDS-MW1), it was not detected in the soil associated with any of the LWDS ER sites. Investigation of the TA V groundwater is continuing.

The RFI Report was completed and submitted to the EPA in September 1995. No Further Action (NFA) was recommended for all three sites of the LWDS.

A Request for Supplemental Information (RSI) was received from New Mexico Environment Department(NMED) in October 1997, and a response was submitted to NMED in January 1998. Tables that summarized analytical results were included with this response.

A 2nd RSI was received from the NMED in March 2001. A response was returned to NMED in May 2001. This response included tables of analytical data and information regarding the boreholes from which the soil samples were collected.

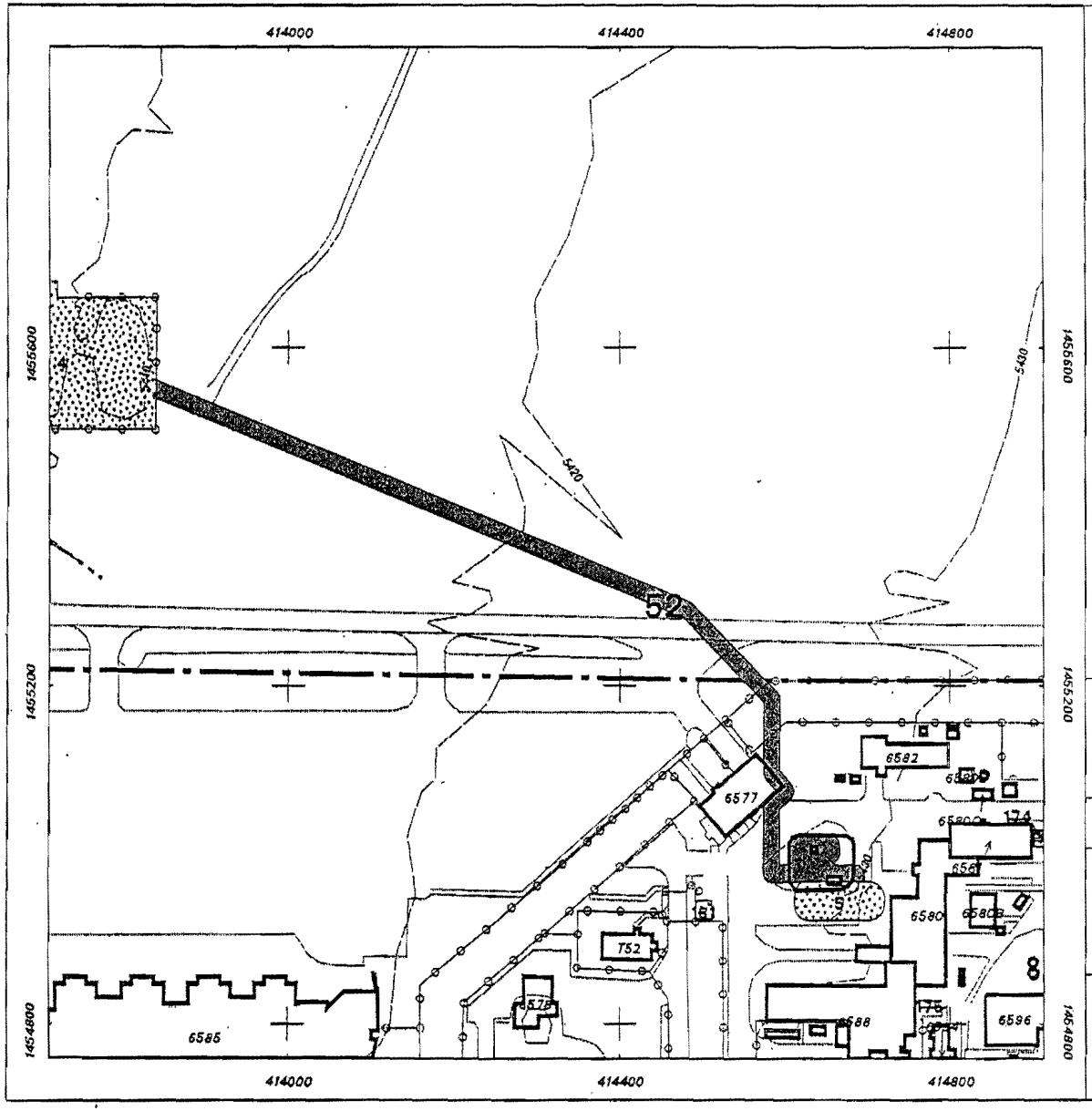
Future Work Planned

No further work is planned.

Waste Volume Estimated/Generated

No waste has been generated at this site.

Information for ER Site 52 was last updated Jan 27, 2003.



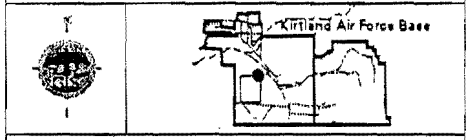
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 52
- Other SWMUs

Center of Site:
X = 414311
Y = 1455359

0 100 200
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 52
LWDS Holding Tanks

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
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OU-1309
TIJERAS ARROYO

ER Site No. 45: Liquid Discharge (Eastern Edge of TA-IV)

ADS: 1309
Operable Unit: Tijeras Arroyo

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Sue Collins
Office Phone: 284-2546

Site History

Environmental Restoration (ER) Site 45, the Liquid Discharge site, covers 0.78 acres near the northeast corner of Technical Area-IV (TA-IV) and the southern apex of TA-II. The site is located approximately 100 ft east of Building 965. ER Site 45 is situated along the northern rim of Tijeras Arroyo on industrial land controlled by the Department of Energy (DOE). The site is flat at an elevation of 5,400 feet, above mean sea level and lies about 50 feet in elevation above the 100-year floodplain. The active channel for Tijeras Arroyo is located approximately 1,600 ft east of ER Site 45. The western part of the site is located within the TA-IV fence and is paved with asphalt; the eastern half is unpaved and is only accessible by driving around the Explosive Components Facility.

Environmental concern about ER Site 45 is based upon the single discharge of "brownish" water from an unidentified tank truck. In February 1985, a Sandia National Laboratories / New Mexico (SNL/NM) employee observed that a tank truck was discharging about 500 to 1,000 gallons of brownish water onto the ground surface immediately east of TA-IV. The employee asked the truck driver what he was doing; he replied "discharging water." The tank truck did not have SNL/NM or military markings. The location of the discharge appeared wet during February 12 - 15, 1985. No more water-disposal details are available in the Comprehensive Environment Assessment and Response Program (CEARP) or any other documents. The precise location of the water discharge is not precisely known; however, the September 1997 No Further Action (NFA)

proposal assumed that the discharge site was one of the disturbed areas defined in the aerial photography. In the mid-1980's ER Site 45 had been a "borrow area" for the temporary storage of clean-fill soil during TA-IV construction activities.

No hazardous chemicals or materials are known to have been disposed of at ER Site 45. No stained soil has been observed at the site. The SNL/NM ER Project has assumed that the potential Constituents of Concern (COC)s in soil consist of Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), and Resource Conservation and Recovery Act (RCRA) metals.

In 1992, the ER Project began conducting groundwater studies at TA-II. These studies along with other Solid Waste Management Unit related investigations were eventually incorporated into the Tijeras Arroyo Groundwater (TAG) Investigation. TA-IV is located in the central part of the TAG study area. The hydrogeologic setting of the study area is dominated by two water-bearing zones, the perched system and the regional aquifer, both of which are present within the upper Santa Fe Group. The perched system is not used for water supply. However, the COA, Kirtland Air Force Base (KAFB), and the Veterans Administration (VA) utilize the regional aquifer for water-supply purposes. At TA-IV, the depth to the perched system is approximately 320 ft below ground surface (bgs). The perched system covers approximately 3.5 square miles in the central part of the TAG study area and may extend across the northern boundary of KAFB. The direction of groundwater flow in the perched system is to the southeast. Discontinuous, yet overlapping multiple lenses of unsaturated alluvial-fan sediments serve as a perching horizon beneath the perched system and above the regional aquifer. At TA-IV, the depth to the regional aquifer is approximately 520 ft bgs. The direction of groundwater flow in the regional aquifer is principally to the northwest towards the KAFB, COA, and VA water-supply wells. Groundwater from the perched system merges with the regional aquifer southeast of Tijeras Arroyo. The regional aquifer extends across the entire TAG study area and the Albuquerque Basin.

Several monitor wells are located in the vicinity of ER Site 45. The nearest monitor well, TA2-W-19, is located 650 feet east of the site. The nearest downgradient water-supply well is KAFB-1, which is located approximately 1.3 miles northwest of the site. Low levels of TCE and nitrate have been detected in perched-system groundwater samples collected at nearby TA-II. The regional aquifer is not contaminated. ER Site 45 has not impacted groundwater.

The vicinity of TA-IV is essentially flat, with a gentle slope to the west of approximately 4 percent. The soil is poorly developed with high akalinity. The subsurface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These upper Santa Fe Group deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains. The depth to Precambrian basement beneath TA-IV is approximatley 3,000 ft.

ER Site 45 is situated approximately 50 ft in elevation above the floodplain of Tijeras Arroyo, which is the largest surface-water feature at KAFB. The site is located approximately 1,600 ft west of the active channel of Tijeras Arroyo. Water flows in the active channel near TA-IV several times per year.

Constituents of Concern

The COCs for ER Site 45 are VOCs, SVOCs, and RCRA metals.

Current Hazards

No chemical or radioactive hazards are present in surface or subsurface soils at ER Site 45.

Current Status of Work

Numerous field surveys were conducted at ER Site 45 in 1993 - 1995. The site was visually surveyed for Unexploded Ordnance (UXO) and High Explosive (HE) material; none was found. A surface gamma radiation survey also was conducted; no radioactive anomalies (defined as more than 30% above natural background) were detected. An archaeological survey determined that no cultural resources were present in the vicinity of the site. Two biological surveys were conducted; the vicinity of the site had been significantly disturbed by construction activities and no natural habitat remained.

An aerial photography report identified the previous locations of soil piles and shallow excavations typical of construction and borrow operations. No stains or liquids were evident in the photographs. The historic aerial photography was reviewed again in April 2001. Twenty-five years of aerial photographs for various years between 1951 and 1999 were available. No suspicious environmental problems were evident.

Soil vapor at ER Site 45 was sampled with 22 Petrex™ passive collectors; no organic contaminants such as Trichoroethene (TCE) or perchloroethylene (PCE) were detected.

A geophysical (magnetic) survey was conducted across the unpaved ground surface east of the TA-IV fence. Three subsurface anomalies were identified. The anomalies were subsequently excavated; the metallic debris consisted of scrap metal, wires, and culvert pipes.

Confirmatory soil sampling was conducted at three types of locations at ER Site 45: a sewer-line trench, the liquid-discharge area, and subsurface magnetic-anomalies. One-hundred fractions of the samples from these locations were analyzed for VOCs, SVOCs, HE compounds, RCRA metals, gamma-emitting radionuclides, and tritium. No significant contamination was detected, but some detection limits were too high for the analytical results to be conclusive. The analytical results were used in the September 1997 NFA proposal.

In June 1999, NMED issued a request for supplemental information (RSI) requiring the excavation of former 'Area A' which is located within TA-IV to determine if debris had been buried there. The RSI also required additional soil sampling at the liquid-discharge area and sewer-line trench 7. SNL/NM submitted an RSI Response in 1999 that acknowledged the need for additional field work at ER Site 45.

Future Work Planned

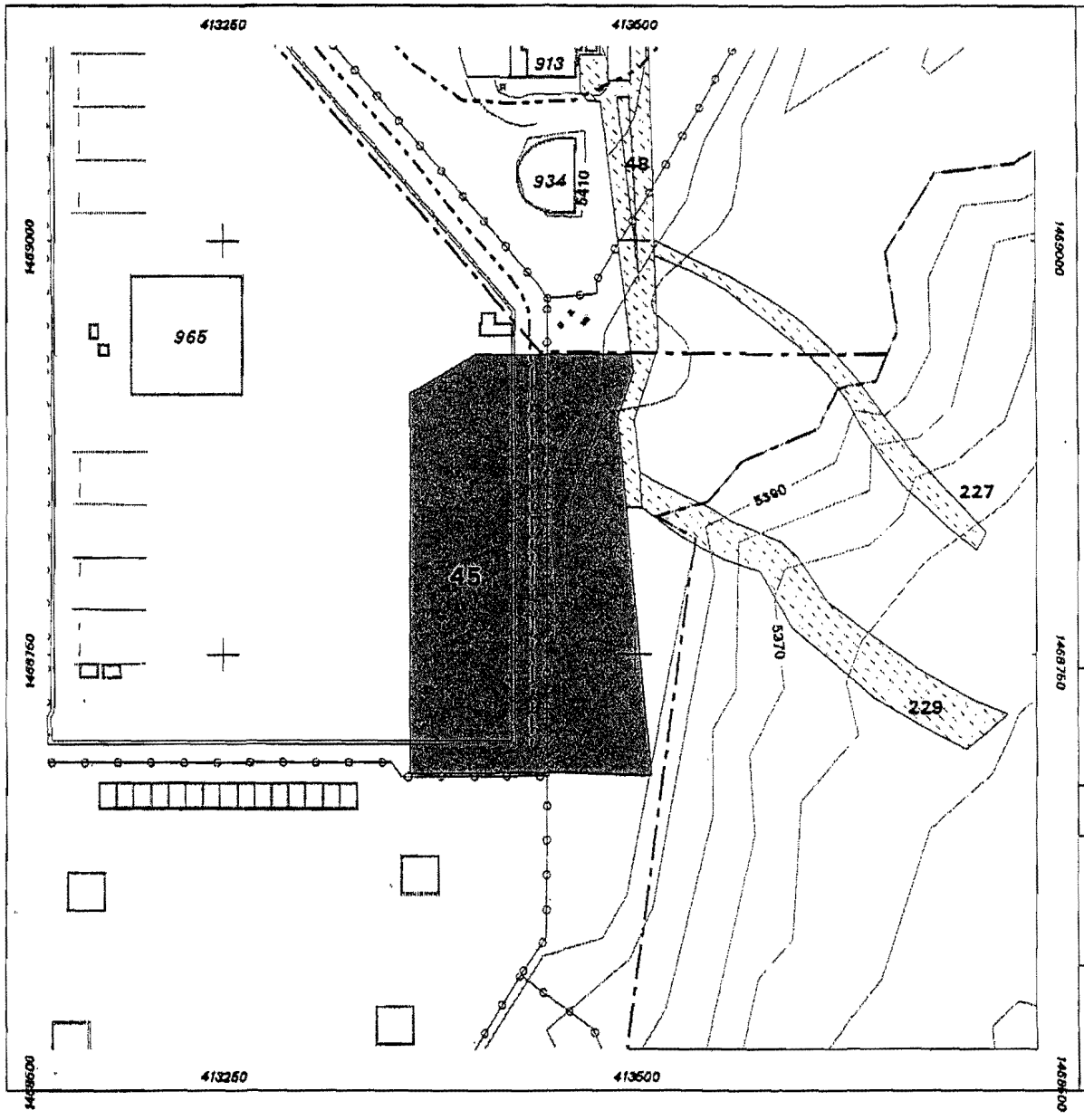
Future work will involve the excavation of former 'Area A' and the collection of soil samples at the liquid-discharge area and sewer-line trench 7. After the field work is complete and the anlaytical

data have been evaluated, a RSI response will be submitted to NMED.

Waste Volume Estimated/Generated

No waste was generated at ER Site 45.

Information for ER Site 45 was last updated Jan 23, 2003.



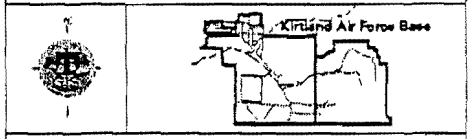
LEGEND

- Road
- Fence
- 10-foot Elevation Contour
- Surface Drainage
- Building / Concrete Structure
- Technical Area
- SWMU 45
- Other SWMU

Center of Site:
X = 413437
Y = 1468804

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 45

Liquid Discharge
(East of TA-IV)

DHelfrich	22-JAN-2003
SNL EGIS DEPT 6135	
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Sandia National Laboratories

ER Site No. 46: Old Acid Waste Line Outfall (SouthWest of TA-IV)

ADS: 1309
Operable Unit: Tijeras Arroyo

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Sue Collins
Office Phone: 284-2546

Site History

ER Site 46 is the inactive outfall for the Old Acid Waste Line (ER Site 226), that was connected to six research buildings in TA-I. Covering 2.11 acres at the southwest corner of TA-IV, ER Site 46 discharged acid-waste water which contained a variety of chemicals and possibly some radionuclides. At ER Site 46, the acid-waste line is constructed of eight-inch diameter clay-tile pipe; the pipe joints are sealed with black tar and jute. From about 1948 through late 1974, the TA-I acid-waste water discharged from a series of three outlets on the southern end of the acid-waste line into three shallow earthen ditches that extended for several hundred feet across the East Mesa. The confluence of these three outfall ditches is still present on the northern rim of Tijeras Arroyo. The amount of discharge was not well documented, but may have been about 130,000 gallons of acid-waste water per day. Soil-vapor samples suggest ER Site 46 might have been a source of trichloroethylene (TCE) which has impacted groundwater.

The specific types and volumes of waste water discharged from the acid-waste line are not completely known. According to the 1987 CEARP, the "old acid waste line was used to discharge about 130,000 gallons per day (gpd) of acidic waste water from Area I to an open ditch that emptied into Tijeras Arroyo. Most of the water was from cooling tower blowdown; however, this line also carried some waste liquid from etching and photographic processing. The contaminants discharged were primarily chromic acid (approximately 200 gallons per day) and ferric chloride."

In the 1990s, TA-I Operable Unit (OU) personnel were able to obtain additional details by interviewing laboratory personnel and excavating various laterals of the acid-waste line in TA-I. The acid-waste line served Buildings 839, 840, 841, 860, 863, and 892. In addition to the chemicals discussed above, the acid-waste line received electroplating solutions and chromates. Most of the chemicals used in the six buildings were typically containerized for off-site disposal. However, some waste waters discharged to the acid-waste line may have contained: various organic compounds (acetone, TCE, and toluene); isopropyl alcohol; methyl alcohol; electroplating solutions containing nickel acetate, cadmium cyanide, copper cyanide, hydrogen sulfide, nickel sulfate, copper sulfate, and sodium dichromate; polyvinyl alcohol binder; various acids (acetic, chromic, sulfuric, nitric); sodium hydroxide; paints; paint strippers; machining coolant oils; non-precious metals (aluminum, depleted uranium, lead, and silver); polychlorinated biphenyls (PCBs); and precious metals. In addition to the waste water, the acid-waste line may have received a relatively minor amount of sanitary waste (sewage) from inadvertant cross-connections between various TA-I piping systems. However, the disposal of sewage in the open ditches would have been limited because of health and odor issues. Storm water did not discharge at ER Site 46.

The CEARP is the only available document that cites waste-water discharge rates for the acid-waste line. The CEARP-cited discharge rate of 130,000 gpd, which is equivalent to approximately 90 gallons per minute, may be unreasonable. Neither historical aerial photographs nor field inspections of the remaining OD-1 and OD-2 segments has identified a sufficiently large amount of soil erosion which would correspond to such a large amount of waste-water. However, the volume of waste water was sufficient to create brushy vegetation that stretched along the 700-foot long outfall ditches and for at least an additional 1,400 feet past the confluence of the outfall ditches.

The soil is poorly developed with high akalinity. The subsurface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These upper Santa Fe Group deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains. The depth to Precambrian basement beneath TA-IV is approximatley 3,000 ft.

ER Site 46 is situated on the steep, northern rim of Tijeras Arroyo but outside the 100-year floodplain. The site is located approximately 2,000 ft north of the active channel of Tijeras Arroyo. Water flows in the active channel near the site several times per year.

Constituents of Concern

The constituents of concern (COCs) for ER Site 46 are:

- volatile organic compounds (VOCs)
- semi-volatile organic compounds (SVOCs)
- the Target Analyte List (TAL) metals
- chromium-VI
- cyanide
- PCBs
- nitrate
- tritium
- gamma-emitting radionuclides.

Current Hazards

Near-surface soil at the northern end of ER Site 46 near the clay-tile pipe is contaminated with heavy metals and PCBs. No radioactive hazards are present at the site.

Current Status of Work

In 1994, ER Site 46 was surveyed for unexploded ordnance / high explosive (UXO/HE) and radioactive material; neither was found. Eight soil samples (46-01-A/B through 46-04-A/B) were collected from a nearby storm-water ditch. The samples were analyzed for VOCs, SVOCs, TAL metals, chromium-VI, cyanide, total Kjeldahl nitrogen (TKN), nitrate/nitrite, tritium, and gamma-emitting radionuclides. No contamination was detected in the soil samples. However, recent research has revealed that the soil samples did not properly characterize the site because the storm-water ditch did not receive any waste water.

In 1995, TA-I OU personnel collected soil and sediment samples at 27 locations along nearly the entire length of the acid-waste line north of ER Site 46. A GeoProbe™ rig was used to collect soil samples from within a few feet laterally of the line, and to a maximum sampling depth of 14 feet below ground surface (bgs). Sediment samples also were collected from the acid-waste line by hand. The soil and sediment samples were analyzed for VOCs, SVOCs, PCBs, TAL metals, tritium, and gamma-emitting radionuclides. No significant contamination was detected. However, the New Mexico Environmental Department (NMED) has recently requested the collection of additional soil samples on both sides of the acid-waste line.

In 1996, Tijeras Arroyo OU personnel reviewed a historical set of aerial photographs and a video-camera survey that had been conducted by SNL/NM Facilities Engineering. Because the acid-waste line had not been constructed with cleanouts, openings for the video camera were cut into the acid-waste line at a series of locations that became known as acid waste access points (AWAPs). Two AWAPs are located at ER Site 46.

As part of the Sandia North groundwater investigation, monitor well TJA-3 was installed at the north end of ER Site 46 in 1998. The well was completed in the regional aquifer at a depth of 496 to 516 feet bgs. The shallow water-bearing zone was not encountered. During drilling, soil-vapor samples were collected at six depths (37, 97, 137, 197, 237, and 312 ft bgs) with a Simulprobe™ sampler driven ahead of the drill string. Low to high levels of 16 VOCs were detected in soil vapor. TCE had the maximum VOC concentration in soil vapor at 10,000 parts per billion by volume (ppbv) in the 137-ft sample. However, the TCE concentration at 197 feet bgs was only 320 ppbv. The second highest VOC concentration was methylene chloride at 620 ppbv from the 137-foot sample. Vinyl chloride was not detected in any of the soil-vapor samples.

In August 1998, the DOE collected soil-vapor samples from four GeoProbe™ boreholes (EPA-ERTA2/4-BH-1, EPA-ERTA2/4-BH-2, EPA-ERTA2/4-BH-3, and EPA-ERTA2/4-BH-5). Samples were collected at depths of 10, 20, and/or 30 feet bgs using a Tedlar™ bag system. Low levels of 16 VOCs were detected in soil-vapor samples collected near the confluence of the outfall ditches at boreholes EPA-ERTA2/4-BH-3 and EPA-ERTA2/4-BH-5. TCE had the maximum VOC concentration at 55 ppbv. VOCs were not detected at boreholes EPA-ERTA2/4-BH-1 and EPA-

ERTA2/4-BH-2, which were located about 700 and 300 feet, respectively south of the confluence.

In October 1999, passive soil-vapor samples were collected using 36 VaporTec™ collectors (TJAOU-46-SVX-01 thorough TJAOU-46-SVX-36). The sampling area covered approximately seven acres and focused on the storm-water ditch, which at the time was a suspected contaminant release site. After being buried for 30 days at shallow depths ranging from approximately 0.5 to 1 feet bgs, the collectors were retrieved and subsequently analyzed for VOCs and gasoline/diesel range organics using U.S. Environmental Protection Agency methods 8021M and 8015M, respectively. VOC values were was reported in nanograms [ng] of contaminant that had sorbed onto the activated carbon sampling media. Low levels of 17 VOCs were detected. The highest values for TCE and vinyl chloride were 257 and 103 ng, respectively.

TCE was detected at 14 of the 36 VaporTec™ locations, but the distribution of TCE did not coincide well with the storm-water ditch. This prompted the review of aerial photography that is discussed below. The highest TCE value of 257 ng corresponded to collector TJAOU-46-SVX-01, which was located near the upper end of the outfall ditches. Most of the TCE in soil vapor was present near the northern ends of the outfall ditches. TCE was not detected in collector TJAOU-46-SVX-24, which was located at monitor well TJA-3. This dislocation between the TCE in soil vapor and the location of the outfall ditches was suspected to be the result of past TA-IV construction activities and the historical migration or degradation of contaminants.

The maximum concentration of vinyl chloride in soil vapor was 103 ng in VaporTec™ collector TJAOU-46-SVX-24, which was located adjacent to monitor well TJA-3. Vinyl chloride was detected at each of the 36 soil-vapor sampling locations even though no documents suggest that SNL/NM has ever used vinyl chloride. Because vinyl chloride was not detected in the trip blank or in any analytical laboratory quality assurance / quality control (QA/QC) samples, the presence of vinyl chloride at each sampling location suggests that vinyl chloride is a degradation product of TCE. The lack of vinyl chloride in the deeper soil-vapor samples from the TJA-3 borehole also suggests that TCE degradation is more prevalent near the ground surface. An interpretation that other contaminants present in soil vapor are the result of degradation is not possible because a variety of VOCs were present in the waste water.

Minor amounts of fuel hydrocarbons were detected in soil vapor. Twenty-six VaporTec™ collectors yielded diesel-range organics. The maximum value for diesel-range organics in soil vapor was 49.6 ng. Only two collectors yielded detectable concentrations of gasoline-range organics; the maximum value was 2.31 ng. These fuel hydrocarbons may be result of activities associated with TA-IV construction or the nearby fire-training area.

In 1999, a minor amount of lead shot was identified at some of the ant hills that are located at ER Site 46. A soil layer consisting of a few inches of blow sand covers most of the lead shot. The lead shot is fallout from the nearby Kirtland Air Force Base (KAFB) skeet range, which was used from the mid-1960s through May 1998. In 1998 and 1999, the KAFB Installation Restoration Program (IRP) remediated the skeet range (IRP Site SS-83) by excavating the upper few inches of the ground surface. Approximately 174,000 pounds of lead shot were sent to a recycling facility. However, the area adjacent to ER Site 46 was located far enough from the shooting positions that remediation was not practical. However, the lead shot at ER Site 46 may impact soil-sampling analyses.

In the Summer of 2000, the ER Project conducted a comprehensive review of historic aerial photography for the period of 1951 to the present. Three previously overlooked outfall ditches

were identified, and are now known as OD-1, OD-2, and OD-3. The outfall ditches extended southeastward from various outlets on the acid-waste line and merged into a confluence that is currently visible amongst some elm trees about 150 feet south of the TA-IV fence. Each of the outfall ditches was about three-feet deep, five-feet wide, and 700-feet long. The discharge of waste water began in 1948 at the first outfall ditch (OD-1). Soon after, the flow of waste water was apparently reduced by the buildup of either vegetation and/or sediment. The low slope (grade) of the acid-waste line aggravated the flowage problem. Thus, more than one outfall ditch was required. In about 1950, an intermediate outlet was constructed on the acid-waste line about 240 feet north of the OD-1 outlet; this second outlet became the starting point for outfall ditch OD-2. In the mid-1960s, another intermediate outlet was constructed in the acid-waste line about 20 feet north of the OD-2 outlet; this third outlet became the starting point for OD-3. A slight topographic low near the outlets allowed waste water to eventually flow into all three ditches simultaneously. The flow continued through the three outfall ditches until late 1974. No waste water has discharged at Site 46 since then.

The aerial photography also shows that construction of TA-IV has disturbed much of the ER Site 46 area. In 1977, an 1,150-foot long storm-water ditch was constructed from the northwest corner of TA-IV to an undisturbed ravine on the arroyo rim. The ditch was used for about one year to drain storm water from some of the unpaved TA-IV parking lots. Use of the storm-water ditch was discontinued in 1978 after buried piping was extended from TA-IV to the Ninth Street Channel. In late 1978, the northernmost 150 feet of the storm-water ditch was backfilled with soil. In the early 1980s, virtually the entire length of each outfall ditch was similarly backfilled with soil when two TA-IV structures (Building 981-I and the ER Site 77 surface-water impoundment) were built. The southernmost 25 feet of the acid-waste line and the original 1948 outlet was destroyed by the construction activities. The near total disappearance of the three outfall ditches and the coincidental construction of the storm-water ditch led to the storm-water ditch being mistakenly identified in 1994 as an outfall ditch for ER Site 46. As mentioned before, soil samples were mistakenly collected from the storm-water ditch in 1994.

In July 2000, the confluence of the ER Site 46 outfall ditches was identified in the field for the first time. The remaining easternmost segments of OD-1 and OD-2 were found to be about 60-feet long. Nearby, no evidence was found for OD-3. The easternmost segment of OD-3 had been disturbed by the construction of a TA-IV storm-water outfall pipe, which is now known as ER Site 234. TA-IV storm water discharged at ER Site 234 from 1979 to the early 1990s.

During January through March 2001, four monitor wells (TJA-6, TJA-7, 46-VW-01, and 46-VW-02) were installed at Site 46. At the northern end of the site, monitor wells TJA-7 and 46-VW-01 were installed near TJA-3. Monitor well TJA-7 was completed in the shallow water-bearing zone at 291 to 311 feet bgs and is a companion well for regional well TJA-3. Near the southern end of the site, monitor wells 46-VW-02 and TJA-6 were installed about 300 feet south of the outfall-ditch confluence. Monitor well TJA-6 was completed in the regional aquifer at a depth of 455 to 475 feet bgs. Shallow groundwater was not detected during the drilling for TJA-6.

Monitor wells 46-VW-01 and 46-VW-02 are soil-vapor monitor wells that are equipped with FLUTe (Flexible Liner Underground Technology)™ systems. The sampling ports for monitor well 46-VW-01 are set at 15, 65, 115, 165, 215, and 265 feet bgs. The sampling ports for monitor well 46-VW-02 are set at 46, 96, 146, 196, 246, and 296 feet bgs. Summa™ canisters will be used to collect soil-vapor samples on a quarterly basis. The samples will be analyzed for VOCs.

Borehole samples were collected to a maximum depth of 275 feet bgs during the drilling of the

four monitor wells. The analytes for the borehole samples consisted of VOCs, SVOCs, HE compounds, metals, and radionuclides. The analytical results are pending.

On April 11, 2001 a backhoe was used to find the third (northernmost) outlet where OD-3 began. Beginning at the southeast corner of the outdoor fire-training facility, a backhoe was used to dig through a gravel-parking lot. The top of the acid-waste line was found at a depth of approximately 1.5 feet. A hand auger was used to collect a soil sample (TJAOU-46-GR-01) from adjacent to the acid-waste line at a depth of 2.5 to 3.5 feet. The backhoe was then used to dig down to four feet; no stained soil was evident in the vicinity of sample TJAOU-46-GR-01. A trench was dug southward along the acid-waste line for a distance of about 30 feet until the third outlet of the acid-waste line was found. Between the first sample location and the third outlet, the acid-waste line was intact and no discolored soil was evident. However, stained soil was found at the third outlet, which was buried at a depth of only about six inches bgs. The soil staining varied from green to blue to gray. The stained soil appeared to be confined to about three feet laterally of the line. However, the limit of stained soil was not fully determined. The staining was most likely associated with organic dyes that were used in the TA-I photo-processing laboratories. Sample (TJAOU-46-GR-02) was collected from the sloughed soil/sediment present inside the third outlet. Farther south along the acid-waste line, another soil/sediment sample (TJAOU-46-GR-03) was collected from a broken section of the acid-waste line. Here, the top of the acid-waste line was only a few inches bgs and the degree of staining was less.

On April 12, 2001 soil sampling was conducted at the southeastern end of outfall ditch OD-2 near the confluence. Two soil samples were collected at location TJAOU-46-GR-04. The samples were collected at 0.5 and 1.5 feet bgs. The samples consisted of native soil from beneath the floor of the outfall ditch. Here, the ditch was only about three feet wide and two feet deep. No soil staining was evident. The soil samples were shipped to an off-site analytical laboratory and analyzed for VOCs, SVOCs, HE compounds, metals, cyanide, gamma-spec radionuclides, and tritium. The analytical results indicate that metal concentrations are above background levels.

Quarterly groundwater sampling began at monitor well TJA-3 in December 1998. Through April 2000, no VOCs were detected. Four VOCs were detected in the January 2001 samples: methylethylketone at 42 ppb, TCE at 0.51J, ethylbenzene at 0.63J ppb, and methylene chloride at 1.2J ppb. Monthly water-level measurements have shown the depth to the regional aquifer at TJA-3 to be consistently near 498 feet bgs. In June 1995, SNL/NM submitted a No Further Action proposal to the New Mexico Environment Department (NMED) for ER Site 46. After receiving the June 1996 Notice of Deficiency (NOD) comments from NMED, SNL/NM submitted a NOD response in October 1996. In October 1999, NMED issued a second set of NOD comments for ER Site 46 in which they requested several types of additional sampling. SNL/NM submitted a second NOD Response in December 1999, which confirmed the need for additional work.

In 2001, a pair of permanent soil-vapor monitoring wells (46-VW-01 and 46-VW-02) were installed at ER Site 46. Soil samples were collected during the drilling of the boreholes for the two monitoring wells. Soil-vapor samples were collected for five quarters from April 2001 through March 2002. The analytical results were reported in the November 2002 Tijeras Arroyo Groundwater - Continuing Investigation Report.

Future Work Planned

A Voluntary Corrective Measure (VCM) will be conducted in 2003 for removing contaminated

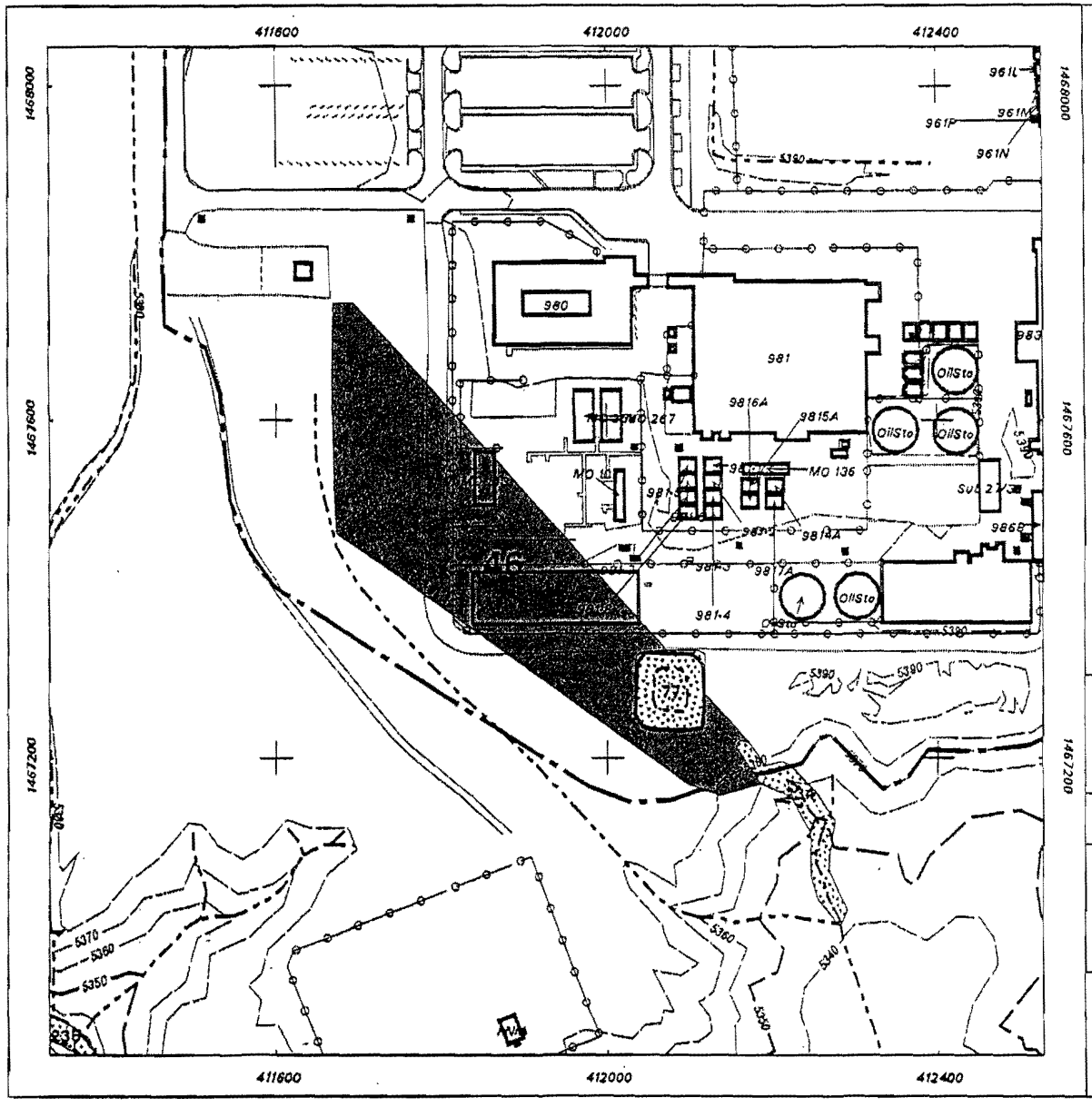
soil near the northern end of ER Site 46. Confirmatory soil samples will be collected in the VCM area. After the analytical results from the VCM sampling are received, an NOD response will be prepared. The NOD response will include at least five sets of analytical results:

- **shallow-soil data for the 2001 sampling,**
- **borehole data from the 2001 drilling,**
- **five quarters of soil-vapor results from monitor wells 46-VW-01 and 46-VW-02,**
- **reformatted data tables for the soil-sampling results previously submitted in the June 1995 NFA Proposal and the October 1996 NOD Response,**
- **and VCM confirmatory soil samples.**

Waste Volume Estimated/Generated

No waste has been generated at ER Site 46.

Information for ER Site 46 was last updated Jan 23, 2003.



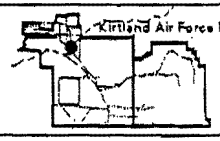
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 46
- Other SWMUs

Center of Site:
X = 411926
Y = 1467448

0 100 200
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 46

Old Acid Waste Line Outfall

(Southwest of TA-IV)

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

cistenop-ac.aml MAPID = 010835

ER Site No. 227: Bunker 904 Outfall (SouthEast of TA-II)

ADS: 1309
Operable Unit: Tijeras Arroyo

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Sue Collins
Office Phone: 284-2546

Site History

Site 227 is one of a pair of inactive Technical Area II (TA-II) waste-water outfalls for the Site 48 high explosive (HE) drain system. Piping for the HE drain system was constructed of cement pipe and was connected to Buildings 904, 913, and 914. The piping discharged waste-water into a shallow ditch that is still visible today in its entirety approximately 80 feet east of the southern TA-II apex. The site covers a mere 0.08 acres on the northern rim of Tijeras Arroyo. The site is 270 feet long and extends eastward from Site 48, down the steep arroyo rim, and on to the floodplain. The outfall ditch is about 130-feet long, 20-feet wide, and ranges in depth from about 3 to 10 feet. The discharge of waste water began in about 1947, but was substantially reduced after the early 1960s. Waste water may have discharged at the site until 1992. The area surrounding Site 227 has historically been sloped so that storm water was not directed into the outfall ditch. No stained soil has been identified at ER Site 227.

ER Site 227 received an unspecified amount of floor washdown water from two buildings. Building 904 was built in 1948 and was used for weapons assembly, HE research, photo processing, and various types of environmental testing. Buildings 913 and 914 were built in 1951 and used for component assembly and pressure testing. Floors in the rooms where HE compounds were machined or assembled were washed down with water to avoid the hazard of static electricity induced by dry sweeping. Water also was used to flush a variety of chemicals and possibly radionuclides into the drain system. In addition to discharging at the ER Site 227 outfall

ditch, the ER Site 48 HE drain system also was connected to the nearby ER Site 229 outfall. A catch box upstream of ER Site 227 prevented HE particulates from reaching either outfall. Neither sanitary (sewer) waste nor storm water were directed to ER Site 227.

The waste water contained:

- organic compounds including acetone, methylene chloride, trichloroethylene (TCE), methyl ethyl ketone (MEK), nitromethane, carbon tetrachloride, toluene, xylenes, Freon™ compounds, hexane
- various alcohols (methanol and isopropyl)
- metals (barium, cadmium, chromium, lead, silver, and titanium)
- HE compounds such as Baratol, Compound B, HMX, RDX, and black powder
- inorganic compounds including ammonium hydroxide and cyanide
- petroleum distillates such as kerosene
- and possibly traces of radionuclides such as cesium-137, uranium-235/238, plutonium-239, and tritium.

In 1992, the ER Project began conducting groundwater studies at TA-II. These studies along with other Solid Waste Management Unit related investigations were eventually incorporated into the Tijeras Arroyo Groundwater (TAG) Investigation. TA-II is located in the central part of the TAG study area. The hydrogeologic setting of the study area is dominated by two water-bearing zones, the perched system and the regional aquifer, both of which are present within the upper Santa Fe Group. The perched system is not used for water supply. However, the COA, Kirtland Air Force Base (KAFB), and the Veterans Administration (VA) utilize the regional aquifer for water-supply purposes. At TA-II, the depth to the perched system is approximately 320 ft below ground surface (bgs). The perched system covers approximately 3.5 square miles in the central part of the TAG study area and may extend across the northern boundary of KAFB. The direction of groundwater flow in the perched system is to the southeast. Discontinuous, yet overlapping multiple lenses of unsaturated alluvial-fan sediments serve as a perching horizon beneath the perched system and above the regional aquifer. At TA-II, the depth to the regional aquifer is approximately 520 ft bgs. The direction of groundwater flow in the regional aquifer is principally to the northwest towards the KAFB, COA, and VA water-supply wells. Groundwater from the perched system merges with the regional aquifer southeast of Tijeras Arroyo. The regional aquifer extends across the entire TAG study area and the Albuquerque Basin.

Several groundwater monitor wells are located in the vicinity of ER Site 227. The nearest monitor well, TA2-W-19, is located 500 feet east of the site. The nearest downgradient water-supply well is KAFB-1, which is located approximately 1.4 miles northwest of the site. Low levels of TCE and nitrate have been detected in perched-system groundwater samples collected at nearby TA-II. The regional aquifer is not contaminated.

The soil is poorly developed with high akalinity. The subsurface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These upper Santa Fe Group deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains. The depth to Precambrian basement beneath TA-II is approximatley 3,000 ft.

ER Site 227 is situated on the steep, northern rim of Tijeras Arroyo but outside the 100-year floodplain. The site is located approximately 1,500 ft west of the active channel of Tijeras Arroyo.

Water flows in the active channel near TA-II several times per year.

Constituents of Concern

The COCs for ER Site 227 are volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), HE compounds, cyanide, RCRA metals, and radionuclides (gamma emitters and tritium).

Current Hazards

No chemical or radioactive hazards are present in surface or subsurface soil at ER Site 227.

Current Status of Work

In 1994, unexploded ordnance/high explosive (UXO/HE) and radiological surveys were conducted at ER Site 227. No UXO/HE material or radioactive anomalies were detected. Eight soil samples (227-01-A/B through 227-04-A/B) were collected in 1994. Four samples each were collected at the upper and lower ends of the outfall ditch. The sampling interval extended from the ground surface to 3 feet below ground surface (bgs). The samples were analyzed for VOCs, SVOCs, cyanide, total petroleum hydrocarbons (TPH), HE compounds, target analyte list (TAL) metals, chromium-VI, total Kjeldahl nitrogen (TKN), nitrate/nitrite, tritium, uranium-235/238, plutonium-239, and other gamma-emitting radionuclides. No VOCs, SVOCs, TPH, or cyanide were detected in the soil samples. All metals, radionuclides, and nitrate results were within background.

Both passive and active soil-vapor samples were collected at ER Site 227. The passive soil-vapor surveys were conducted in 1993, 1995, and 1999. The active soil-vapor samples were collected in 1998 and 1999.

Of the several hundred Petrex™ soil-vapor collectors that were used in 1993 and 1995 during TA-II and ER Site 45 investigations, analytical results from 15 of collectors are applicable to ER Site 227. These 15 soil-vapor collectors had been installed near the western end of ER Site 227. Each collector was buried at a depth of about 1.5 feet bgs for approximately three weeks before being retrieved and shipped to an analytical laboratory. No SVOCs, or VOCs such as TCE or perchloroethylene, were detected in any of the 15 soil-vapor collectors.

In November 1996, TA-II Operable Unit (OU) personnel drilled three boreholes for the purpose of collecting active soil-vapor samples at various TA-II locations. One of the boreholes, T2-BH-021, was installed approximately 110 ft northwest of ER Site 227. During drilling, soil-vapor samples were collected at 10-foot intervals with a Simulprobe™ sampler driven ahead of the augers. Soil-vapor samples were collected from 10 to 110 feet bgs. Low to moderate levels of 33 VOCs were detected. Acetone had the maximum VOC concentration at 2,500 parts per billion by volume (ppbv) at a depth of 50 feet bgs. The maximum TCE concentration was 1,100 ppbv at 40 feet bgs. The highest value for total VOCs was 6,590 ppbv, which was encountered at a depth of 50 feet bgs. In December 1996, the borehole was converted to a soil-vapor monitor well (TA2-VW-21) with sampling ports set at 50 and 92 ft bgs. After the initial sampling in September 1997, quarterly

sampling began in May 1998. Low to moderate levels of VOCs in soil vapor have been routinely detected using Summa™ sampling canisters. From September 1998 through June 2000, the TCE concentrations from 50 ft bgs averaged 470 ppbv, while the TCE concentrations from 92 ft bgs averaged 1,100 ppbv.

In August 1998, two active soil-vapor samples were collected by the DOE at GeoProbe™ location EPA-ERTA2/4-BH4, which was located about 85 feet southeast of ER Site 227. The samples were collected at depths of 10 and 30 feet bgs using a Tedlar™ bag system. The samples were analyzed using EPA method TO14. Low levels of eleven VOCs were detected. Acetone had the maximum VOC concentration at 14 ppbv. The maximum TCE concentration was 5.7 ppbv. No trends in soil-vapor concentrations versus depth were apparent.

In October 1999, passive soil-vapor samples were collected using VaporTec™ collectors. Four collectors (TJAOU-227-SVX-01 thorough TJAOU-227-SVX-04) were installed along the south side of the outfall ditch at a depth of approximately 0.5 feet bgs. After being buried for 30 days, the collectors were analyzed for VOCs and gasoline/diesel range organics using EPA methods 8021M and 8015M, respectively. Each detected value for the VaporTec™ collectors was reported in nanograms (ng) of contaminant that had sorbed onto the activated carbon sampling media. Low levels of six VOCs, including 1,1-dichloroethylene, were detected. TCE was not detected. Vinyl chloride had the maximum VOC value at 51.9 ng. The maximum value for total gasoline/diesel range organics was 1.2 ng.

The process knowledge for the ER Site 227 outfall is partially based on other ER investigations beside the work of the Tijeras Arroyo OU. During March 2000, TA-II OU personnel excavated the septic and drain systems located within the TA-II boundary. This work identified the locations of the systems and the effluent-release points. A review of historic and current SNL/NM Facilities Engineering drawings showed that Buildings 904 and 913 had been connected to the ER Site 48 HE drain system that discharged at ER Sites 227 and 229. Except for scattered pieces of cement pipe on the ground surface, the outfall pipe from ER Site 48 has not been found outside the TA-II boundary. No TA-II disposal records have been found that identify the volume of waste-water discharged at ER Site 227.

Historic aerial photographs were reviewed in February 2001. Twenty-five years of photographs were available for the period of 1951 to 1999. Even though the discharge of waste water began in about 1947, the 1951 photograph does not show much soil erosion. The depth and width of the outfall ditch varies little between the 1951 and 1999 photographs. Not much erosion is evident. Vegetation visible in the photographs suggests that the volume of waste water declined substantially after the early 1960s. Waste water may have discharged at the site until 1993 before the HE drain system was replaced with polyvinyl-chloride (PVC) piping that is presently connected to the City of Albuquerque sanitary-sewer system. The photographs also show that construction and trenching of various sanitary-sewer and water lines in 1963, 1979, and 1993 disturbed the area immediately west of ER Site 227. However, the outfall ditch was not disturbed by the nearby construction.

Exploratory work was conducted on February 23, 2001 in an attempt to find the outfall pipe at Site 227. Except for scattered pieces of cement pipe on the ground surface, the ER Site 48 piping has not been found outside the TA-II fence. A backhoe was used to dig an exploratory trench on the western end of the outfall ditch at the only location outside the TA-II fence where the pipe was likely to remain buried. The exploratory trench was cut perpendicular to the orientation of the ditch and the suspected alignment of the pipe. The exploratory trench was 30-feet long, 2-feet

wide, and had a maximum depth of 6 feet. No stained soil was found in the exploratory trench or along the outfall ditch. If present, the outfall pipe would have been at a depth of 3 feet or less. However, the outfall pipe was not found. This was not too surprising because historical aerial photographs show that the westernmost end of the site near the TA-II fence was disturbed during the installation of sewer and water lines in 1963, 1979, and 1993.

On February 27, 2001 three hand-auguring locations (TJAOU-227-GR-05, TJAOU-227-GR-06, and TJAOU-227-GR-07) were sampled to a maximum depth of seven feet bgs. The shallow-soil samples consisted of native soil and were collected from the exploratory trench and along the outfall ditch. The analytes consisted of VOCs, SVOCs, HE compounds, metals, and radionuclides. Following the sampling work, the exploratory trench was backfilled. No significant contamination was detected in the soil samples.

In late March 2001, deep-soil samples were collected to a depth of 275 feet bgs during the drilling for soil-vapor monitor well 227-VW-01. The analytes for the borehole samples consisted of VOCs, SVOCs, HE compounds, metals, and radionuclides. The well was installed near the eastern end of Site 227 with sampling ports set at depths of 25, 75, 125, 175, 225, and 275 feet bgs. Soil-vapor samples were collected on a quarterly basis (April, June, September, December 2001 and March 2002) and analyzed for VOCs. The maximum TCE concentration was 14,000 ppbv.

In June 1995, the ER Project submitted a risk-based no further action (NFA) proposal to the New Mexico Environment Department (NMED) for ER Site 227. After receiving the June 1996 Notice of Deficiency (NOD) comments from NMED, SNL/NM submitted a NOD response in October 1996, which included a risk assessment using the 1994 analytical results. No significant contamination was apparent; however, some of the detection limits were too high for a definitive conclusion to be made by NMED. In October 1999, NMED issued a second set of NOD comments that requested several types of sample collection. SNL/NM submitted a second NOD response in December 1999, which confirmed the need for additional field work. The February and March 2001 sampling completed the field-work request.

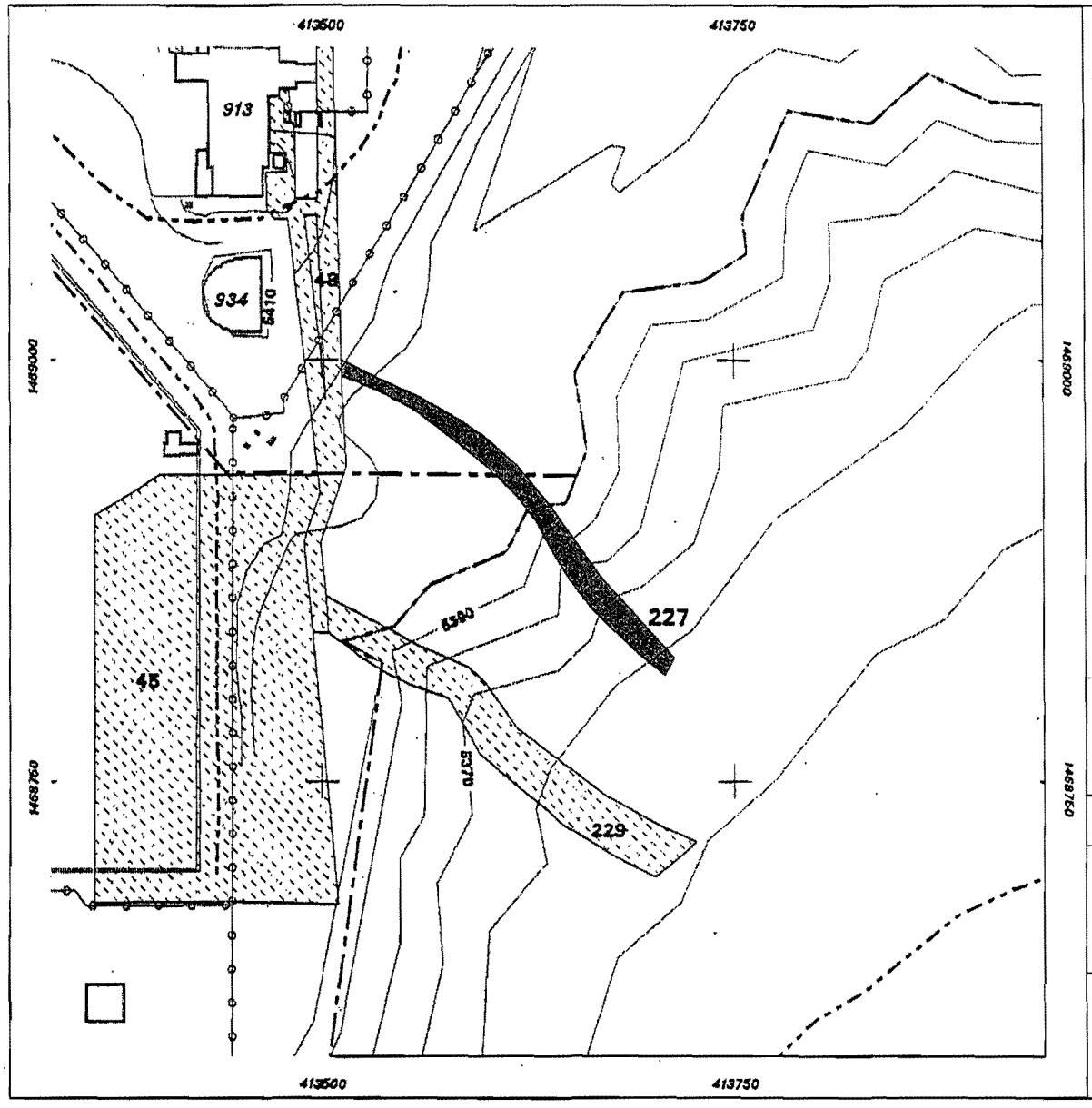
Future Work Planned

The ER Site 227 NOD response will be submitted in 2003 in tandem with the ER Site 229 NOD response. The ER Site 227 NOD response will include four sets of analytical results: shallow-soil data for the March 2001 hand augering, deep-soil data for the March 2001 borehole, four quarters of soil-vapor results from monitor well 227-VW-01, and reformatted data tables for the results previously submitted in the June 1995 NFA Proposal and the October 1996 NOD Response.

Waste Volume Estimated/Generated

No waste was generated at ER Site 227.

Information for ER Site 227 was last updated Jan 31, 2003.



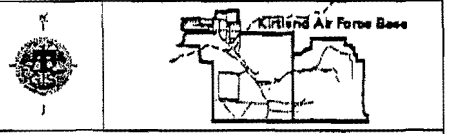
LEGEND

- Road
- Fence
- 10-foot Elevation Contour
- Surface Drainage
- Building / Concrete Structure
- Technical Area
- SWMU 227
- Other SWMU

Center of Site:
X = 413635
Y = 1468907

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 227

Storm Drain System Outfall
(Southeast of TA-II)

DHeffrich 22-JAN-2003

SNL EGIS DEPT 6135

sh030173.ami Mapid = 030173

ER Site No. 229: Storm Drain System Outfall (Building 904 Outfall, SouthEast of TA-II)

ADS: 1309
Operable Unit: Tijeras Arroyo

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Sue Collins
Office Phone: 284-2546

Site History

Site 229 is one of a pair of inactive Technical Area II (TA-II) waste-water outfalls for the Site 48 high explosive (HE) drain system. Piping for the HE drain system was constructed of cement pipe and was connected to waste-water systems in Buildings 904, 913, and 914. The HE drain system discharged into the Site 229 outfall ditch, of which only a short 40-foot long segment remains today on the northern rim of Tijeras Arroyo. The entire site is 270 feet long and extends eastward from the southern end of HE drain system, down the steep rim of the arroyo, and on to the Tijeras Arroyo floodplain. The discharge of waste water began in about 1947, but was substantially reduced after the early 1960s. Waste water may have discharged at the site until 1992. Neither sanitary (sewer) waste nor storm water was directed to ER Site 229. No stained soil has been identified at ER Site 229.

ER Site 229 received an unspecified amount of floor washdown water from two buildings. Building 904 was built in 1948 and used for weapons assembly, HE research, photo processing, and various types of environmental testing. Buildings 913 and 914 were built in 1951 and used for component assembly and pressure testing. Floors in the rooms where HE compounds were machined or assembled were washed down with water to avoid the hazard of static electricity discharges induced by dry sweeping. The rinse water also contained a variety of chemicals and possibly some radionuclides. In addition to discharging at the ER Site 229 outfall ditch, the ER Site 48 HE rinse-water system was connected to the nearby ER Site 227 outfall. A catch box

upstream of ER Site 227 prevented HE particulates from reaching either outfall.

The waste water contained :

- organic compounds including acetone, methylene chloride, trichloroethylene (TCE), methyl ethyl ketone (MEK), nitromethane, carbon tetrachloride, toluene, xylenes, Freon™compounds, hexane; various alcohols (methanol and isopropyl)
- metals (barium, cadmium, chromium, lead, silver, and titanium)
- HE compounds such as Baratol, Compound B, HMX, RDX,and black powder
- inorganic compounds including ammonium hydroxide and cyanide
- petroleum distillates such as kerosene;
- and possibly traces of radionuclides such as cesium-137, uranium-235/238, plutonium-239, and tritium.

Site 229 covers 0.16 acres. Unfortunately, the historical name for Site 229 is erroneous because no storm water has discharged there. The area surrounding the site has historically been sloped so that storm water was not directed into the outfall ditch.

Several groundwater monitor wells are located in the vicinity of ER Site 229. The nearest monitor well, TA2-W-19, is located 500 feet east of the site. The nearest downgradient water-supply well is KAFB-1, which is located approximately 1.4 miles northwest of the site. Low levels of TCE and nitrate have been detected in perched-system groundwater samples collected at nearby TA-II. The regional aquifer is not contaminated.

The soil is poorly developed with high akalinity. The subsurface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These upper Santa Fe Group deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains. The depth to Precambrian basement beneath TA-II is approximatley 3,000 ft.

ER Site 229 is situated on the steep, northern rim of Tijeras Arroyo but outside the 100-year floodplain. The site is located approximately 1,500 ft west of the active channel of Tijeras Arroyo. Water flows in the active channel near TA-II several times per year.

Constituents of Concern

The COCs for ER Site 229 are: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), HE compounds, cyanide, RCRA metals, and radionuclides (gamma emitters and radionuclides).

Current Hazards

No chemical or radioactive hazards are present in surface or subsurface soil at ER Site 229.

Current Status of Work

In 1994, unexploded ordnance/high explosive (UXO/HE) and radiological surveys were conducted at ER Site 229. No UXO/HE material or radioactive anomalies were detected. Eight soil samples (229-01-A/B through 229-04-A/B) were collected in 1994. Four samples each were collected at the upper and lower ends of the outfall ditch. The sampling interval extended from the ground surface to 3 feet below ground surface (bgs). The samples were analyzed for VOCs, SVOCs, cyanide, total petroleum hydrocarbons (TPH), HE compounds, target analyte list (TAL) metals, chromium-VI, total Kjeldahl nitrogen (TKN), nitrate/nitrite, tritium, uranium-235/238, plutonium-239, and other gamma-emitting radionuclides. No VOCs, SVOCs, TPH, or cyanide were detected in the soil samples. All metals, radionuclides, and nitrate results were within background.

Passive soil-vapor surveys were conducted in 1993, 1995, and 1999. Of the several hundred Petrex™ soil-vapor collectors that were used in 1993 and 1995 during TA-II and ER Site 45 investigations, analytical results from 15 of the soil-vapor collectors are applicable to ER Site 229. These 15 soil-vapor collectors had been installed near the western end of ER Site 229. Each collector was buried at a depth of about 1.5 feet bgs for approximately three weeks before being retrieved and shipped to an analytical laboratory. No SVOCs, or VOCs such as TCE or perchloroethylene, were detected in any of the 15 Petrex™ collectors.

In October 1999, passive soil-vapor samples were collected at ER Site 229 using VaporTec™ collectors. Three locations (TJAOU-229-SVX-01 through TJAOU-229-SVX-03) along the outfall ditch were sampled. After being buried for 30 days at a depth of approximately 0.5 feet bgs, the collectors were analyzed for VOCs and gasoline/diesel range organics with EPA methods 8021M and 8015M, respectively. Each detected value for the VaporTec™ collectors was reported in nanograms (ng) of contaminant that had sorbed onto the activated carbon sampling media. Low levels of six VOCs, including 1,1-dichloroethylene, were detected. Vinyl chloride had the greatest VOC value at 51.9 ng. TCE was not detected in the collectors.

The process knowledge for the Site 229 outfall is partially based on other ER investigations beside the work of the Tijeras Arroyo OU. During March 2000, TA-II Operable Unit (OU) personnel excavated the ER septic and drain systems. This work identified the locations of the septic systems and the effluent-release points within the TA-II boundary. A review of historic and current SNL/NM Facilities Engineering drawings showed that Buildings 904 and 913 had been connected to the Site 48 HE drain system that discharged at ER Sites 227 and 229. Except for scattered pieces of cement pipe on the ground surface, the outfall pipe from ER Site 48 has not been found outside the TA-II boundary. No TA-II disposal records have been found that identify the volume of waste-water discharge.

Historic aerial photographs were reviewed in February 2001. Twenty-five years of photographs were available for the period of 1951 to 1999. Even though the dischage of waste water began in about 1947, the 1951 photograph does not show much soil erosion. The depth and width of the outfall ditch varies little between the 1951 and 1999 photographs. Not much erosion is evident. Vegetation visible in the photographs suggests that the volume of waste water declined substantially after the early 1960s. Waste water may have discharged at the site until 1993 before the HE drain system was replaced with polyvinyl-chloride (PVC) piping that is presently connected to the City of Albuquerque sanitary-sewer system. The depth and width of the outfall ditch varies little between the 1951 and 1999 photographs.

The historic aerial photographs also show that the construction of underground utilities in 1979 and 1993 disturbed the western end of Site 229. In 1979, a water line was installed and the

surrounding area was graded flat; this grading utilized numerous piles of clean fill that had been placed on the west side of the site in the mid-1950s. In 1993, a series of three sewer lines were installed near the western end of the site. This constuction also removed the Building 913 septic system near Site 229. Coincidentally, the construction activities produced a 50-foot long section of ditch that was in nearly the same location as the original western end of the outfall ditch. In 1994, the ER Project unfortunately collected several soil samples without recognizing that the construction had disturbed the western part of Site 229.

Exploratory work was conducted on February 23, 2001 in an attempt to find the outfall pipe at Site 229. A backhoe was used to deepen the western end of the outfall ditch, which was the only location outside the TA-II fence where the pipe was likely to remain. At the western end of the site, the ditch was deepened from the pre-existing three feet to a depth of nine feet, which was the safety limit for not destabilizing the adjacent sewer lines. Neither the outfall pipe nor stained soil were found. The excavated material consisted of fill soil, as well as a few pieces each of concrete rubble, scrap metal, and wood. Installation of water and sewer lines in 1979 and 1993 had apparently already removed the outfall pipe. During the exploratory work, the adjacent sewer manhole was opened and three sewer lines were visible. The lines ranged in diameter from six inches to two feet, and were set at depths of seven, 11, and 18 feet bgs.

On February 28, 2001 three soil samples (TJAOU-229-GR-05, TJAOU-229-GR-06, and TJAOU-229-GR-07) were collected at Site 229. The samples were collected from the floor of the newly deepened ditch as well as from the outfall ditch on the floodplain. The potential instability of the ditch walls did not allow any samples to be collected between location TJAOU-229-GR-05 near the manhole and location TJAOU-229-GR-06 which is on the edge of the floodplain. Location TJAOU-229-GR-07 is located on the floodplain. Hand augers were used to collect soil samples to a maximum depth of 14 feet bgs. No stained soil was observed. The soil samples were shipped to an off-site laboratory with the analytes consisting of VOCs, SVOCs, HE, metals, and radionuclides. Analytical results indicate that no significant contamination is present.

In March 2001, the construction-related section of the ditch was backfilled because the ditch was an instability hazard to the adjacent sewer lines. Facilities Engineering used the just-excavated soil along with several dump-truck loads of clean-fill soil to backfill the westernmost 40 feet of the ditch to the elevation of the adjacent manhole.

In June 1995, the ER Project submitted a risk-based no further action (NFA) proposal to the New Mexico Environmental Department (NMED) for ER Site 229. After receiving the June 1996 Notice of Deficiency (NOD) comments from NMED, SNL/NM submitted a NOD response in October 1996, which included a risk assessment using the 1994 analytical results. No significant contamination was apparent; however, some of the detection limits were too high for a definitive conclusion to be made by NMED. In October 1999, NMED issued a second set of NOD comments that requested the collection of additional soil samples. In December 1999, SNL/NM submitted a second NOD response which confirmed the need for additional work. The March 2001 sampling completed the field-work request.

Future Work Planned

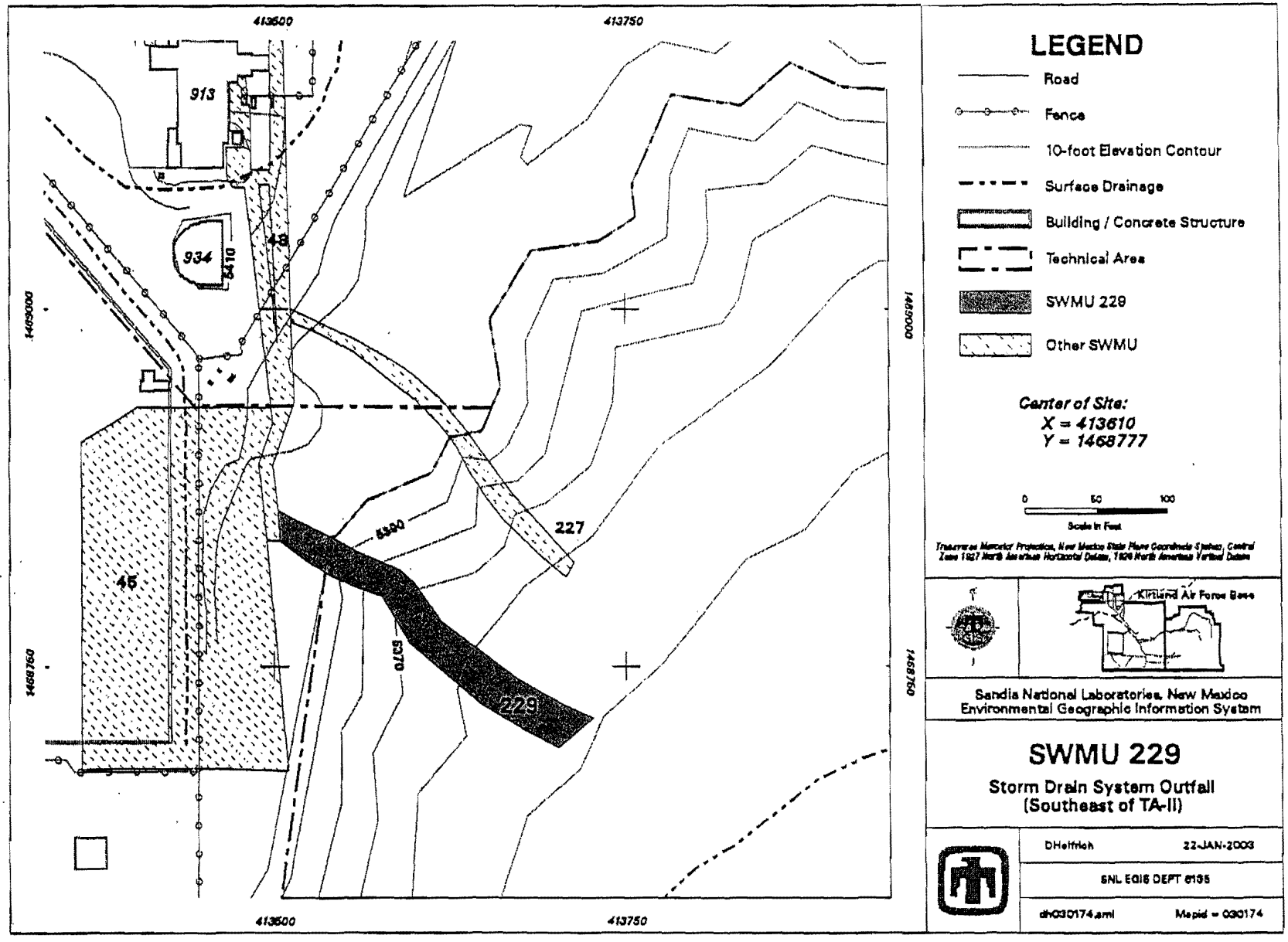
The ER Site 229 NOD response will be submitted in 2003. The NOD response will include four sets of analytical results: shallow-soil data for the March 2001 hand augering, deep-soil data for the March 2001 borehole, four quarters of soil-vapor results from monitor well 227-VW-01, and

reformatted data tables for the results previously submitted in the June 1995 NFA Proposal and the October 1996 NOD Response. The ER Site 229 NOD response will be submitted in tandem with the ER Site 227 NOD response.

Waste Volume Estimated/Generated

No waste was generated at ER Site 229.

Information for ER Site 229 was last updated Jan 31, 2003.


413500
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1468750
913
934
5410
48
45
227
229
5390
5370
LEGEND
Road
Fence
10-foot Elevation Contour
Surface Drainage
Building / Concrete Structure
Technical Area
SWMU 229
Other SWMU
Center of Site:
X = 413610
Y = 1468777
0
50
100
Scale in Feet
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 229
Storm Drain System Outfall
(Southeast of TA-II)
DHelfrich
22-JAN-2003
SNL EGIS DEPT 6135
dh030174.aml
Mapid = 030174

ER Site No. 230: Storm Drain System Outfall (East side of TA-IV)

ADS: 1309
Operable Unit: Tijeras Arroyo

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Sue Collins
Office Phone: 284-2546

Site History

ER Site 230 covers 0.02 acres of unpaved ground along the steep northern rim of Tijeras Arroyo. The site consists of a 65-foot long earthen ditch that occasionally receives storm water from a vegetated area located on the north side of TA-IV Building 970. The storm water is directed to the site through buried piping and a concrete ditch. The outfall was built in the early 1980s.

Four other storm-water outfall systems are also located below TA-IV (ER Sites 231, 232, 233, and 234). The TA-IV outfalls are designed to reduce the amount of soil erosion caused by storm water. The TA-IV outfalls were added to the ER Site list in 1993. However, no industrial waste streams are discharged at the outfalls. According to National Pollutant Discharge Elimination System (NPDES) guidance, only one of the TA-IV outfalls requires monitoring because all of the TA-IV outfalls receive storm water from similar sources. The SNL/NM Storm Water Program performs that monitoring about 50 feet upslope of ER Site 233 at Station 006 and reports the analytical data to the New Mexico Environment Department (NMED) in the SNL/NM Site Environmental Reports.

Constituents of Concern

In the June 1995 No Further Action (NFA) Proposal, the potential constituents of concern (COCs) were considered to be chromates, antifoulants, chromium, sodium hydroxide, hydrochloric acid, diesel fuel, and mineral oil. This list of COCs was conservatively based upon chemicals used at TA-IV. However no chemical releases are known to have occurred in the area that drains to the ER Site 230 outfall. Likewise no stained soil has been identified at the site.

Current Hazards

No chemical or radioactive hazards are present at ER Site 230.

Current Status of Work

Field work was conducted at ER Site 230 in 1994. The ground surface was surveyed for unexploded ordnance/high explosives (UXO/HE) and radioactive materials; no anomalies were detected. Shallow-soil samples were collected at the four corners of the site. The maximum sampling depth of the four samples was three feet bgs (below ground surface).

The soil samples were analyzed for Target Analyte List (TAL) metals, chromium-VI, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), tritium, and gamma-emitting radionuclides.

No VOC or SVOC contamination was detected in the ER Site 230 soil samples. The reporting of three TPH detections at concentrations ranging from 110 to 120 mg/kg (ppm) is considered suspect because no VOCs or SVOCs were detected. All of the metal and radionuclide values were within background.

In June 1995, a risk-based NFA Proposal for ER Site 230 was submitted to NMED. SNL/NM submitted Notice of Deficiency (NOD) Responses to NMED in October 1996 and December 1999.

In June 2001, three locations were sampled with a backhoe. The soil samples were collected at depths ranging from 0 to 5 ft bgs. The analytes were VOCs, SVOCs, TPH, TAL metals, chromium-VI, gamma-emitting radionuclides, gross alpha/beta, and tritium. No significant contamination was detected.

The SWMU 230 NOD Response was submitted to NMED in December 2002.

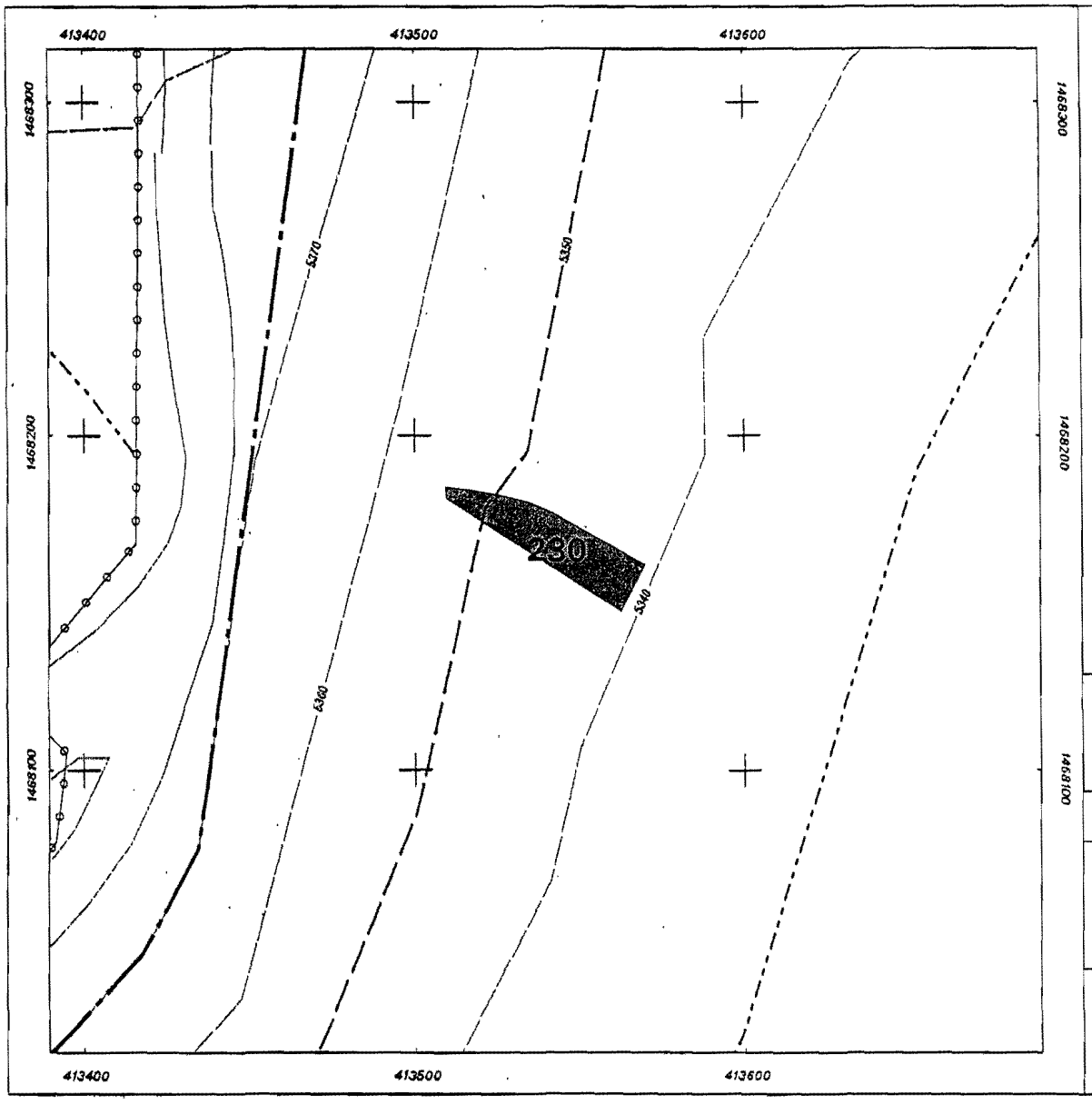
Future Work Planned

None

Waste Volume Estimated/Generated

No waste was generated at ER Site 230.

Information for ER Site 230 was last updated Jan 8, 2003.



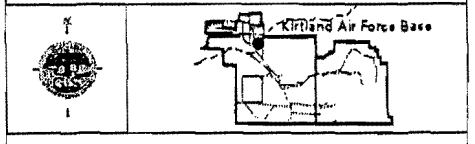
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 230
- Other SWMUs

Center of Site:
X = 413539
Y = 1468166

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 230

Storm Drain System Outfall

(East side of TA-IV)

SMorrison 18-SEP-2001

SNL EGIS DEPT 6135

cistenop-co.aml MAPID = 010881

ER Site No. 231: Storm Drain System Outfall (SouthEast Side of TA-IV)

ADS: 1309
Operable Unit: Tijeras Arroyo

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Sue Collins
Office Phone: 284-2546

Site History

ER Site 231 covers 0.04 acres of unpaved ground along the steep northern rim of Tijeras Arroyo. The site consists of a 140-foot long earthen ditch that occasionally receives storm water from a paved storage yard located on the east side of TA-IV Building 970. The storm water is directed to the site through buried piping and a concrete ditch. The outfall was built in the early 1980s.

Four other storm-water outfall systems are also located below TA-IV (ER Sites 230, 232, 233, and 234). The TA-IV outfalls are designed to reduce the amount of soil erosion caused by storm water. The TA-IV outfalls were added to the ER Site list in 1993. However, no industrial waste streams are discharged at the outfalls. According to National Pollutant Discharge Elimination System (NPDES) guidance, only one of the TA-IV outfalls requires monitoring because all of the TA-IV outfalls receive storm water from similar sources. The SNL/NM Storm Water Program performs that monitoring about 50 feet upslope of ER Site 233 at Station 006 and reports the analytical data to the New Mexico Environment Department (NMED) in the SNL/NM Site Environmental Reports.

Constituents of Concern

In the June 1995 NFA Proposal, the potential COCs were considered to be chromates, antifoulants, chromium, sodium hydroxide, hydrochloric acid, diesel fuel, and mineral oil. This list of COCs was conservatively based upon chemicals used at TA-IV. However no chemical releases are known to have occurred in the area that drains to the ER Site 231 outfall. Likewise, no stained soil has been identified at the site.

Current Hazards

No chemical or radioactive hazards are present at ER Site 231.

Current Status of Work

Field work was conducted at ER Site 231 in 1994. The ground surface was surveyed for unexploded ordnance/high explosives (UXO/HE) and radioactive materials; no anomalies were detected. Shallow-soil samples were collected at the four corners of the site. The maximum sampling depth of the four samples was three feet bgs (below ground surface).

The soil samples were analyzed for Target Analyte List (TAL) metals, chromium-VI, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), tritium, and gamma-emitting radionuclides.

No VOC or SVOC contamination was detected in the soil samples. The reporting of four TPH detections ranging from 44 to 130 mg/kg (ppm) is considered suspect because no VOCs or SVOCs were detected. All of the metal and radionuclide values were within background.

In June 1995, a risk-based NFA Proposal for ER Site 231 was submitted to NMED. SNL/NM submitted Notice of Deficiency (NOD) Responses to NMED in October 1996 and December 1999.

In June 2001, two locations were sampled with a backhoe. The soil samples were collected at depths ranging from 0 to 5 ft bgs. The analytes were VOCs, SVOCs, TPH, TAL metals, chromium-VI, gamma-emitting radionuclides, gross alpha/beta, and tritium. No significant contamination was detected.

The SWMU 231 NOD Response was submitted to NMED in December 2002.

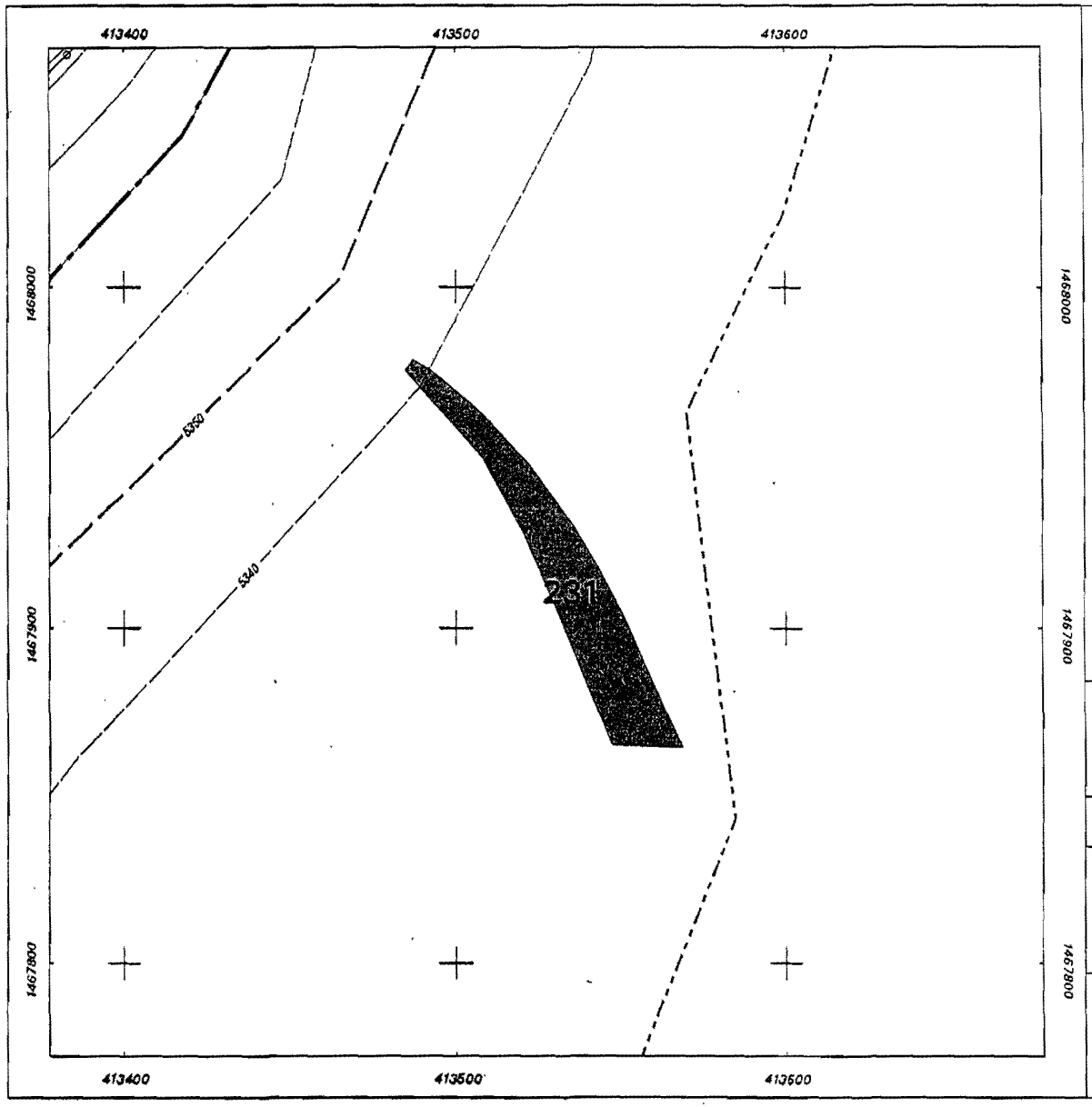
Future Work Planned

None

Waste Volume Estimated/Generated

No waste was generated at ER Site 231.

Information for ER Site 231 was last updated Jan 8, 2003.



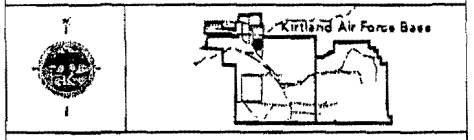
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 231
- Other SWMUs

Center of Site:
X = 413528
Y = 1467922

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 231

Storm Drain System Outfall

(Southeast Side of TA-IV)

SMorrison 18-SEP-2001

SNL EGIS DEPT 6135

cistenop-co.aml MAPID = 010882

ER Site No. 232: Storm Drain System Outfall (SouthEast of TA-IV)

ADS: 1309
Operable Unit: Tijeras Arroyo

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Sue Collins
Office Phone: 284-2546

Site History

ER Site 232 consists of two sites (ER Sites 232-1 and 232-2) that are located on the southeast side of TA-IV. Both sites are located on unpaved ground along the steep northern rim of Tijeras Arroyo. ER Sites 232-1 and 232-2 cover 0.01 and 0.02 acres, respectively. The outfalls were built in the early 1980s.

ER Site 232-1 consists of a 70-foot long earthen ditch that receives storm water from an unpaved area on the southeast side of Building 970A. No chemical spills have occurred in the area that drains to ER Site 232-1. Storm water is directed to the site through buried piping and a concrete ditch.

ER Site 232-2 consists of a 90-foot long earthen ditch that receives storm water from paved areas surrounding Building 983. Storm water is directed to the site through buried piping and a drop structure. On June 1, 1994 approximately 150 to 300 gallons of mineral oil(petroleum-based) flowed on to the ground surface at ER Site 232-2 after being spilled from an aboveground tank near Building 986.

Four other storm-water outfall systems are also located below TA-IV (ER Sites 230, 231, 233, and 234). The TA-IV outfalls are designed to reduce the amount of soil erosion caused by storm water. The TA-IV outfalls were added to the ER Site list in 1993. However, no industrial waste streams

are discharged at the outfalls. According to National Pollutant Discharge Elimination System (NPDES) guidance, only one of the TA-IV outfalls requires monitoring because all of the TA-IV outfalls receive storm water from similar sources. The SNL/NM Storm Water Program performs that monitoring about 50 feet upslope of ER Site 233 at Station 006 and reports the analytical data to the New Mexico Environment Department (NMED) in the SNL/NM Site Environmental Reports. ER Site 232 is the only one of the TA-IV outfalls that has been involved in a spill or release.

Constituents of Concern

TPH (total petroleum hydrocarbons) is an obvious constituent of concern (COC) for ER Site 232-2. To be consistent with the other TA-IV outfalls, the potential COCs for both ER Sites 232-1 and 232-2 also include chromates, antifoulants, chromium, sodium hydroxide, hydrochloric acid, diesel fuel, and mineral oil(petroleum-based). This list of COCs was conservatively based upon chemicals used at TA-IV. The June 1994 oil spill at ER Site 232-2 resulted in the only known occurrence of stained soil at the two sites. The spilled oil consisted of petroleum-based HERMES oil, which is a mineral oil manufactured with no Polychlorinated Biphenyls (PCBs).

Current Hazards

No chemical or radioactive hazards are present at ER Site 232.

Current Status of Work

In 1994, ER Site 232 was surveyed for unexploded ordnance / high explosive (UXO/HE) materials and radioactive anomalies; neither was found.

Two soil-sampling investigations were conducted at ER Site 232-1. In 1994, the first investigation collected eight soil samples to a maximum depth of three feet below ground surface (bgs). The samples were analyzed for VOCs, SVOCs, TPH, metals, and radionuclides. The metals and radionuclides were within naturally occurring background levels. TPH concentrations up to 860 mg/kg (ppm) were reported. Surprisingly, no VOCs or SVOCs were detected. In 1995, the second investigation further defined the extent of TPH in soil. Soil samples were collected at depths of 5, 6, and 10 feet bgs from five GeoProbe boreholes. TPH was the sole analyte for the GeoProbe samples; the maximum TPH value was 32 ppm. Analytical results from the two investigations showed that the extent of TPH concentrations greater than 100 ppm was confined to the northern end of the site next to the concrete ditch.

In 1994, the oil spill at ER Site 232-2 was remediated. The cleanup goal was an overly conservative 100 ppm TPH. A backhoe was used to excavate the oil-contaminated soil. During the cleanup, five methods were used to verify that the cleanup goal was reached: visual observation of soil stains; Hanby immunoassay kit; real-time monitoring with a Flame Ionization Detector (FID); soil analysis with an on-site laboratory; and soil analyses from an off-site commerical laboratory. The resulting trench was 75 feet long. Approximately 429 cubic yards of oil-contaminated soil was shipped to commercial waste management facility. Confirmatory-soil sampling also was performed at ER Site 232-2 in 1995. Soil samples were collected from the walls and floor of the

trench. The analyses consisted of VOCs, SVOCs, TPH, metals, and radionuclides. No VOCs or SVOCs were detected. The metals and radionuclides were within background. Only one sample contained TPH; the reported value was 32 ppm TPH. The trench was subsequently backfilled to the original grade.

A No Further Action proposal was submitted to NMED in August 1997. A RSI Response was submitted in September 1999. A NOD Response was submitted in December 1999.

In June 2001, soil samples were collected at both sites with a backhoe. The five samples were collected at depths ranging from 0 to 10 ft bgs. The analytes were VOCs, SVOCs, TPH, PCBs, TAL metals, chromium-VI, gamma-emitting radionuclides, gross alpha/beta, and tritium. No significant contamination was detected.

The SWMU 232 NOD Response was submitted to NMED in December 2002.

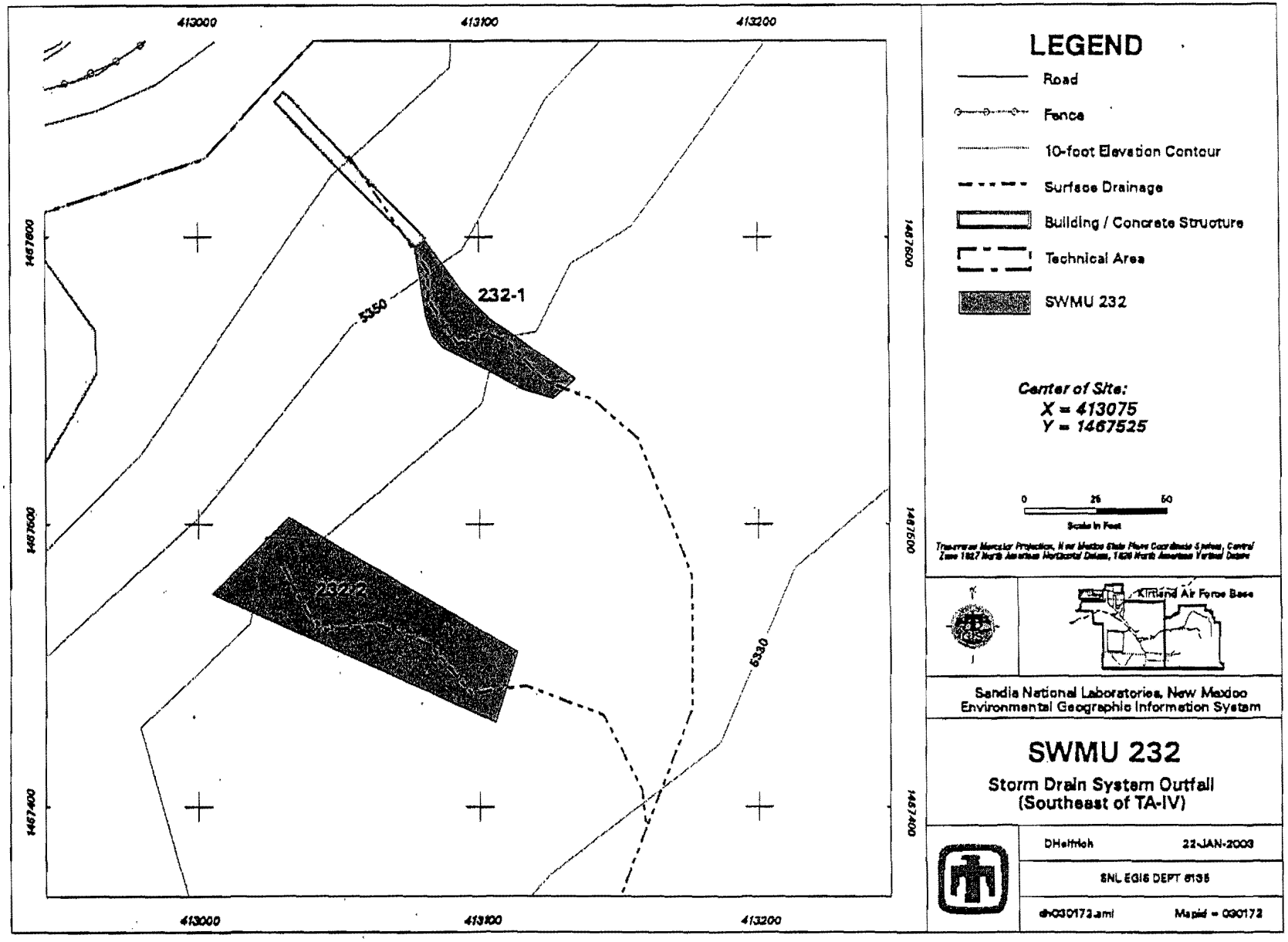
Future Work Planned

None

Waste Volume Estimated/Generated

Approximately 429 cubic yards of nonhazardous oil-contaminated soil were generated during the cleanup of ER Site 232-2. No waste has been generated at ER Site 232-1.

Information for ER Site 232 was last updated Jan 8, 2003.


413000
413100
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1467400
232-1
5350
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LEGEND
Road
Fence
10-foot Elevation Contour
Surface Drainage
Building / Concrete Structure
Technical Area
SWMU 232
Center of Site:
X = 413075
Y = 1467525
0
25
50
Scale in Feet
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 232
Storm Drain System Outfall
(Southeast of TA-IV)
DHeffrich
22-JAN-2003
SNL EGIS DEPT 6135
dh030172.aml
Mapid = 030172

ER Site No. 233: Storm Drain System Outfall (South side of TA-IV)

ADS: 1309
Operable Unit: Tijeras Arroyo

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Sue Collins
Office Phone: 284-2546

Site History

ER Site 233 covers 0.03 acres of unpaved ground along the steep northern rim of Tijeras Arroyo. The site is 175-feet long and has two discharge points. ER Site 233 occassionally receives storm water from TA-IV parking lots and Building 981 roof drains. Storm water is directed to the site through buried piping. The outfall was built in the early 1980s.

Four other storm-water outfall systems are also located below TA-IV (ER Sites 230, 231, 232, and 234). The TA-IV outfalls are designed to reduce the amount of soil erosion caused by storm water. The TA-IV outfalls were added to the ER Site list in 1993. However, no industrial waste streams are discharged at the outfalls. According to National Pollutant Discharge Elimination System (NPDES) guidance, only one of the TA-IV outfalls requires monitoring because all of the TA-IV outfalls receive storm water from similar sources. The SNL/NM Storm Water Program performs that monitoring about 50 feet upslope of ER Site 233 at Station 006 and reports the analytical data to the New Mexico Environment Department (NMED) in the SNL/NM Site Environmental Reports.

Constituents of Concern

In the June 1995 NFA Proposal, the potential COCs were considered to be chromates, antifoulants, chromium, sodium hydroxide, hydrochloric acid, diesel fuel, and mineral oil. This list of COCs was conservatively based upon chemicals used at TA-IV. However, no chemical releases are known to have occurred in the area that drains to the ER Site 233 outfall. Likewise, no stained soil has been identified at the site.

Current Hazards

No chemical or radioactive hazards are present at ER Site 233.

Current Status of Work

Field work was conducted at ER Site 233 in 1994. The ground surface was surveyed for unexploded ordnance/high explosives (UXO/HE) and radioactive materials; no anomalies were detected. Shallow-soil samples were collected at the four corners of the site. The maximum sampling depth of the four samples was three feet bgs (below ground surface).

The soil samples were analyzed for Target Analyte List (TAL) metals, chromium-VI, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), tritium, and gamma-emitting radionuclides.

No VOC or SVOC contamination was detected in the soil samples. The reporting of TPH detections at concentrations ranging from 40 to 140 mg/kg (ppm) is considered suspect because no VOCs or SVOCs were detected. All of the metal and radionuclide values were within background.

In June 1995, a risk-based NFA Proposal for ER Site 233 was submitted to NMED. SNL/NM submitted Notice of Deficiency (NOD) Responses to NMED in October 1996 and December 1999.

In June 2001, three locations were sampled with a backhoe. The soil samples were collected at depths ranging from 0 to 5 ft bgs. The analytes were VOCs, SVOCs, TPH, TAL metals, chromium-VI, gamma-emitting radionuclides, gross alpha/beta, and tritium. No significant contamination was detected.

The SWMU 233 NOD Response was submitted to NMED in December 2002.

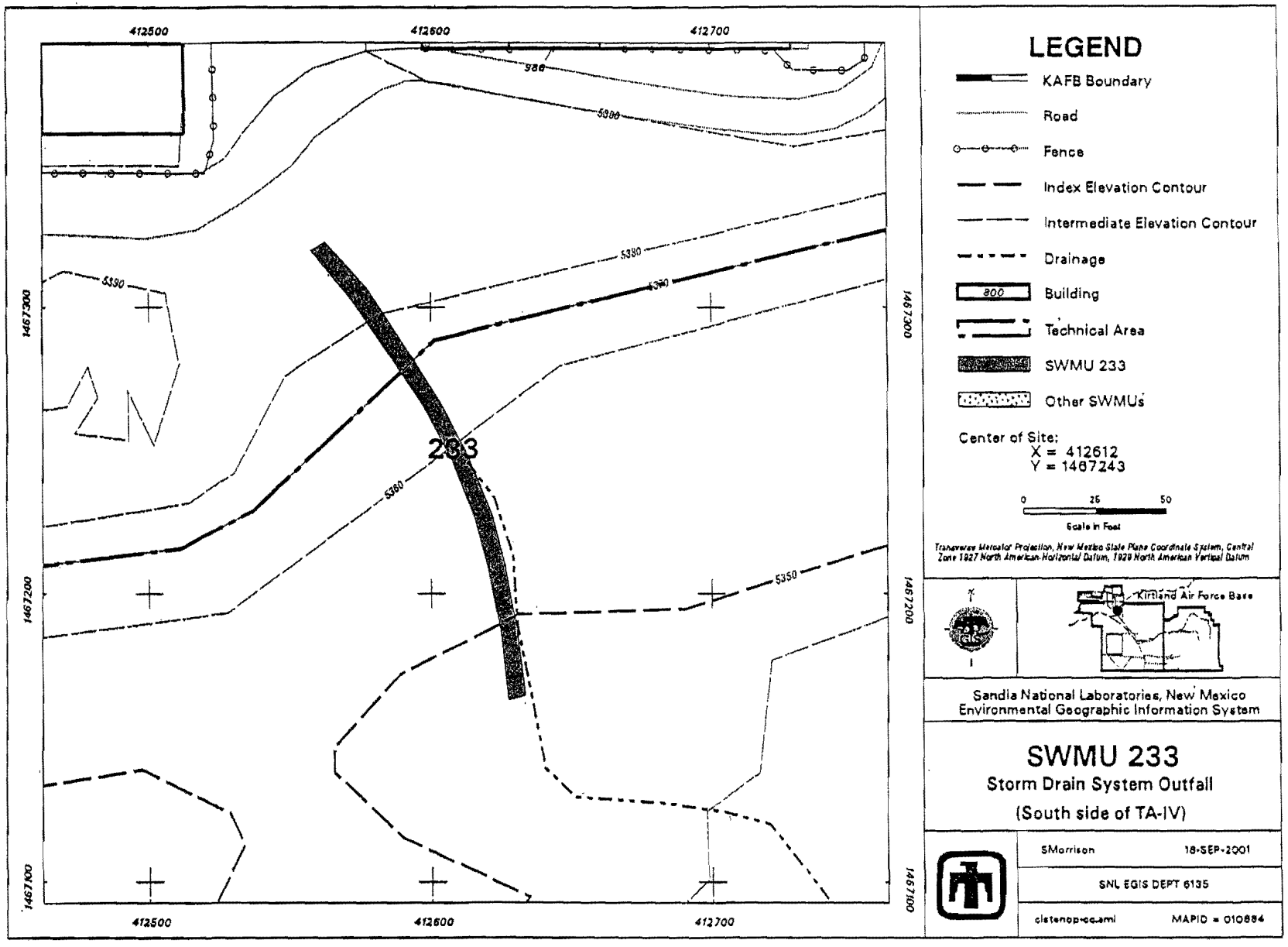
Future Work Planned

None

Waste Volume Estimated/Generated

No waste was generated at ER Site 233.

Information for ER Site 233 was last updated Jan 8, 2003.


412500
412600
412700
1467300
1467200
1467100
5390
5380
5370
5360
5350
233
LEGEND
KAFB Boundary
Road
Fence
Index Elevation Contour
Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 233
Other SWMUs
Center of Site:
X = 412612
Y = 1467243
0 25 50
Scale in Feet
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum
Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 233
Storm Drain System Outfall
(South side of TA-IV)
SMorrison
18-SEP-2001
SNL EGIS DEPT 6135
cistenop-cc.ami
MAPID = 010884

ER Site No. 234: Storm Drain System Outfall (South side of TA-IV)

ADS: 1309
Operable Unit: Tijeras Arroyo

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Sue Collins
Office Phone: 284-2546

Site History

ER Site 234 consists of a 270-foot long earthen ditch on the steep northern rim of Tijeras Arroyo. The site previously received TA-IV storm water that was directed to the site through buried piping. From about 1979 until the early 1990s, ER Site 234 discharged storm water which came from the Building 981 parking lots and roof drains. In the early 1990s, the outfall piping was removed from Site 234 and the storm water was re-directed eastward through buried piping to the adjacent Site 233 outfall. Site 234 has not discharged any type of TA-IV water since then. The Site 234 boundary was revised in September 2000 and now encompasses 0.15 acres.

Four other storm-water outfall systems are also located below TA-IV (ER Sites 230, 231, 232, and 233). The TA-IV outfalls are designed to reduce the amount of soil erosion caused by storm water. The TA-IV outfalls were added to the ER Site list in 1993. However, no industrial waste streams are discharged at the outfalls. According to National Pollutant Discharge Elimination System (NPDES) guidance, only one of the TA-IV outfalls requires monitoring because all of the TA-IV outfalls receive storm water from similar sources. The SNL/NM Storm Water Program performs that monitoring about 50 feet upslope of ER Site 233 at Station 006 and reports the analytical data to the New Mexico Environment Department (NMED) in the SNL/NM Site Environmental Reports.

Constituents of Concern

In the June 1995 NFA Proposal, the potential COCs were considered to be chromates, antifoulants, chromium, sodium hydroxide, hydrochloric acid, diesel fuel, and mineral oil. This list of COCs was conservatively based upon chemicals used at TA-IV. However, no chemical releases are known to have occurred in the area that previously drained to the ER Site 234 outfall. No stained soil has been identified at the site.

Current Hazards

No chemical or radioactive hazards are present at ER Site 234.

Current Status of Work

Field work was conducted at ER Site 234 in 1994. The ground surface was surveyed for unexploded ordnance/high explosives (UXO/HE) and radioactive materials; no anomalies were detected. Six soil samples were collected; the maximum sampling depth was three feet bgs (below ground surface). The soil samples were analyzed for Target Analyte List (TAL) metals, chromium-VI, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), tritium, and gamma-emitting radionuclides. No VOC, SVOC, or TPH contamination was detected in the soil samples. All of the metal and radionuclide values were within background.

In June 1995, a risk-based NFA Proposal for ER Site 234 was submitted to NMED. SNL/NM submitted Notice of Deficiency (NOD) Responses to NMED in October 1996 and December 1999.

A review of historic aerial photography was conducted in 2000. One peculiar aspect of Site 234 is that the TA-IV storm water discharged to nearly the same location where Site 46 acid-waste water had flowed from 1948 to 1973. Site 234 is located just east and slightly down slope of the Site 46 confluence where TA-I acid-waste water had flowed along a series of three outfall ditches. As a result, analytical results from the Site 234 soil samples may contain COCs from the Site 46 acid-waste water.

The ER Site 234 soil-sample results were re-evaluated in 2000. Of the six sample locations, only two samples (234-05-A/B and 234-06-A/B) were properly selected in 1994 and are therefore useful for site characterization. None of the four soil samples that were collected at the northern end of the site provide useful site-characterization results. Even though the lateral location for 234-01-A/B was adequate, the sampling depth was probably too shallow at a mere three feet below ground surface (bgs) to have reached native soil. As a result, sample 234-01-A/B was probably collected from backfill soil associated with the removal of the outfall pipe, rather than from native soil underneath or downstream of the outfall pipe. The other three sample locations (234-02-A/B, 234-03-A/B, and 234-04-A/B) were collected at useless locations where outfall pipes had been erroneously suspected.

In June 2001, two locations were sampled with a backhoe. The soil samples were collected at depths ranging from 0 to 5 ft bgs. The analytes were VOCs, SVOCs, TPH, TAL metals, chromium-VI, gamma-emitting radionuclides, gross alpha/beta, and tritium. The backhoe also

was used to dig a 24-ft long exploratory trench where the outfall pipe was previously located. The storm-water outfall pipe was not found, but the depth to native soil was determined. No significant contamination was detected in the soil samples.

The SWMU 234 NOD Response was submitted to NMED in December 2002.

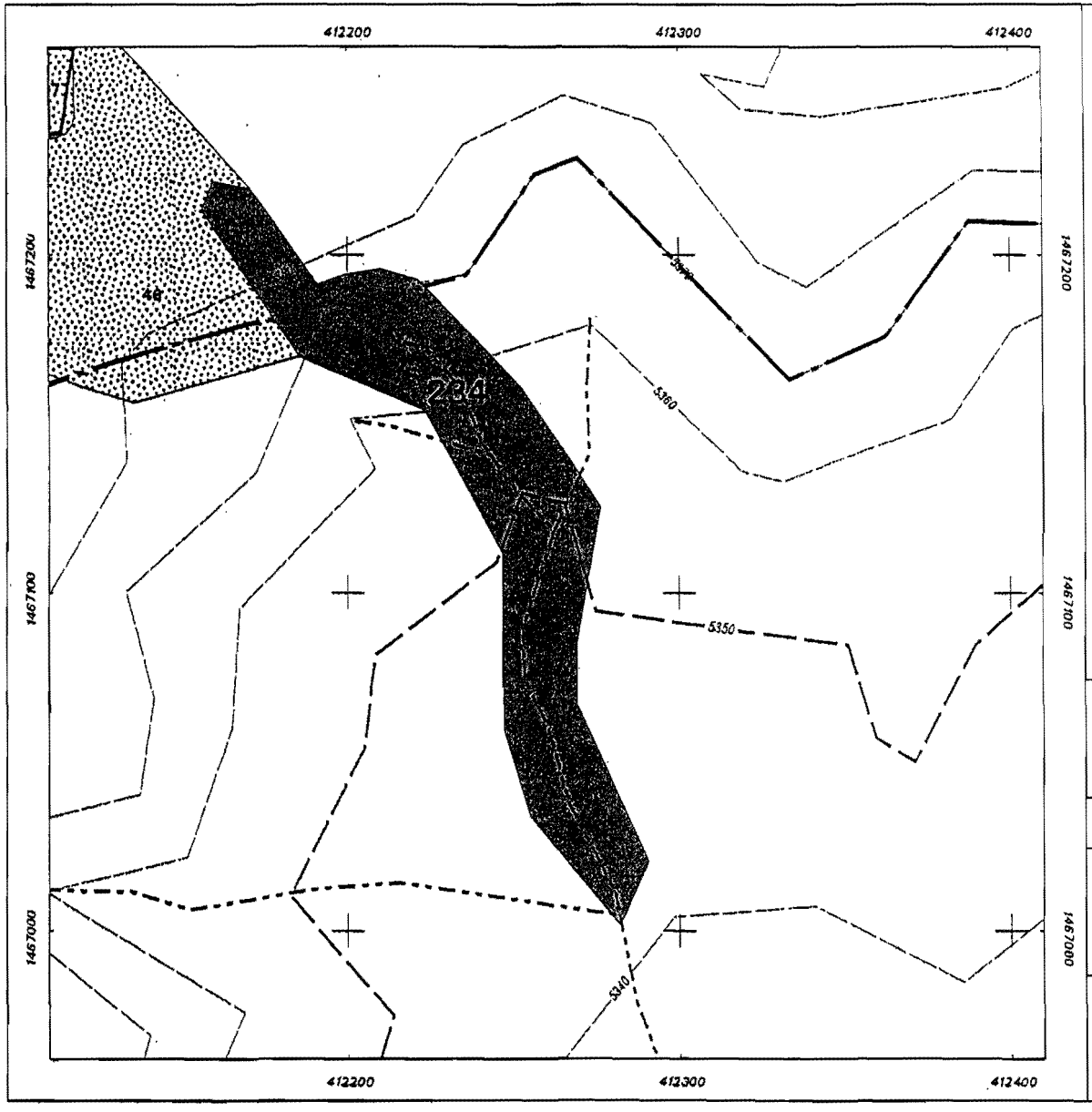
Future Work Planned

None

Waste Volume Estimated/Generated

No waste was generated at ER Site 234.

Information for ER Site 234 was last updated Jan 8, 2003.



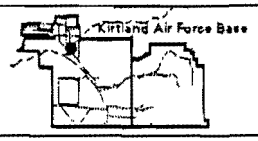
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 234
- Other SWMUs

Center of Site:
X = 412260
Y = 1467112

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 234

Storm Drain System Outfall

(South side of TA-IV)

SMorrison	18-SEP-2001
SNL EGIS DEPT 6135	
clstenop-co.aml	MAPID = 010665

OU-1332
FOOTHILLS TEST AREA

ER Site No. 8: Open Dump (Coyote Canyon Blast Area)

ADS: 1332
Operable Unit: Foothills Test Area

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Caroline Byrd or Ed Mignardot
Office Phone: 284-2531 or 284-3733

Site History

Site 8 is the surface dump associated with the Site 58 test area. Site 8 contained mainly general refuse and demolition debris. There is evidence of open burning in the southeast corner of the site. The site is not currently being used as an active dump.

Sites 8 and 58 are interrelated in both the activities conducted at the sites and geographically. Site 8 is fully contained within the 4,000-foot diameter circle defining the fragment boundary surrounding the Site 58 test area. A north-south oriented road dissects Site 58 and provides site access from the north and south. Site 8 is bounded by this road to the east, the end of debris to the north (approximately 3,200 feet from Coyote Springs Road), the base of the steep ridge to the west, and the end of test debris to the south.

Site 8 is generally flat and gently sloping to the south southwest. It is bordered on the NW by a ridge. A medium-sized arroyo runs from the east to the west about 600 feet south of the site. A smaller arroyo runs from the north to the south through the west side of Site 8. Both arroyos are dry, except during and immediately after heavy storms.

Site 8 is approximately 31 acres based on the debris areas as determined by historical accounts, aerial photographs and site surveys. Not all the area within the site boundary contained debris.

The vegetation consists mostly of sparse grasses and cacti. Small juniper trees are found in small numbers. Two Wright's Pincushion cacti, an endangered species, have been found on Site 8.

Constituents of Concern

The site appears to have contained mainly refuse and demolition debris deposited on the surface. Interviews indicate that some open burning was conducted at Site 8. Surface inspection and historical photographs reveal that the dump contained: 12-15 blown-apart glove boxes that contained no hazardous materials, forms, cradles, unexploded ordnance, scrap metal, plastics, wires, pieces of concrete, miscellaneous cans and bottles, high temperature ceramic firing bricks, rocket motors and high explosives [which were removed by Kirtland Air Force Base(KAFB)], ceramic and silica insulators, scrap and wood from explosive packing crates.

The Constituents of Concern (COCs) in the area are beryllium, asbestos, lead, depleted uranium and high explosives according to draft field notes from Comprehensive Environmental Assessment and Response Program (CEARP). Soil and debris containing CS-137, thorium, tritium, and depleted uranium (DU) were found and removed during recent Voluntary Corrective Measure (VCM) activities. Soil sampling data has identified some elevated metals levels, total petroleum hydrocarbons, and low levels of high explosives in isolated soil samples.

Current Hazards

At the former location of the surface dump (the middle of SWMU 8) there are minor levels of explosives and slightly elevated metals levels remaining in the soil after the voluntary corrective measure/voluntary corrective action activities. These levels will pass risk assessment and no further work is planned in this area. In the southeast corner of the site (Area of Open Burning) there are soils potentially contaminated with heavy metals (primarily lead) and radionuclides. There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

During the PSI, it was noted that pieces of high explosives (HE) and old rocket motors (with some explosive remaining) were scattered around the dump and down the arroyo. There were chunks of HE (1-4" diameter) scattered over the hillside to the west of Site 8.

During the time of the PSI, KAFB Explosive Ordnance Disposal (EOD) group surveyed the area and collected surficial items containing potential unexploded ordinance/high explosives (UXO/HE). EOD collected two dump truck loads of explosive material for disposal.

Another UXO survey was conducted in 1993. Live ordnance and ordnance debris were found including: ordnance shipping containers, bomb fuses, trip flares, cartridges with primer, 5-lbs of partially burned HE, rocket motors, and smoke grenades. These materials were subsequently removed and destroyed.

In October and November 1993, RUST Geotech Inc. conducted a surface gamma radiation survey at ER Site 8. One point-source anomaly was detected at 994 μR/hr. Background activities were

measured at approximately 10-13 µR/hr. The radioactive material appeared to be a gray plastic with white veins of material in it. Sandia Radiation Protection Operations removed the fragment, conducted an analysis, and found the radioactive material was cesium (CS-137). Based on this result it is believed that this fragment came from a weapons test that had CS-137 as a component of the fire set in the weapon.

Radioactive fragments, point-sources, and UXO were removed in 1995 as a VCM. A VCM was conducted in 1996 to remove surface debris from the site prior to the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI). Another VCM was conducted to remove radioactive material from the Site 8 Area of Open Burning in 1997. A Voluntary Corrective Action (VCA) was conducted in 1998 to remove soils containing elevated levels of metals, explosives, asbestos, and radioactive materials. RFI sampling is complete and sampling data is under evaluation. The debris on the site has been completely removed from the surface dump area. The site has been regraded and revegetated.

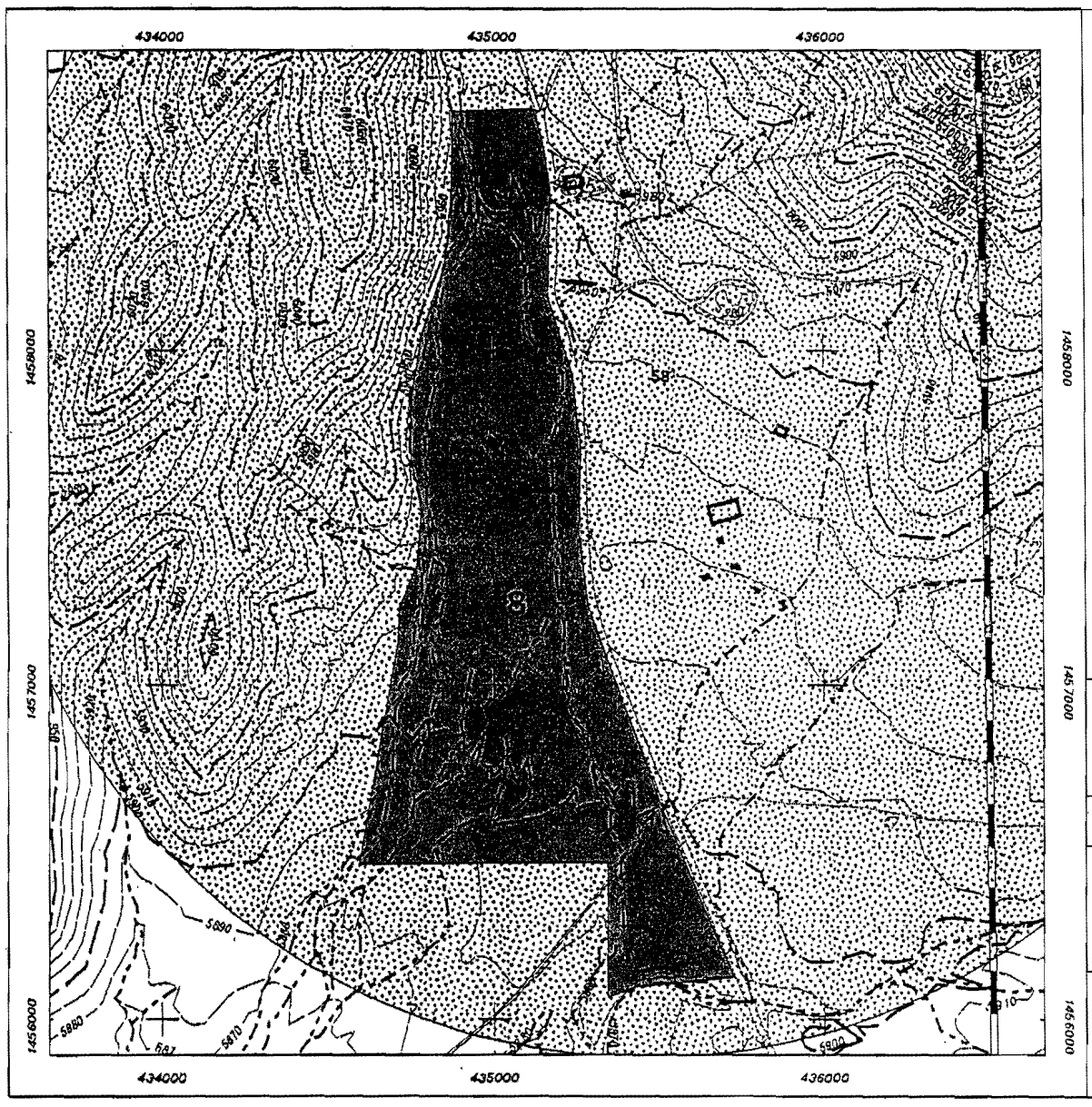
Future Work Planned

The data from the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) is being evaluated. The work plan for this investigation has been conditionally approved. A VCM is planned for the southeast corner of the site (Area of Open Burning)to remove soils contaminated with heavy metals and possibly radioactive waste. An NFA will be submitted to NMED following the VCM.

Waste Volume Estimated/Generated

Sixty-nine drums of radioactive waste, 3 drums of mixed waste, 10 gallons of hazardous waste, 3 drums of asbestos waste, and 423 cubic yards of nonhazardous wastes have been generated at this site.

Information for ER Site 8 was last updated Jan 29, 2003.



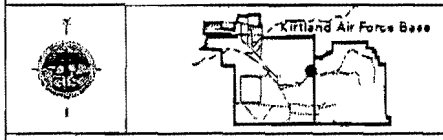
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 8
- Other SWMUs

Center of Site:
X = 435159
Y = 1457392

0 250 500
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 8

Open Dump

(Coyote Canyon Blast Area)

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
cistenop-aa.aml	MAPID = 010826

ER Site No. 28: Mine Shafts

ADS: 1332
Operable Unit: Foothills Test Area

- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Caroline Byrd or Ed Mignardot
Office Phone: 284-2531

Site History

There are ten mine shafts (ER Site 28-1 through 28-10) located throughout the Withdrawn Area. The mines were placed on the permit based solely on an interviewee who had heard a rumor that the mine shafts were used as the disposal sites for low-level radioactive wastes and explosive ordnance. Except for Mine 28-2, no evidence to support this rumor was found during the RFI investigation. Some of the mines are open pits and some are shafts that appear to be partially collapsed.

Constituents of Concern

It was speculated that low level radioactive wastes were disposed in the mines, but no radiation anomalies were found during a radiation survey conducted in the mine shafts in 1982 by the SNL RPO (formerly Health Physics). More recent safety surveys of mine 28-1, 28-3, 28-6, and 28-10 found no elevated radiation. The inside of Mine 28-2 was sampled and found to contain soils with metals and radionuclide at background levels, and very low levels of high explosives. In November 2001, elevated radioactivity was found at the opening of Mine 28-2. A sample was collected at the mine opening, and analyzed for radionuclides by gamma spectroscopy. The analytical result from this sample was 25,000 pCi/gram U-238 and the U-235 was 383 pCi/gram, and it was determined that the material is depleted uranium. UXO was found around but not in the mines during a unexploded ordinance (UXO) survey conducted by the KAFB Explosive Ordnance Division (EOD).

Current Hazards

Sites 28-1, -3, -4, -5, -6, -7, -8, -9 and -10 have been accepted for NFA. There are no current hazards at these sites related to contamination of the surface or subsurface soils. Mine 28-2 has the minerals expected in this type of mine and very low levels of explosives in the sediment inside the mine, however this mine is structurally unsafe and should not be entered. In addition, elevated radioactivity was found just outside of the Mine 28-2 opening. There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

An administrative No Further Action (NFA) has been proposed to the U.S. Environmental Protection Agency (EPA). Nine of the 10 mines have been approved by the New Mexico Environmental Department (NMED) for NFA and a Class 3 Permit Modification has been completed to remove these sites from the Hazardous and Solid Waste Amendments (HSWA) permit. NMED indicated that Site 28-10 is appropriate for NFA petiton on April 12, 2001. No further sampling activities will be conducted at the mine sites which have been accepted for NFA. The mine shafts have been either plugged or fenced to prevent accidents. Of these, three were shallow pits which have been backfilled to mitigate a vertical fall hazard. A fence was installed around Mine 28-4 to address the fall hazard. Mine 28-10 was inspected then backfilled with NMED approval. A wire cable net was installed over the opening at Mine 28-1 to provide fall protection and maintain the mine as bat habitat. ER Site 28-2 remains on the HSWA permit. Supplemental information on the mines and the results of the Mine 28-2 entry and sampling have been submitted to NMED. The outside area of Mine 28-2 has been characterized and remediated.

Future Work Planned

ER Site 28-2 remains on the HSWA permit. SNL awaits NMED's decision regarding the supplemental information and the results of the Mine 28-2 entry and sampling which have been submitted to NMED.

Waste Volume Estimated/Generated

Five gallons of slag containing elevated lead was removed from Mine 28-10. Eighteen drums of contaminated soils were removed from the outside area of Mine 28-2.

Information for ER Site 28 was last updated Jan 29, 2003.

NO MAP ASSOCIATED WITH THIS SITE

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ER Site No. 58: Coyote Canyon Blast Area

ADS: 1332
Operable Unit: Foothills Test Area

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Caroline Byrd or Ed Mignardot
Office Phone: 284-2531 or 284-3733

Site History

Site 58 was used to conduct more than a hundred explosive field tests. The site is not currently being used for test activities. Tests were conducted at the site from 1950 to late 1960s. More than 17 test locations within Site 58 conducted a very wide variety of tests involving at or above ground explosive detonations, until the non-explosive tests commenced. Tests included:

- Burn test on weapons
- Height of Burst studies
- Blast Force on Structure test
- Studies of the effects of terrain on blast waves
- Explosive related Star Wars tests
- Shrapnel studies
- Electromagnetic studies of weapon detonations
- Detonation effects on glove boxes of the type used to handle nuclear materials.
- Studies of explosive propelled plates impacting weapons simulating reentry into the atmosphere and impact with the ground
- Penetrator impact tests.

The Site 58 fragment boundary is located east of Manzano Base (approximately 1,000 feet at the closest point). Its southern boundary is located 200 feet north of Coyote Springs Road. A north-south oriented road dissects the site and provides site access. The size of Site 58 fragment boundary is approximately 256 acres (a 4,000 foot diameter circle). The size of the test area is

approximately 87 acres. The Site 58 test area boundary was selected to encompass all known or suspected firing/test sites. The fragment boundary, a circle with a radius of 2,000 feet from the center of the test area, was selected to encompass the probable dispersal areas for fragments.

The test area of Site 58 is generally flat and gently sloping to the south southwest. It is surrounded on the NE, NW, and S by hills. A medium-sized arroyo runs from the east to the west along the extreme southern portion of the site. A smaller arroyo runs from the north to the south through the west side of the site. Both arroyos are dry, except during storms.

Constituents of Concern

The material that may have been dispersed/released at some tests within Site 58 include:

High explosives
Metals (barium from some high explosives and lead)
Carbon tetrachloride in cable conduit
JP-4 from burn tests
Argon
Radioactive metal fragments containing depleted uranium and thorium
Plastic fragment containing cesium
Small piles of construction debris

Current Hazards

Based on RFI sampling and voluntary corrective measures/voluntary corrective actions that have taken place at the site during 1995-2000, slightly elevated levels of metals, U-235, U-238, Th-323, Cs-137, volatile organic compounds, semi-volatile organic compounds, and explosives are present in both the surface and subsurface soils. Although the levels are relatively low, a risk assessment has not been conducted yet. There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

Site 8 and portions of Site 58 are in the Manzano Combat Range. Military training is conducted through the range. Most of the unexploded ordnance found on site is from this activity and is not the result of Sandia research.

During the time of the Preliminary Site Inspection (PSI), the KAFB Explosive Ordnance Disposal (EOD) group surveyed the area and collected surficial items containing potential unexploded ordinance/high explosive (UXO/HE). EOD collected two dump truck loads of explosive material for disposal.

Another UXO survey was conducted in 1993. Live ordnance and ordnance debris were found including: ordnance shipping containers, bomb fuses, trip flares, cartridges with primer, 5-lbs of partially burned high explosive (HE), rocket motors, and smoke grenades. These materials were subsequently removed and destroyed.

Radiation surveys of the surface were conducted in 1993/1994/1998. Approximately 74 radioactive metal fragments, later found to contain thorium, were found. One fragment containing cesium was found. Several soil areas with slightly elevated radioactivity were also found. A Voluntary Corrective Measure (VCM) to remove radioactive fragments and point sources was conducted in 1995. Another VCM was conducted in 1996 to remove buried UXO and soils with slightly elevated radioactivity levels. A VCM was conducted in 1998 to remove asbestos containing debris. Another VCM was conducted in 1998 to remove a large concrete and metal test structure and other concrete debris. A VCM was conducted in 1999 to remove soil and debris containing elevated lead and thorium. Resource Conservation and Recovery Act (RCRA) Facility Investigation sampling has been completed. A Voluntary Corrective Action (VCA) was conducted in October 2000 to remove an underground conduit system that site history indicates may have been periodically flushed with chlorinated organic compounds. The entire system was removed and verification sampling was conducted to confirm that no soils contaminated with organic compounds remain at this former feature.

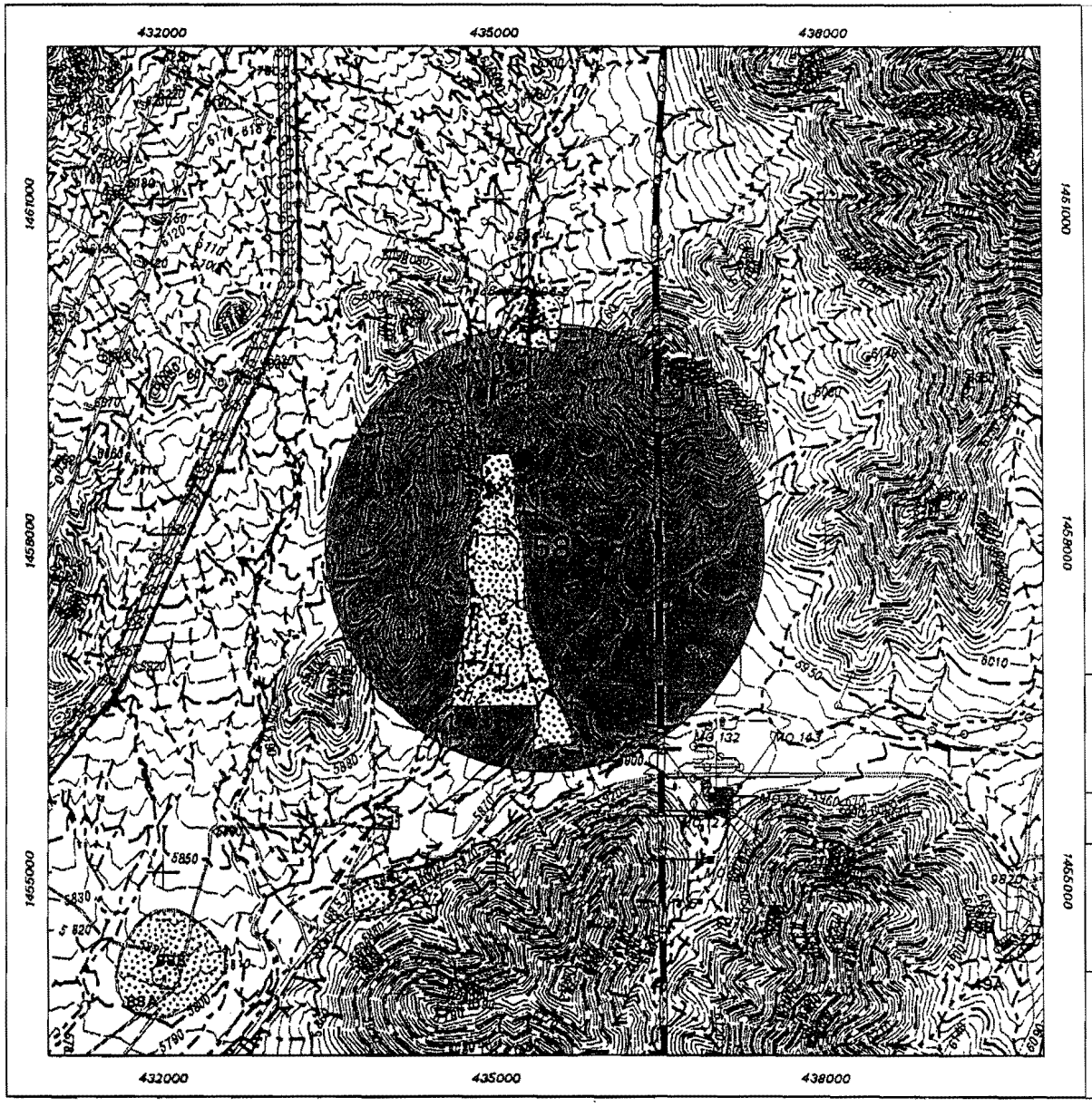
Future Work Planned

A No Further Action (NFA) proposal for SWMU 58 will be submitted to the NMED.

Waste Volume Estimated/Generated

About 38 55-gallon drums of radioactive waste have been generated at this site along witrh two 55-gallon drums of batteries and approximately 10 cubic yards of asbestos waste.

Information for ER Site 58 was last updated Jan 29, 2003.



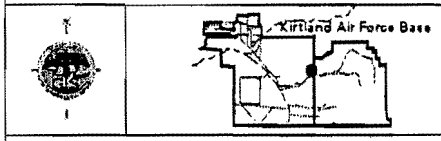
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 58
- Other SWMUs

Center of Site:
X = 435457
Y = 1457876

0 750 1500
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 58
Coyote Canyon Blast Area

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
clstenop-ac.aml	MAPID = 010839

Sandia National Laboratories

ER Site No. 66: Boxcar Site

ADS: 1332
Operable Unit: Foothills Test Area

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Caroline Byrd or Ed Mignardot
Office Phone: 284-2531

Site History

The Boxcar Site, ER Site 66 is located off Demolition Range Road southeast of Manzano Base, on the road toward the TRUPACT Boneyard and the Old Aerial Cable Site. The actual site is located in an area that slopes gently to the southwest, approximately 250 ft south of a metal bunker. The original site is 3 acres in area, and the boundaries of that area also encompassed the surface radiation survey. Currently, the site is inactive.

The Boxcar Site was used to study detonations in Atomic Missile (ATMX) railroad cars to determine if subsequent detonations would occur if one of the weapons exploded. The tests were conducted in 1958-1959. The site was comprised of a boxcar with concrete shielding and four telephone poles with wire cables. The telephone poles and wire cables were used to hoist the units, which were placed on elevated platforms. Triangular-shaped concrete barriers about 2.5 ft high were constructed and placed between weapons units to deflect the explosive materials when a detonation occurred. The weapons units had dummy pits. There were no nuclear materials used in the tests. An unknown quantity of TNT was used for each test. The green metal bunker to the north of the test site was used to store detonators. According to sources, the boxcar tests were the only tests performed at the site by SNL. NMED requested the site be expanded to include additional test pads and structures close to the Boxcar test site, thus increasing the area to 17 acres.

Constituents of Concern

No nuclear material was used at the site. No radiation above background was detected in the area in a recent survey conducted in 1994.

In 1988, 22 soil samples were collected from the Boxcar site and analyzed for metals, pesticides, polychlorinated Biphenyls (PCB), TNT, and SVOCs. Detectable levels of Al, Ba, Ca, Ce, Cr, Hg, Fe, K, Mg, Mn, Pb, Ti, Zn, As, V, Cu, Ni, and Se were measured. No detectable levels of TNT, pesticides, or PCBs were measured. One sample contained pentachlorophenol at 2 ug/L. Total uranium concentrations range from 0.91 ug/g to 1.5 ug/g. Sampling in 1998 found elevated arsenic, beryllium, cadmium, lead, mercury, and silver in at least one sample. The levels are close to background and are below action levels. Toluene and 1,1,1-trichloroethane were found at very low levels in three samples. Thorium 232 and Uranium 235 were slightly elevated above background in some samples but well below action levels.

Current Hazards

RFI sampling results indicate that the soil contains slightly elevated Th-232, Volatile Organic Compounds,and elevated metals. The thorium levels are consistent with the bedrock of the area. Risk assessment has not been conducted but the site should pass risk. There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

A No Further Action (NFA) proposal was submitted for this site in October 1996. New Mexico Environmental Department (NMED) requested additional sampling which was conducted in 1998. An RSI Response which included results of the additional sampling was submitted to NMED in January 2003.

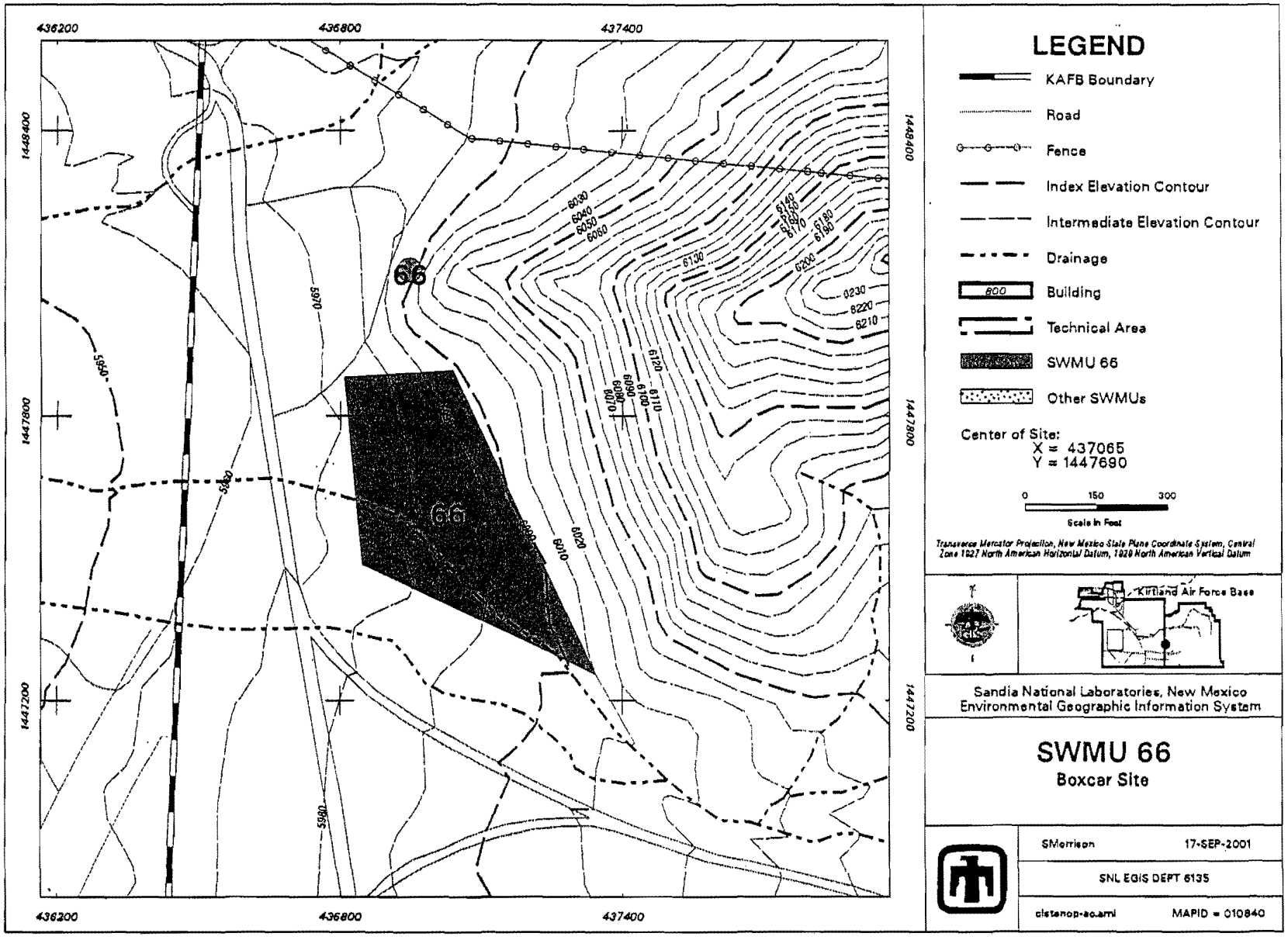
Future Work Planned

No additional work is planned.

Waste Volume Estimated/Generated

A housekeeping VCM removed 4 55-gallon drums of scrap metal in 1998.

Information for ER Site 66 was last updated Jan 29, 2003.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LEGEND
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Fence
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Intermediate Elevation Contour
Drainage
Building
Technical Area
SWMU 66
Other SWMUs
Center of Site:
X = 437065
Y = 1447690
0
150
300
Scale in Feet
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Kirtland Air Force Base
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
SWMU 66
Boxcar Site
SMorrison
17-SEP-2001
SNL EGIS DEPT 6135
cistenop-ac.aml
MAPID = 010840

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ER Site No. 87: Building 9990 Firing Site

ADS: 1332
Operable Unit: Foothills Test Area

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Caroline Byrd or Ed Mignardot
Office Phone: 284-2531

Site History

ER Site 87, Building 9990 (Firing Site), is located off of Demolition Road, approximately 1.3 miles due east of the intersection with Coyote Springs Road. The site is on U.S. Forest Service (USFS) withdrawn land that is permitted to the DOE by the USAF, in a box canyon that opens to the southwest. In the central part of the canyon, where Building 9990 is located, the terrain is relatively flat, sloping gently to the southwest. Bedrock is exposed at the surface of the surrounding ridges. A thin veneer of regolith (broken/eroded rock fragments and sand-sized material with minor or no true soil) and alluvial sediment partially covers some of the ridge slopes and much of the canyon bottom near the central arroyo. Vegetation in the area is spotty in distribution and primarily comprised of junipers, sage brush, desert grasses, and cedar scrub. The size of the site is approximately 90 acres. The outer boundary of the site is based on both the unexploded ordinance (UXO) survey and the surface gamma radiation survey.

A gravel road that branches off Demolition Road to the northeast provides access to the Building 9990 area. Within the box canyon area another gravel road branches off the access road and forms a loop around the Building 9990 area. This road is primarily a fire barrier or a fire line. Several smaller buildings and concrete pads are also present in the area, primarily at the northeast end of the canyon. The actual test site is located on the immediate north side of the building. It has not been used for large explosive tests since 1986. The north-facing wall was reinforced with steel plating. A butler building (9990A) was erected just north of the former firing site in late 1986. The surrounding canyon area and ridge slopes are littered with various pieces of metal shrapnel. The testing group that operated the facility moved out, and it has been inactive

since July 1994.

The test facility was active from 1969 to May 1994. All of the explosive tests were conducted in the area immediately north of Building 9990. Some of the tests described below threw shrapnel for distances greater than 1200 ft, based on the surface radiation survey results and visual inspection of the area. The topography of the area has largely contained the distribution of shrapnel. Tests included:

- Explosive generator and electromagnetic launcher research;
- Electromagnetic launcher tests;
- Containment tests involving detonating mock-up warheads that contained significant quantities of depleted uranium (DU) (one test was not contained);
- Neutron generator proof tests and "stand-off tests" to test weapon components performance;
- Davis gun tests;
- Box tests where high explosives (HE) were packed around a gas cylinder, placed in an aluminum box and detonated;
- And flyer plate tests involving accelerating aluminum plates into the nose of a mock warhead to assess damage.

Constituents of Concern

The materials that may have been dispersed/released during some tests within the area of ER Site 87 include:

- HE combustion by-products from Comp B, HMX, Tetryl, PBX9404, nitromethane, LX-04, Octol, nitrocellulose, and baratol
- DU
- Toluene, acetone, and methanol (these evaporated off a concrete pad and are not expected to be present)
- Metals (beryllium, barium, chromium, copper, lead, silver, and zinc)

Current Hazards

Slightly elevated levels of metals, explosives, Th-232, U-235, and U-238 remain in the surface soils. Preliminary risk assessments indicate that the levels would not pose an unacceptable risk. There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

This site is included in the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan for OU 1332.

A UXO surface clearance survey was performed at ER Site 87. One live HE shell and ordnance

debris were found. The shell and debris were subsequently removed.

A surface radiation survey was conducted and over 1400 radioactive fragment/soil areas were detected. Two rad Voluntary Corrective Measures (VCMs) were performed to remove radioactive fragments in FY95.

A housekeeping Voluntary Corrective Action was conducted in 2000 to remove test debris and metal fragments from the areas surrounding the firing site. RCRA Facility Investigation sampling was conducted to assess the site.

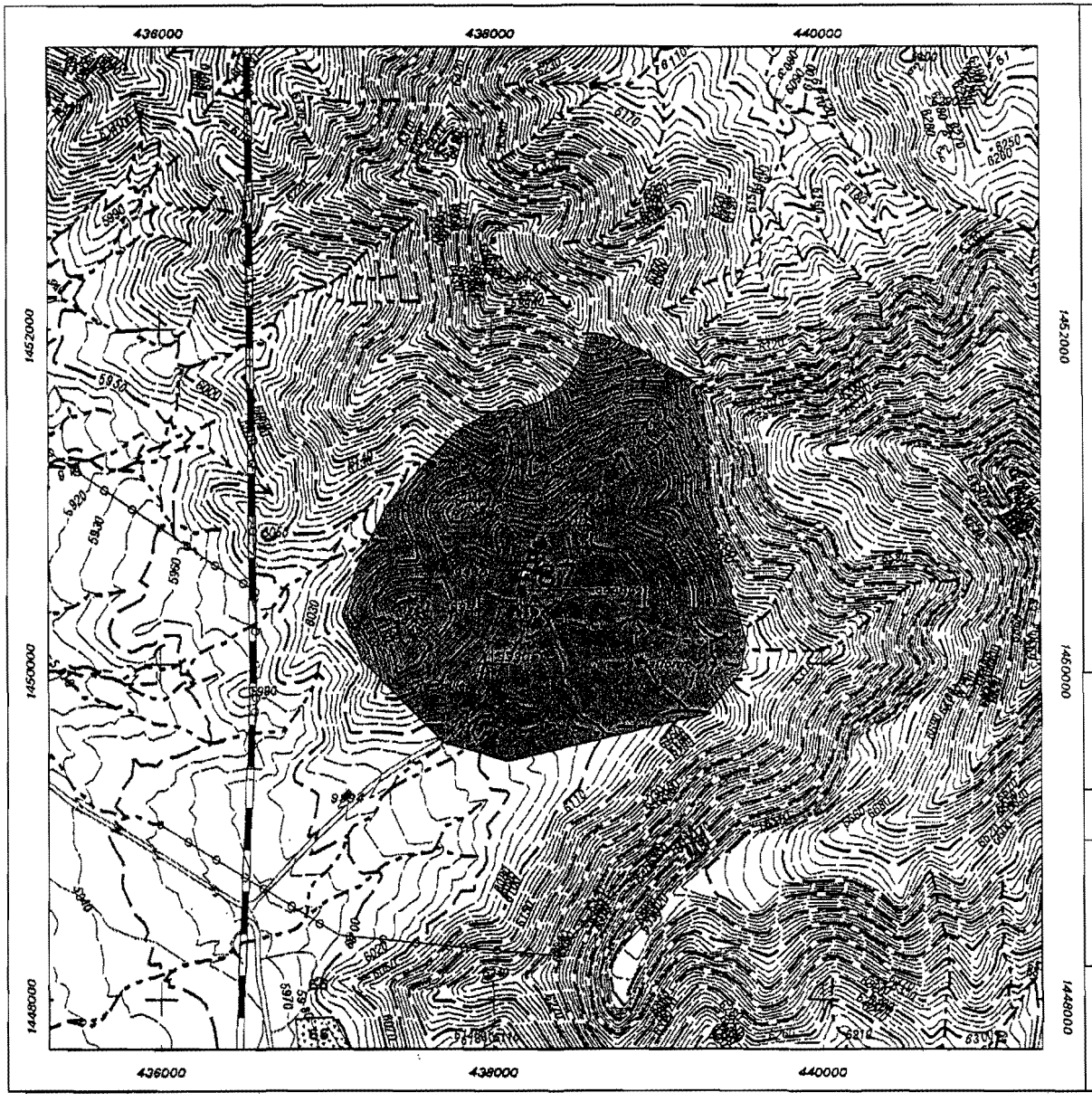
Future Work Planned

A housekeeping Voluntary Corrective Action is planned for 2003 to remove test debris and metal fragments from an additional area surrounding the firing site. RCRA Facility Investigation sampling results are being evaluated and used to determine if further actions are required at the site. If no further characterization or remediation is required, a no further action (NFA) proposal for the site will be submitted to the NMED.

Waste Volume Estimated/Generated

Twenty-seven drums of radioactive waste have been generated and removed from the site.

Information for ER Site 87 was last updated Jan 29, 2003.



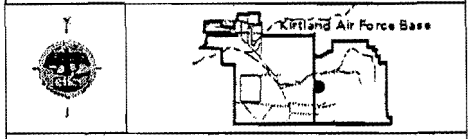
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 87
- Other SWMUs

Center of Site:
X = 438323
Y = 1450700

0 500 1000
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 87

Building 9990

Firing Site

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
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OU-1333
CANYONS TEST AREA

ER Site No. 94: Lurance Canyon Burn Site

ADS: 1333
Operable Unit: Canyons Test Area

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Paul Freshour
Office Phone: 845-3108

Site History

ER Site 94, identified as Lurance Canyon Burn Site (LCBS) in the HSWA Module, is located on land withdrawn from the USFS by the USAF and permitted to the DOE. The site is located on the canyon floor alluvium in the closed upper reaches of the Lurance Canyon drainage. It is surrounded by moderately steep, sloping canyon walls. The site is constructed on a large graded area, and the immediate topographic relief around the site is over 500 ft. A 25- to 50-ft wide road is cut on the hillslopes as a firebreak and encircles the site. The canyon floor at the site is isolated by the canyon walls except for the western drainage into Arroyo del Coyote. Coyote Springs Road follows this drainage and is the main access road into Lurance Canyon and the LCBS.

The location of ER Site 94 coincides with ER Site 65 Lurance Canyon Explosive Test Site, an inactive site used for HE tests and for liquid and solid propellant burn tests. The LCBS is currently used for testing fire survivability of transportation containers, weapons components, simulated weapons, and satellite components. Only a few of the permanent, engineered structures at the site are currently active. Historical aerial photographs indicate that the transition of testing activities from predominantly open detonation explosives testing and JP-4 fuel fires in excavated pits (ER Site 65) to open burning with JP-4 fuel fires in portable burn pans (ER Site 94) occurred between 1971 and 1982. Based on test reports and interviews, open burning with JP-4 fuel fires in portable burn pans began by 1975. By 1980, the first permanent, engineered burn unit was constructed on the site of the former Primary Detonation Area (ER Site 65B) and was in operation. The scrap yard was established in the northwestern portion of the site within the boundary of the former Far Field Dispersion Area (ER Site 65F). The scrap yard has been used to

store spare materials used in explosives and burn tests and is currently used for storing nonliquid materials and used equipment.

By 1983, the LCBS was constructed. It consisted of five permanent, engineered burn units, including the Large Open Burn Pit (LOBP), the Small Open Burn Pit (SOBP), the Light Airtransport Accident Resistant Container (LAARC) Unit, the Bomb Burner Unit, the Small Wind-Shielded (SWISH) Unit, and the Conical Containment (CON-CON) Unit. They were sited on the graded area that had been the Primary Detonation Area (ER Site 65B) and Near Field Dispersion Area (ER Site 65D). Two of the burn units (the SWISH Unit and later, the Smoke Emissions Reduction Facility [SMERF]) were constructed to provide testing facilities that would eliminate wind effects and provide accurate temperature control and instrumentation for test monitoring. A small surface impoundment is also visible southeast of Bunker 9830. Engineered soil berms had also been constructed by 1983 in the southeastern portion of the site for flood protection from the main arroyo in Lurance Canyon.

The CON-CON Unit was dismantled prior to 1989 and by 1992 a new burn unit (SMERF) was constructed on its site. Prior to 1992, a debris/soil mound area was created in the southern portion of the LCBS, immediately north of the main arroyo in Lurance Canyon. This debris/soil mound may be associated with on-going grading activities at the site. Northeast of the debris/soil mound area is another soil mound that was created during the remediation of a wastewater spill from a permanent engineered unit that occurred on March 20, 1992.

Burn testing at the LCBS has always been conducted with JP-4 fuel pool fires in open portable pans or contained within the permanent engineered structures. Pool fires provide the closest simulation of accidents involving flammable liquids. For the tests, the pans are filled with approximately 1 to 2 ft of water and an average 8-in. layer of JP-4 fuel. The test unit, such as a transportation container, is placed on a stand above the fuel. The fuel is ignited and the fire typically burns until the JP-4 fuel is consumed. The length of the test is controlled by the volume (thickness) of the JP-4 fuel layer. After a burn test is completed, test units are retrieved and salvageable materials are collected and stored in the scrap yard located in the northwest portion of the site. Any test object residue (e.g., metal slag) is recovered with the test unit and removed from the site by the testing group. Only small residue particulates may be left in the water following the burn test. While no testing is currently conducted on components containing radioactive materials, ER Sites 94B and C are currently classified as RMMAs because of the presence of residual DU in the soil from earlier burn tests and from former explosives testing activities associated with ER Site 65 which was abolished as an RMMA following submittal of NFAs for all Site 65 sub-units. ER Site 94G is classified as an RMMA because the scrap material stored in the yard may have some radioactive contamination since some of it was used in tests conducted at Site 65 sub-units.

Due to the overlap in location and periods of testing at ER Sites 65 and 94, the criteria below were used to determine the types of operational tests and test structures to include in descriptions of each ER site.

ER Site 65 includes all operations or testing that involved general explosives tests, early burn tests that involved the excavation of pits into soil and sediment, miscellaneous (non-petroleum fuel-fire) burn tests, cone tests, a Torch Activated Burn System (TABS) test location, and slow-heat tests. ER Site 94 includes all burn tests involving portable pans and fixed-location structures or engineered burn units. A TABS test location also exists in ER Site 94.

In order to facilitate site characterization, ER Site 94 has been subdivided into the following seven

sub-units that represent areas where hazardous constituents may have been released.

ER Site 94A - Aboveground Tanks
ER Site 94A includes all of the current and historic aboveground tank storage locations at ER Site 94, including the current tank location north of the LOBP, the current tank location north of the LAARC Unit, and the former tank location north of the Bomb Burner Unit. These tank areas have been included due to documented and potential accidental releases of JP-4 fuel. ER Site 94A is comprised of three individual areas having a total surface area of 0.8 acres.

ER Site 94B - Debris/Soil Mound Area
ER Site 94B is located south of the Bomb Burner Unit and SMERF, and north of the main arroyo. The site consists of a soil mound of irregular surface area that contains some visible debris. It was established as a sub-unit because of the lack of available information about past activities that may have created the mounds and the presence of beta/gamma radiological anomalies. The area covers a total of 0.6 acres.

ER Site 94C - Bomb Burner Area and Discharge Line
ER Site 94C occupies an area of 0.2 acres surrounding the Bomb Burner Unit and the Bomb Burner Unit trench. An underground corrugated culvert extended from the Bomb Burner Unit to a discharge pit (ER Site 94D) located between the access road and the arroyo. The Bomb Burner Unit itself has been decontaminated and decommissioned and is not included as a sub-unit. Release of potential COCs outside of the Bomb Burner Unit were characterized as part of ER Site 94C. Releases of potential COCs from the TABS Test location, portable pan tests, rocket propellant tests, slow-heat tests, and uncontained pool fires that occurred in the Bomb Burner Unit trench were also characterized.

ER Site 94D - Bomb Burner Discharge Pit
ER Site 94D encompasses the area of the discharge pit at the point of entry from the discharge line. The discharge pit received all wastewater from operation of the Bomb Burner Unit. The site covers less than 0.1 acre.

ER Site 94E - Small Surface Impoundment
ER Site 94E is located approximately 250 ft southeast of Bunker 9830 and east of the camera bunker. The impoundment was used for several fuel-fire burn tests and may have received wastewater from some portable pan burn tests. The impoundment also receives surface-water runoff from the graded area. The site occupies 0.2 acres.

ER Site 94F - LAARC Discharge Pit
The LAARC Discharge Pit consists of the southern half of the shallow, open rectangular trench located approximately 50 ft south of the LAARC Unit. The discharge pit received all wastewater from operation of the LAARC Unit. The site covers less than 0.1 acre.

ER Site 94G - Scrap Yard
The Scrap Yard is located on 3.2 acres in the northwest portion of ER Site 94. Surplus test materials and equipment to support burn testing at the LCBS are stored there.

ER Site 94H - JP-8 Site
The JP-8 site was discovered in August 2000. The JP-8 site is located immediately west of the Large Open Burn Pool and covers approximately 0.1 acres. No details exist on the date of the release of JP-8 from underground piping that connected ER Site 94A to the LOBP. The piping has

since been upgraded.

Constituents of Concern

SVOCs
VOCs
Jet fuel (JP-4 and JP-8)
HE
Metals

Current Hazards

This section describes potential hazards that may be associated with Environmental Restoration activities only and does not address hazards associated with buildings and/or structures or their contents.

There are no current hazards at these sites related to contamination of the surface soils.

Current Status of Work

An RFI Work Plan was submitted to EPA for approval in January 1996. An RSI was received from the New Mexico Environmental Department (NMED) in August 1997 and a response was subsequently submitted to NMED. A Notice of Deficiency (NOD) was received from NMED in April 1998 for the RFI work plan and a response was subsequently submitted to NMED.

A passive soil vapor survey was conducted for the entire burn site in February 1998. Based on results of the SVS and comments from NMED in the RSI and NOD, RFI sampling was conducted at all subunits at the Burn site in 1998 with the exception of the active Scrap Yard Site 94G. To determine the extent of fuel contamination at Site 94F, a second phase of characterization was conducted in 1999 that consisted of an active soil gas survey and soil sampling. Additional characterization was also conducted at Sites 94B & 94C and baseline sampling was conducted at Site 94G.

The drain line at site 94C was shown to have fixed radiological contamination and was excavated and removed from the trench in 1999. Rad surveys of the Site 94C trench sidewalls revealed an area of DU contaminated soil, a small DU contaminated soil area was also found at site 94B.

Voluntary Corrective Actions were conducted at Sites 94B, C, & F in March and April of 2000. Radiologically contaminated soils were excavated at sites 94B & C and staged for disposal. Fuel contaminated soils were excavated at Site 94F. All soil with petroleum contamination were removed to bedrock at a depth of approximately 18 feet. The soils were disposed at a landfarm or landfill, as appropriate, in the summer of 2000.

After discovery in August 2000 an RFI was conducted at ER site 94H to determine the extent of contamination. A VCA to remove the petroleum-contaminated soil was conducted in July 2001, approximately 900 cubic yards of soil were removed. A risk-based No Further Action(NFA)

Proposal was submitted to NMED for Site 94A in September 1998. In December 1999, following review of SNLs response to a Request for Supplemental Information (RSI), NMED indicated that the site was acceptable for NFA. The NFA for 94A was approved by NMED on July 2000 after completing the public review and permit modification process.

An NFA was submitted to NMED for Site 94D in May 1999. Site 94D was found acceptable for NFA petition in September 1999.

An NFA was submitted to NMED for Site 94E in September 1999. Site 94E was found acceptable for NFA petition in March 2000.

The NFAs for 94D and 94E were approved by NMED in October 2000 after completing the public review and permit modification process.

NFAs were submitted to NMED for Sites 94C and 94G in March 2001. On April 26, 2001 NMED indicated that Sites 94C and 94G are appropriate for NFA petition.

NFAs for sites 94B and 94F were submitted to NMED in September 2001. On January 17, 2003 NMED indicated that Sites 94B and 94F are appropriate for NFA petition.

The NFAs for Sites 94C and 94G were approved by NMED on November 19, 2001, after completing the public review and permit modification process.

An NFA for site 94H was submitted in September 2002.

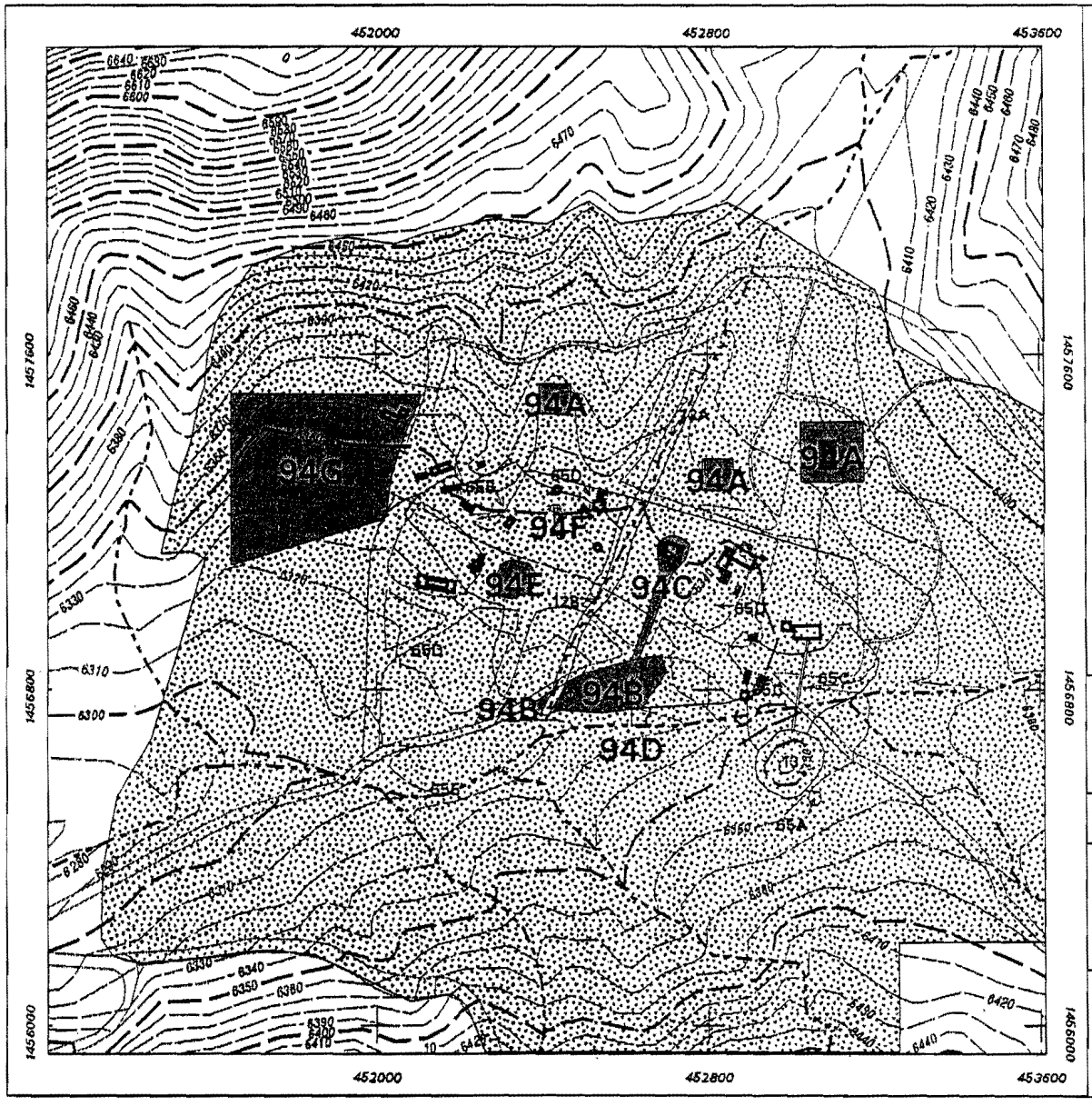
Future Work Planned

No future work is planned pending NMED approval of the NFAs and the permit modification process for sites 94B, 94F, and 94H.

Waste Volume Estimated/Generated

A combined surface radiation VCM for Sites 12, 13, 65, and 94 has generated 200 drums of low level radioactive waste. The VCAs for sites 94B, 94C, and 94F generated approximately 1,200 cubic yards of fuel contaminated soil and 60 cubic yards of low level radioactive waste. The VCA at 94H generated approximately 900 cubic yards of fuel contaminated soil.

Information for ER Site 94 was last updated Feb 17, 2003.



LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- SWMU 94
- Other SWMUs

Center of Site:
X = 452410
Y = 1457133

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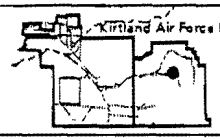
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 94

Lurance Canyon

Burn Site

SMorrison	24-OCT-2001
SNL EGIS DEPT 6135	
clsmulatesc-a.aml	MAPID = 020070

OU-1334
CENTRAL COYOTE TEST AREA

ER Site No. 9: Burial Site/Open Dump (Schoolhouse Mesa)

ADS: 1334
Operable Unit: Central Coyote Test Area

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Caroline Byrd, Joe Pavletich (284-2479)
Office Phone: 284-2531

Site History

ER Site 9, identified as Burial Site/Open Dump in the Hazardous and Solid Waste Amendments (HSWA) Module, lies on approximately 1.86 acres of federally owned land controlled by the United States Air Force (USAF). This inactive site is located adjacent to, and within, an arroyo channel approximately 1,800 ft east of the Schoolhouse Building on the north side of Demolition Range Road, where a north-trending dirt road crosses the arroyo channel and splits into two dirt trails immediately east of the site. Site 9 forms the southwest corner of adjacent Solid Waste Management Unit(SWMU) 61A and encompasses features on the north and south arroyo banks as well as in the arroyo channel. The mean elevation of the site is 5,845 ft above mean sea level (amsl).

The original description of Site 9 included three "debris mounds" of which only the largest, Mound 1, on the north bank of the arroyo was later determined to be a true soil-covered debris burial mound. Mound 1 was approximately 175 ft long and up to 8 ft high above the surrounding grade. The other two "mounds" were simply debris, dumped as either a discreet pile in the arroyo channel (Mound 2) or as debris scattered along the south bank of the arroyo channel (Mound 3). Mound 2 debris consisted of a tangled mass of barbed wire, empty paint cans, ceramic electrical insulators, mortar shell storage cases, a military bomb rack, vehicle parts, a shrapnel-riddled iron plate, pieces of wood and metal, and building rubble (cinder blocks, glazed masonry tiles.) Mound 3 debris consisted of wooden crate remnants, empty paint cans, expended smoke grenades, an

empty 55-gallon (gal) drum containing a grate that appears to have been used as a grill, and other miscellaneous solid waste.

A burial pit containing radioactively-contaminated materials was discovered during a voluntary corrective measure (VCM) conducted between 1996 and 1998. The burial pit was located about 30 ft northeast of the south end of Mound 1 and was about 30 ft in diameter and had debris materials buried to a depth of about 4 ft.

No specific information on site activities at SWMU 9 or adjacent SWMU 61A was discovered until a retired worker confirmed that SWMU 9 was used as an open dump for test debris and trash generated in the local area.

A 1951 aerial photograph shows the first evidence of manmade features at ER Site 9. A 1967 aerial photograph shows an access road between ER Site 61A, Blast Area, and ER Site 9. A 1971 aerial photograph depicts a debris mound that appears similar to Mound 1. Vegetation gradually reclaimed the roads and the site during a period of inactivity between 1971 and 1991. Other than Mound 1, no additional waste management units are shown in aerial photographs of the site.

Previous Investigations - ER Site 9 was identified during investigations conducted under the Comprehensive Environmental Assessment and Response Program (CEARP) and the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA). However, no records regarding waste disposal at this site were found during either of these investigations.

In early 1993, Sandia National Laboratories / New Mexico (SNL/NM) Radiation Protection Offices (RPO) personnel conducted a beta/gamma radiation survey at the site with a Geiger-Muller detector with a pancake probe. No activity above background was detected near any of the debris mounds, including a cavity containing corrugated metal exposed in debris Mound 1. In addition, SNL/NM RPO personnel recorded no radioactivity readings above background activity at a shallow, crater-like feature northeast of debris mound 1.

In November 1993, Kirtland Air Force Base (KAFB) Explosive Ordinance Disposal (EOD) conducted a surface visual Unexploded Ordinance / High Explosives (UXO/HE) survey of Schoolhouse Mesa test areas. This survey, which was completed in conjunction with ER Sites 20 and 61, included ER Site 9. UXO/HE material identified and removed during this survey was associated with recent U.S. Department of Defence (DoD) war game exercises conducted throughout the Schoolhouse Mesa area and included one live groundburst simulator and one lb. of HE compounds. Ordnance debris that was collected and removed included six smoke grenades, two flare-illuminating cartridges, and three 40-mm white star parachute cartridges. No UXO/HE was found on the surface of the three debris mounds at ER Site 9.

In February 1994, RUST Geotech Inc. conducted a Phase I surface gamma radiation survey at ER Site 9. One point-source anomaly was detected at 18 microR/hr in the southeast corner of Mound 1. Background activities were measured at approximately 14 microR/hr. The radioactive material was attributed to activities conducted at ER Site 61A. Yellow material near Mound 1 was thought to be radioactive uranium oxide. It was believed that the radioactive material was deposited over the ER Site 9 area by activities at ER Site 61A, and that radioactive material was not disposed of in the debris mounds.

VCM activities were conducted at ER SWMUs 61A and 9 during March 1995 and February, March, May, July, and October 1996. Point sources identified during the Phase I survey were

removed in March 1995. In February 1996, SWMU 61A was resurveyed on 6-foot centers (100-percent coverage), additional point and area sources that were discovered were remediated as the schedule permitted in February, March, May, and July 1996.

In June 1996, ER Site 9 was sampled according to the strategy, methodology and procedures outlined in the Operable Unit (OU) 1334 RCRA Facility Investigation (RFI) Work Plan. Trenches were excavated across the three mounds to determine the extent, possible types of buried debris, and to collect samples for characterization. The three trenches across Mound 1 showed that only the southern end contained buried wastes, while the northern end was composed only of burlap bags filled with crushed granite. A shallow depression along the northwest side of Mound 1 indicated that it might have been used as protective berm during testing at SWMU 61A. Burned and buried debris exposed in trenches 2 and 3 at the south end of Mound 1 consisted of shrapnel-riddled, galvanized steel and metal-plate test stands, steel I-beams, wire and cable, metal tubing, plastic sheeting, concrete pieces, cans and bottles, burned wood and paper, and glazed tile fragments. The trench excavated across Mound 2 revealed that it was simply a pile of debris dumped in the arroyo and was not an extension of Mound 1. The trench into Mound 3 showed that this feature was a natural terrace deposit with debris scattered on the surface rather than a burial mound. The analytical data indicated that Mound 1 contained radioactive materials, mainly depleted uranium (DU) as scattered "pockets" and surface contamination on some debris pieces, volatile organic compounds (VOCs), and HE residues. A VCM was planned to excavate, characterize, and dispose of the materials in the south end of Mound 1, and to characterize and dispose of the materials from Mounds 2 and 3.

In October of 1996, SNL/NM began to excavate Mound 1 as a VCM and to segregate radioactive materials for proper disposal. A backhoe was used for the excavation because it was evident that the lateral and vertical extent of contaminated materials would exceed the capabilities of manual excavation and clean-up procedures. The VCM was stopped after 10 days when UXO (a rocket warhead and a 5-in. diameter artillery shell) was encountered in the excavation. The open excavation was covered with soil and additional safety precautions and procedures were scheduled for implementation. However, due to budgetary restrictions, the VCM could not be resumed until June 1998. The Mound 1 excavation and surveying continued for one week in June and the first two weeks of August 1998 when it was finally completed. A small burial pit containing DU-contaminated soil and debris was also discovered about 10 feet east of Mound 1. The pit was excavated during the June 1998 portion of the VCM. The debris scattered in the arroyo (Mound 2) and on the arroyo terrace (Mound 3) was picked-up and surveyed for radiation in August 1998. No radioactive contamination was found on the materials from Mounds 2 or 3.

When the VCM was completed in August 1998 a total of eighteen 55-gallon drums of mixed waste (soil and small debris pieces), approximately 50 cubic yards of scrap metal (excavated from Mound 1 and picked up from Mounds 2 and 3), and 520 cubic yards of soil had been excavated and surveyed from Mound 1 and the burial pit.

The 18 drums of contaminated soil and debris were sampled in September 1998 and determined to be mixed waste. These waste drums were shipped to Envirocare of Utah for disposal by SNL/NM Waste Management.

In July 1999 following the VCM, the site was resampled including the excavated area under the south end of former Mound 1 and the burial pit.

Between August and October 2000, the 520 cubic yards of excavated soil were sifted through a grizzly to remove as much debris as possible, mixed with manure and regraded onto the site

surface. In November 2000, the site and excavation was reseeded and covered with straw anti-erosion mats. The remaining scrap metal from the mounds and the debris removed from the soil piles was taken to the KAFB landfill for disposal.

Constituents of Concern

Metals
Volatile Organic Compounds (VOCs)
Semivolatile Organic Compounds (SVOCs)
HE
Radionuclides.

Current Hazards

There are no current hazards at this site related to residual contamination remaining in the surface or subsurface soils.

Current Status of Work

RFI Work Plan was submitted to the U.S. Environmental Protection Agency(EPA) in November 1994.

A VCM to remove radioactive point and area sources was conducted between July and October 1996.

A VCM to excavate and remove radioactively-contaminated material from Mound 1 was conducted between October 1996 and August 1998. Debris from Mounds 2 and 3 was also surveyed for subsequent disposal.

The 520 cubic yards of excavated soil was processed to remove admixed debris and regraded onto the site surface. The admixed debris and the scrap metal from Mounds 1, 2, and 3 was taken to the KAFB landfill for disposal in November 2000.

Site 9 was proposed for a risk-based NFA in September 2000. This site was accepted for No Further Action by NMED on December 5, 2000.

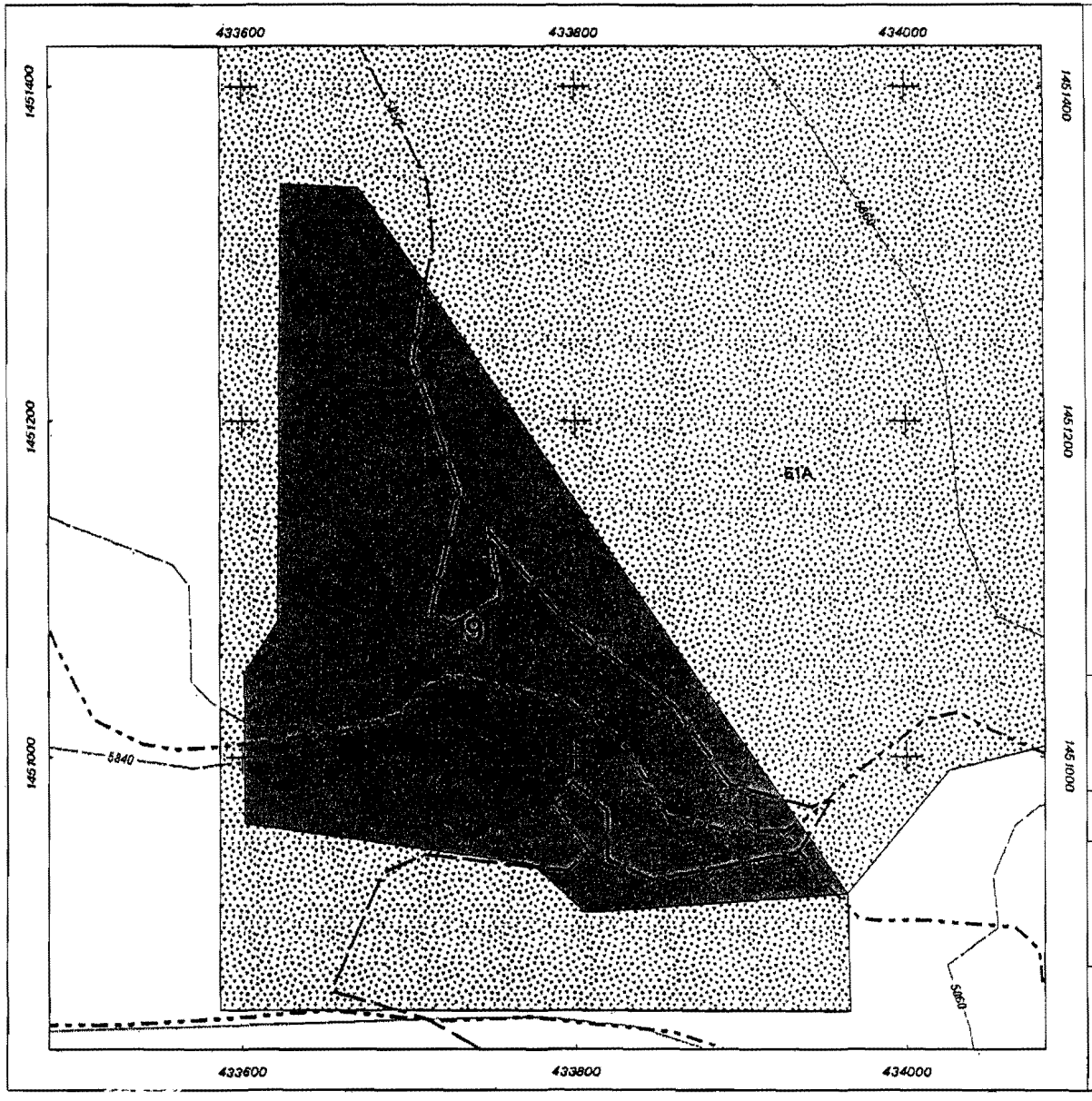
Future Work Planned

While no further fieldwork is planned at this site, various administrative tasks, such as site file closure, remain.

Waste Volume Estimated/Generated

The rad VCM mentioned above generated five 55-gallon drums of radioactive waste which were removed in FY96. The Mound 1 VCM (excavation) generated a total of 18 drums of mixed waste, fifty cubic yards of scrap metal, and 520 cubic yards of nonhazardous soil mixed with small debris pieces. Twenty cubic yards of scrap metal were removed in FY 97. The mixed waste was disposed of in 1998. In October-November 2000, the 520 cubic yards of soil were sifted through a grizzly to remove as much admixed debris as possible and the soil was regraded onto the site surface. The site and excavation was reseeded and covered with straw anti-erosion mats. The estimated 10 cubic yards of debris separated from the soil and was released for disposal in the KAFB landfill in November 2000.

Information for ER Site 9 was last updated Jan 29, 2003.



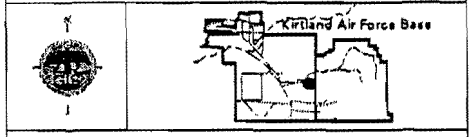
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 9
- Other SWMUs

Center of Site:
X = 433783
Y = 1451124

0 50 100
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 9

Burial Site / Open Dump

(Schoolhouse Mesa)

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
cistenop-sc.aml	MAPID = 010827

ER Site No. 68: Old Burn Site

ADS: 1334
Operable Unit: Central Coyote Test Area

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Caroline Byrd, Joe Pavletich (284-2479)
Office Phone: 284-2531

Site History

ER Site 68 (Old Burn Site) covers approximately 6.5 acres of United States Air Force(USAF) controlled land. This inactive site is located on the north side of Isleta Road, across from the Kirtland Air Force Base(KAFB) 200-ft shock tube facility, approximately one mile east of the intersection of Lovelace and Isleta Roads. This site lies inside the boundary of ER Site 71.

ER Site 68 was used to test weapons components for fire survivability and contains features associated with those tests such as a permanent burn pad, four excavated pits, four debris mounds, scattered test debris, and a burial pit containing radioactively contaminated materials. The largest site feature is an earth-bermed, 30-ft square burn pan. The burn pan has a concrete slab floor that is level with the local grade and four metal sides that rise 3 feet above the slab floor. The metal sides have been reinforced on the outside by earth berms. A floor drain in the center of the slab floor emptied via a buried pipe and drain valve system to an unlined ditch. The ditch flowed about 120 feet to the southwest where it emptied into an excavated pit/overflow basin. The overflow basin is approximately 50 feet long in a northwest-southeast direction and 35 feet wide in a northeast to southwest direction. Judging by remnants around the edge of the basin, it once apparently had a wood frame and plastic lining. It has been backfilled and a concrete slab was discovered 3.5 feet below grade when the basin was trenched for sampling. The burn pan contains rusted metal test stands, tumbleweeds, and other plant debris and wind-blown sediment. Another rectangular pit with remnants of a burned wood frame and plastic liner is located approximately 175 feet south of the burn pan.

Two irregularly shaped pits are present on the site. One is north of, and the second is south of the burn pan. Their irregular shapes suggest that they might have been borrow pits for the earth material used to construct the berm surrounding the burn pan's metal sides. Although a small amount of insulated electrical wiring and woven canvas straps were excavated in the north pit during the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) sampling, no evidence or information has been found to indicate these pits were used for burn tests or as drainage/holding ponds.

Four debris "mounds" were present on the site. Three of these "mounds" were actually piles of debris (metal test stands, metal pans, concrete blocks, metal pipe, epoxy pipe debris, wire, metal grates, and melted metal scraps). Three "mounds" were removed during a housekeeping Voluntary Corrective Measure (VCM) during October 1995. The fourth mound is located about 600-ft north-northeast of the burn pan near an unnamed arroyo. It contains burned metal mesh, wood, scraps, insulating material, and melted aluminum fragments. About 150-ft northeast of the burn pan, two wood utility poles lay on the surface next to a small pile of ceramic pipe debris. This ceramic debris and the fourth debris mound will be removed as part of another housekeeping VCM in FY04.

In FY98 a soil mound approximately 40 feet long, 25 feet wide, and 10-15 feet high was discovered on the north side of the arroyo about 900 feet northeast of the burn pan. No information or records for this feature were found. For convenience, this feature was included in the Site 68 investigation and sampling. This mound was trenched and sampled in February 1999. No evidence for waste disposal was seen with field screening instruments or visually. No contamination was detected in the soil samples submitted for laboratory analysis. Following regulator inspection and approval, the mound was knocked down and the area graded.

Various types of shipping containers, simulated space nuclear power reactors, and mock nuclear weapons were subjected to pool fire tests at Site 68. The test unit would be instrumented for monitoring and placed on a test stand within the burn pan. The pan would be filled with water and a layer of JP-4 fuel would be added and ignited. Approximately 1,500 gallons of fuel would be used for a 30-minute test. After the test, the remaining water was released into the drainage ditch and overflow basin, and the test unit recovered for examination. All materials were brought to the site by truck and power would be provided by portable generators. Tests were conducted from approximately 1965 through 1978. When the current burn facility was constructed at Lurance Canyon around 1981, this site became inactive.

Site 68 was identified during investigations conducted under Comprehensive Environment Assessment and Response Program (CEARP) and during the RCRA Facility Assessment (RFA). A radiation survey of the site conducted in 1983 identified and removed an unspecified amount of thorium contaminated soil. In December 1993, a surface gamma radiation survey conducted at Sites 68 and 71 by RUST Geotech Inc. detected 240 anomalies at Site 68. Most anomalies were depleted uranium (DU) fragments lying an inch or two below the ground surface and originated from testing activities at Site 71. In December 1993, Los Alamos National Laboratory completed an alpha radiation survey at Sites 68 and 71 but did not detect any readings above background. This result was thought to be caused by the large, 200-foot-square sampling grid spacing.

Between January and March 1995 RUST Geotech located and removed all the point sources identified in the December 1993 survey. Between January and March 1996, the sites were resurveyed and the survey area was expanded south across Isleta Road. Three area sources still required additional clean up after this visit. In May to June 1998, these three areas were excavated; one turned out to be a burial site for contaminated debris. An area approximately 30

by 36 by 4 feet deep was eventually excavated. Approximately 160 cu yds of radioactively contaminated soil and 10 cubic yds of debris (metal pipes, test stands, and concrete) were segregated for disposal. The debris was removed for disposal in May 2000 and the soil was removed for disposal in August 2001. A geophysical survey in late 1998 failed to detect any other possible debris burial areas at Site 68.

In November 1993, KAFB Explosive Ordinance Disposal (EOD) conducted a surface visual survey for Unexploded Ordinance / High Explosives (UXO/HE) at the site and found numerous artillery shells and ordnance debris that was related to the anti-aircraft shell testing at ER Site 57A.

Soil samples collected in 1989 during the CEARP investigation indicated that soil in the overflow basin might contain Semi-Volatile Organic Compounds (SVOC)s and elevated lead concentrations. This sampling indicated that the potential Constituents of Concern (COC)s were: DU, thorium, beryllium, lead, and SVOCs (fuel residues).

An RFI Workplan was submitted to New Mexico Environmental Department (NMED) in October 1994 and sampling began in FY96. NMED requested supplemental information for the RFI Workplan on August 26, 1997, responses were submitted on November 26, 1997. RFI fieldwork, including sampling of the soil mound northeast of the burn pan, was completed in FY98-99, but lead contamination in excess of risk-based action levels was confirmed in the overflow basin soil. Additional characterization and a VCM to remove the contaminated soil are planned for FY04-05.

Remaining Activities: RFI and VCM data will be evaluated followed by verification sampling and risk assessments to document that the site does not pose a threat to human health and the environment. A draft No Further Action (NFA) proposal will then be submitted and finalized after comment resolution, followed by closure of the site.

Constituents of Concern

Metals
Volatile Organic Compounds (VOCs)
Semivolatile Organic Compounds (SVOCs)
Radionuclides

Current Hazards

There are open trenches and an open excavation on the site south of the burn pan structure. These areas are surrounded by orange snow fencing and posted with "soil contamination" signs. The area is currently an RMMA due to the presence of the residual radionuclides in the soil of the overflow basin and the 30 by 36 by 4 foot deep Rad VCM excavation (primarily depleted uranium [DU, U-238]). Because of surface disturbance and grading following the Moonlight Shot radioactive fallout dispersion testing at surrounding Site 71, DU fragments or DU-contaminated soil may be present in the subsurface (below 6-inches.) Because this area is also within the gun fan for munitions testing at Site 57A to the west, UXO is present on the surface and in the subsurface. There may be structures or stored materials that remain at the site that are a potential hazard.

Current Status of Work

RFI Work Plan submitted to U.S. Environmental Protection Agency (EPA) in November 1994.

Two VCMs to remove radioactive point and area sources were completed in March 1995 and March 1996, respectively. Three area sources remaining from the 1996 VCM were excavated. The 160 cu yds of radioactively-contaminated soil was taken to NTS for disposal in August 2001.

The planned RFI field work was completed in FY98. A VCM is necessary to excavate, characterize, and dispose of lead and radionuclide-contaminated soil in the overflow basin for the burn pan.

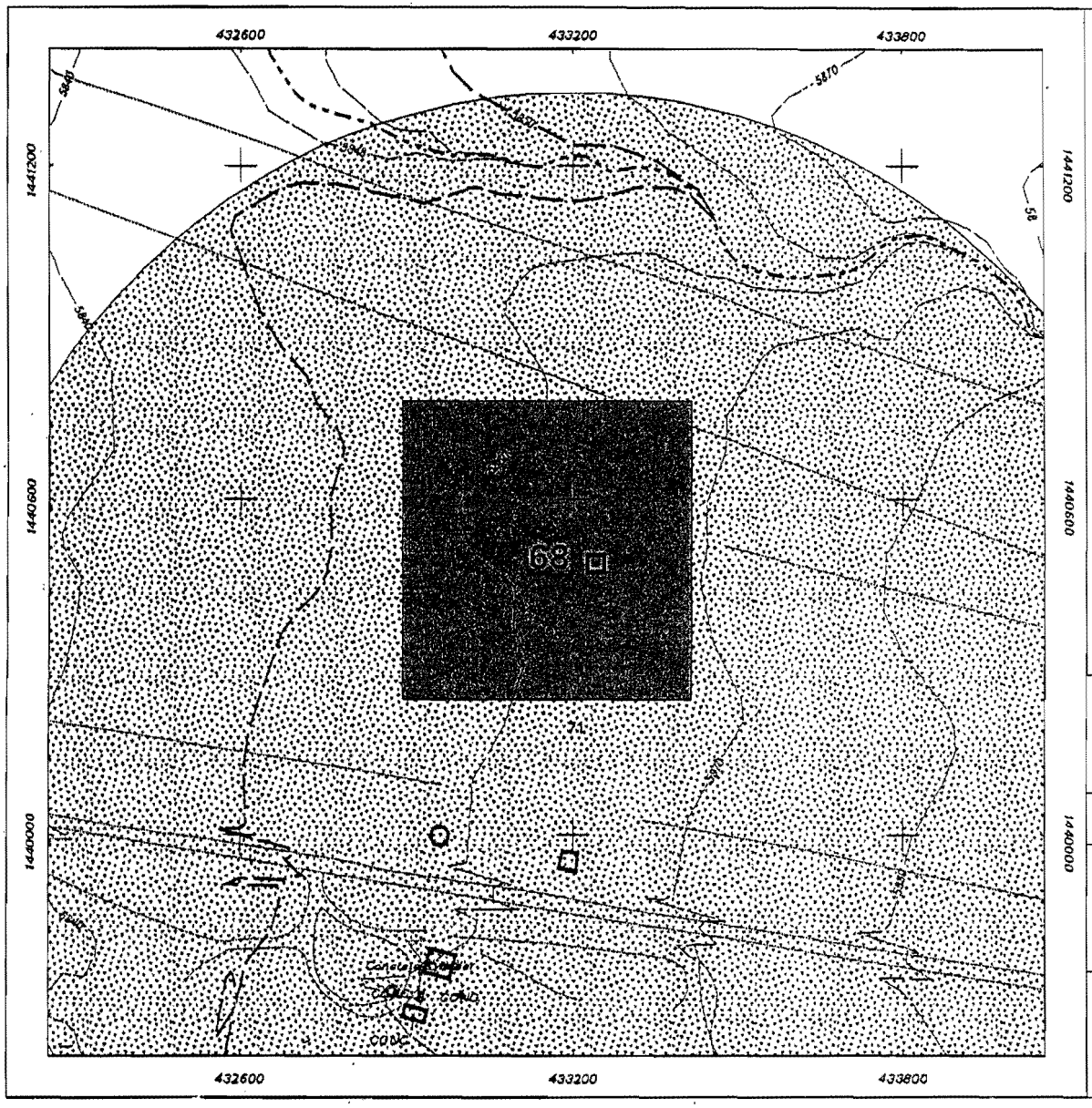
Future Work Planned

A Voluntary Corrective Action will be conducted at this SWMU to remove contaminated soil in the overflow basin and characterize waste. The three mounds and scattered debris will be removed from the site at the same time the overflow basin VCM is conducted. The NFA proposal will be written and submitted to NMED following this VCA.

Waste Volume Estimated/Generated

Seventeen drums of radioactive waste were generated in the combined rad VCMs of Sites 68/71 in 1995 and 1996. The 1998 VCM generated another 143 drums of radioactively contaminated soil, 160 cu yds of contaminated soil (stored in soil piles) and 10 cu yds of debris. An estimated 5 cu yds of non-hazardous waste will be generated when the three mounds and scattered site debris are removed.

Information for ER Site 68 was last updated Jan 29, 2003.



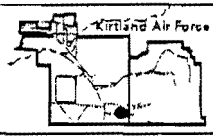
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 68
- Other SWMUs

Center of Site:
X = 433155
Y = 1440509

0 150 300
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 68
Old Burn Site

SMorrison	17-SEP-2001
SNL EGIS DEPT 6135	
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OU-1335
SOUTHWEST TEST AREA

ER Site No. 91: Lead Firing Site (Thunder Range)

ADS: 1335
Operable Unit: Southwest Test Area

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Paul Freshour,
Office Phone: 845-3108

Site History

The Lead Firing Site is located in the northern part of Thunder Range, at the southwest end of the large shock tube. It is no longer an active site, but SNL would like to retain the option to use this area in the future. The site is approximately 750-ft long by 510-ft wide (382,500 sq ft). The firing site itself is defined by a barbed-wire enclosure approximately 225-ft long by 185-ft wide, but other associated, potentially contaminated areas are not enclosed within the fenced area.

Testing activity at the site involved more than 20 high explosive (HE) shots, each using 3000 to 4000 lb of lead. Although large scraps of lead were removed after testing, significant amounts of lead may still remain. The Comprehensive Environmental Assessment and Response Program (CEARP) description says that "the area may be contaminated with high explosives, including barium and that explosives are generally picked up." Radioactive material has not been used in tests at this site.

The terrain around ER Site 91 is relatively flat. Geology is characteristic of the area. Depth to groundwater is not known but is estimated to be approximately 500 ft below ground surface. Vegetation is comprised primarily of sage and tumbleweeds.

Constituents of Concern

Lead

Current Hazards

Lead debris exists throughout the site which could cause a hazard to workers involved in any surface or subsurface disturbance activity.

Current Status of Work

This site is included in the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan that was submitted in 1996. Preliminary scoping and RFI sampling were completed in 1996, along with two Voluntary Corrective Measures (VCMs). The first VCM addressed surface radioactive contamination and the second VCM addressed Lead contamination (soil and Lead fragments). Since 1996 more characterization sampling and field testing has been conducted. The results of this work indicate additional soil and debris clean up will be required before a final no further action (NFA) proposal can be prepared. (Status Current as of 11/12/02)

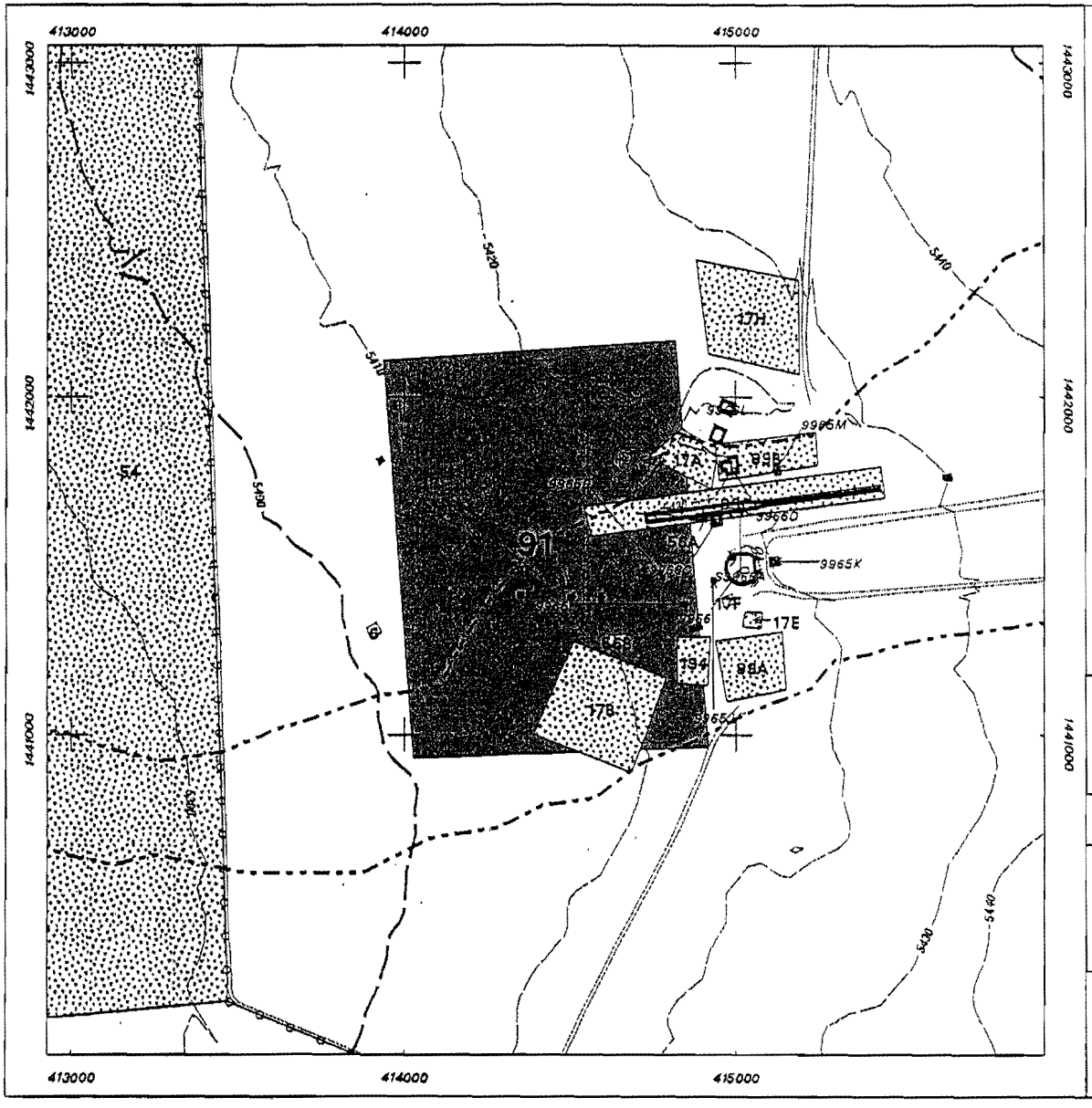
Future Work Planned

A final Voluntary Corrective Action (VCA) involving soil remediation and debris removal is planned. A risk-based NFA proposal will be submitted to the New Mexico Environment Department (NMED) following the VCA. After SWMU 91 is deemed appropriate for NFA by the NMED it will undergo the permit modification and public review process prior to final approval by the NMED.

Waste Volume Estimated/Generated

The surface radiation VCM removed 2 drums of radioactive waste. The other VCM generated hazardous lead-contaminated soil totaling 276 cubic yards that were shipped off-site for disposal. Current waste volume estimates for the final VCA include: 1,500 cubic yards of non-hazardous (stabilized), special waste (treated, decharacterized Lead-contaminated soil), several tons of pure Lead fragments (for recycling/re-use), and 400 cubic yards of test debris (scrap metal, wire, plastic, wood, etc.).

Information for ER Site 91 was last updated Jan 22, 2003.



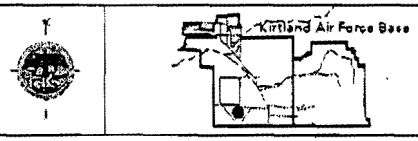
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building (800)
- Technical Area
- SWMU 91
- Other SWMUs

Center of Site:
X = 414428
Y = 1441551

0 250 500
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

SWMU 91

Lead Firing Site

(Thunder Range)

SMorrison 17-SEP-2001

SNL EGIS DEPT 6135

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SITES QUALIFIED
TO BE ON PERMIT

Area of Concern (AOC): Former Building 828 (TA-I)

ADS: 1302
Operable Unit: Technical Area I

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Brenda Langkopf
Office Phone: 284-3272

Site History

Building 828 was constructed in 1946 as a Mechanical Test Laboratory at the northwest corner of what is now the intersection of G Avenue and 7th Street, Technical Area I, Sandia National Laboratories, New Mexico (SNL/NM). The original building, located in north central portion of what was to become Technical Area I, was designed as a large, uneven H, with the long sides running east to west. The north section was shorter and narrower, designed with office space at the west end and a large drafting room at the east. The longer south section was the core of the mechanical test laboratory and housed the testing equipment.

Mechanical testing would subject a weapon and/or its components to the environmental conditions that might be encountered from the time the weapon was assembled until the time its drop would be completed. Early testing equipment and facilities included a cold chamber, shaker table, and machine shop that supported machine tool activities base-wide.

Building 828 was constructed in the temporary, military style of the period. The building was wood framed with pitched roofs over each section enclosing attic spaces or partial second story spaces. The south section contained steel framing to support a ½-ton monorail hoist that protruded from the high bay on the building's west end. The original building enclosed 10,120 square feet. In 1949, the building underwent a major renovation to fill in the H shape. The areas between the north and south sections were filled in with additional offices and equipment space.

Between 1950 and 1953 the groups involved in mechanical testing and machining moved out of Building 828 as new space became available. At this time Building 828 began housing groups mainly involved with instrument development, testing, and calibration. The test instrument division moved into Building 828 in 1953. The work in that group included instrument calibration. Instrumentation services remained in the building until 1958, when it was again remodeled. The primary modifications were to renovate the restrooms, move partitions to accommodate new tenants, and rewire electrical circuits. The electronic test equipment department (renamed system test equipment development department in 1960) moved into the building in 1959. While Building 828 acquired different tenants during the 1950's; it remained dedicated to testing and test equipment design and development of optical equipment. Further instrumentation services were consolidated in the building in 1955, including the optical measurements division (photometrics).

In 1962, the building underwent significant remodeling to create new laboratories for component development. Drafting support area and specifications and catalog libraries were added. In 1963 the hoist was removed and the doors around the monorail were remodeled. The high-bay second story was separated from the ground floor by installation of a suspended acoustical ceiling. In 1970 the specifications and catalog library moved to the building where the main technical library was housed.

In 1964 a centrifuge foundation and cage were installed in the northwest corner of the south section of the building. A variety of other equipment was installed and removed over time as different groups changed their research or moved out of the building. Equipment was upgraded. For example, a new metal cage was installed around the centrifuge in 1974.

During the 1960's the building was increasingly devoted to laboratory space. In 1963 the advanced development section of the solid state and thin film devices division of the electronic components department moved into the building. A microcircuit laboratory operated in the southeast portion of the building until 1974.

In 1975, the transducer evaluation and calibration division moved into the building and the building became known as the transducer calibration and evaluation building. However, a variety of occupants still used the building. In the 1970's, the building was housing groups that needed laboratory space, but that kept the majority of their employees in different facilities. For example, in 1973 two of the material analysis divisions had laboratories in Building 828, but only four employees worked there; the rest were located in Building 805.

By the late 1980's, Building 828 was over forty years old, and viewed as undesirable space by most SNL organizations. By 1992 only 12 people worked in the building, none of them representing an entire organization. The last spaces occupied in the building were the mechanical testing laboratories in the northeast part of the building. By June of 1996 the building was empty.

Currently the site remains a fenced and graded vacant lot. A pedestrian walkway of compacted base course overlain with asphalt bisects the area today.

Former structures outside of but proximate to former Building 828 include:

- An above ground oil storage tank located near the southeast corner of the building
- A small compressor shed identified as Building 8828, northeast of Building 828
- A sand interceptor pit on a drain line west of the southwest corner of the building, and
- Steam pits in the area.

The above ground oil storage tank was located outside along the south wall of the building and near the southeaster corner. The tank had a 200-gallon capacity and was used to store hydraulic oil that was piped into the laboratories to operate equipment. The tank was removed during building demolition in early 1999.

Building 8828 was located north and east of Building 828. The structure housed an air compressor and compressed air storage tank. Sandia Facilities operated the compressor to provide centralized compressed air service to the laboratories in Building 828. The structure and equipment were removed during demolition activities in 1999.

The sand interceptor pit was located outside the southwest corner of Building 828. The interceptor pit was on a drain line exiting the building leading to the sanitary sewer. The drain line began at the floor drain in the high-bay room of the building. As such, the sand interceptor pit would have been installed to trap and prevent large particulate matter washed down the floor drain from proceeding to the sanitary sewer. The pit was a small concrete box with cover, not larger than 3-feet by 4-feet and about 4-feet deep. The sand interceptor pit contained a layer of sand or gravel set on a concrete grout bottom. The entire structure sat on a compacted base. The sand interceptor pit was removed during demolition activities in 1999.

There were several steam pits proximate to Building 828. Steam pits typically are concrete vaults with steel grating covers. The pits are constructed so that workers can access valves on the steam lines running from the central steam plant to heating utilities in the various buildings at SNL/NM. Steam pits on the lines servicing Building 828 were removed during demolition in 1999. Steam pits on steam lines servicing adjacent buildings remain in the vacant lot area. The Area-of-Concern (AOC) Building 828 site has been characterized in a series of activities conducted by either SNL/NM Facilities or SNL/NM Environmental Restoration (ER).

In preparation for demolishing or renovating Building 828, a preliminary contamination assessment of the building was made for SNL/NM Facilities in 1994 and 1995.

Based upon recommendations made in the preliminary contamination assessment report, additional field screening, and sampling and analysis, of building materials, surface swipes, and soil were performed to further assess the site. Soil from several locations outside Building 828 were investigated in August 1996. Surface soil samples were collected around the accessible sides of the 200-gallon aboveground oil storage tank near the southeast corner of Building 828, and around each side of the compressor-shed Building 8828. The soil samples were analyzed for polychlorinate biphenyls (PCBs) using an immunoassay screening technique. One of three surface soil samples around the 200-gallon above ground oil tank and one of the four samples around Building 8828 showed positive results for PCBs with a concentration of greater than one mg/kg to less than 10 mg/kg. PCBs were not detected above one mg/kg in the remainder of the soil samples. In December 1996, in a letter sent to the New Mexico Environment Department (NMED), SNL used this data to support not having Building 828 listed as a Solid Waste Management Unit (SWMU).

After removal of Building 828 itself, but during demolition of the concrete floor slab and removal of the sub-grade drain lines, SNL/NM Facilities collected soil samples from under the drain lines to determine whether or not contaminants had been released to the soil, September-October 1999.

Based upon soil sample analysis results for the under-drain-line samples collected by Sandia Facilities, SNL/ER returned to the site and collected additional subsurface soil samples at six of

the nine original under-drain-line locations. Soil samples were collected from 5, 10, and 15 feet below the ground surface (bgs) in September 2000.

Constituents of Concern

Polychlorinated biphenyls (PCBs)
Metals

Current Hazards

There are no current hazards at this site related to contamination of the surface or subsurface soils.

Current Status of Work

In December 2000, NMED/Hazardous Waste Bureau (HWB) issued a Request for Supplemental Information (RSI). This RSI rejected the PCB immunoassay data (presented in the letter of December 1996 to NMED that stated that this site was not a SWMU) as unsuitable for purposes of determining if a site is appropriate for No Further Action (NFA) status and indicated that laboratory analytical data with appropriate detection limits were necessary for purposes of site characterization and risk assessment. Thus samples were collected in the vicinity of the two original 1996 PCB soil screening samples that had detections greater than 1 mg/kg. Samples were collected from the surface and 2 feet below the surface. PCBs were detected in only one of the samples; the surface soil sample from the oil storage tank location had a PCB aroclor 1260 concentration of 39 micrograms/kg.

The final response to the December 2000 RSI was submitted to the NMED/HWB in July 2001. In October 2001, NMED/HWB indicated that Building 828 is appropriate for risk-based NFA petition under an industrial scenario.

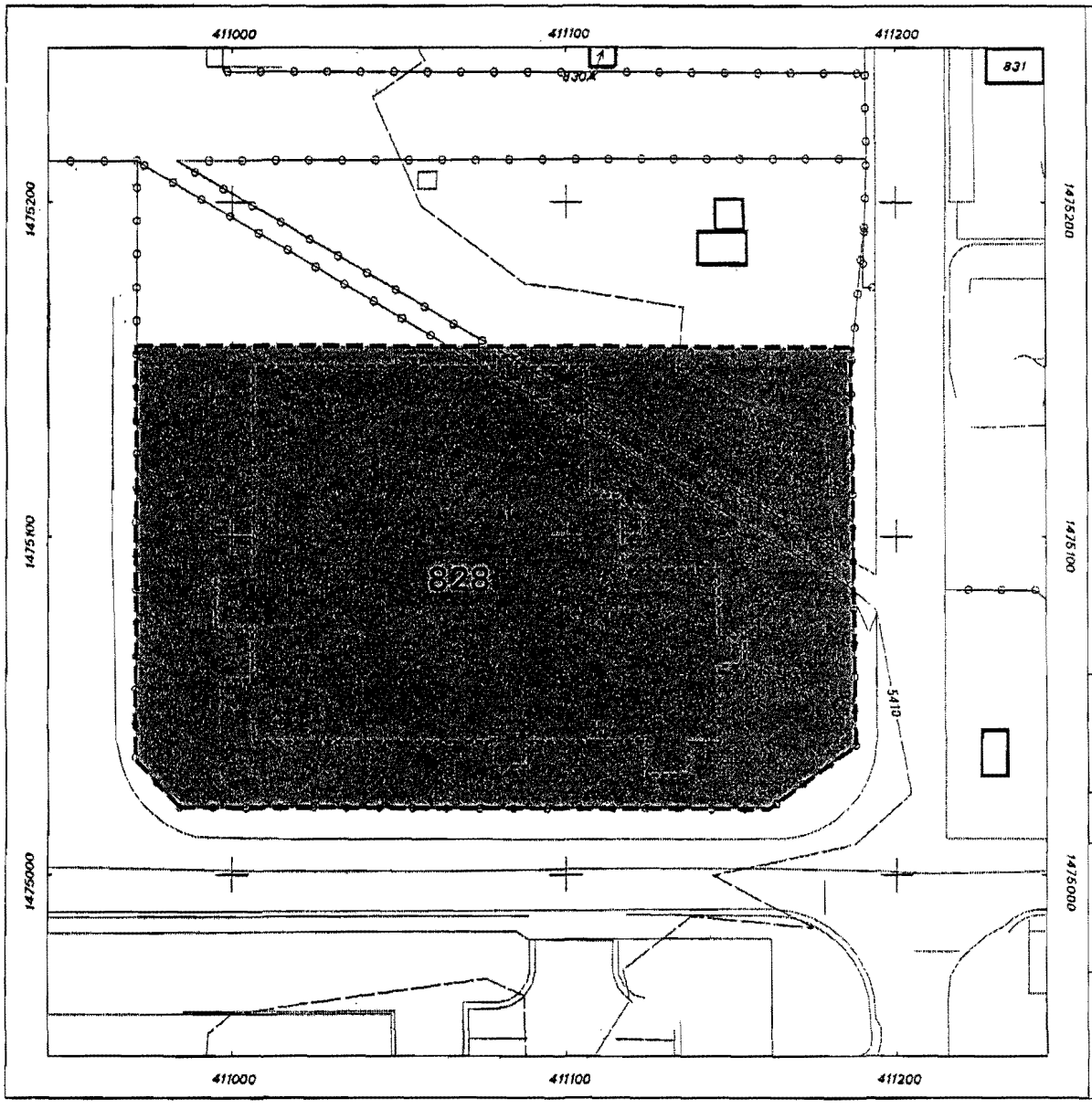
Future Work Planned

No further work is planned.

Waste Volume Estimated/Generated

There was no waste generated as part of the sampling activities for this site.

Information for ER Site BLDG828 was last updated Jan 21, 2003.



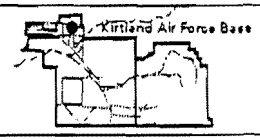
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- Area of Concern
- Other SWMUs
- Former Building Footprint

Center of Site:
X = 411095
Y = 1475097

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Area of Concern
Building 828

SMorrison	08-JAN-2002
SNL EGIS DEPT 6135	
sm020121caml	MAPID = 020121

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Area of Concern (AOC): TNT Site

ADS: 1335
Operable Unit: Southwest Test Area

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Paul Freshour
Office Phone: 845-3108

Site History

The TNT Site is located adjacent to the southern boundary of SMWU 54, the Pickax Site, in the central portion of the SWTA. Environmental concern at the TNT Site is based upon the discovery of unexploded TNT during earthmoving activities in the area. The unexploded 2,4,6-trinitrotoluene TNT was removed by KAFB Explosive Ordnance Disposal (EOD) personnel and disposed of at their range on KAFB. Additional TNT was also discovered in boreholes at the site and was detonated by KAFB EOD, after which a SWMU assessment was conducted to determine if environmental contamination was present at the site.

Constituents of Concern

High Explosive (HE) compounds

Current Hazards

There is the potential for additional unexploded TNT in the general area and caution should be used for all intrusive work.

Current Status of Work

A SWMU assessment has been completed and no significant contamination was detected. A SWMU Assesment Report (SAR) supporting No Further Action (NFA) was submitted to NMED in September 2002.

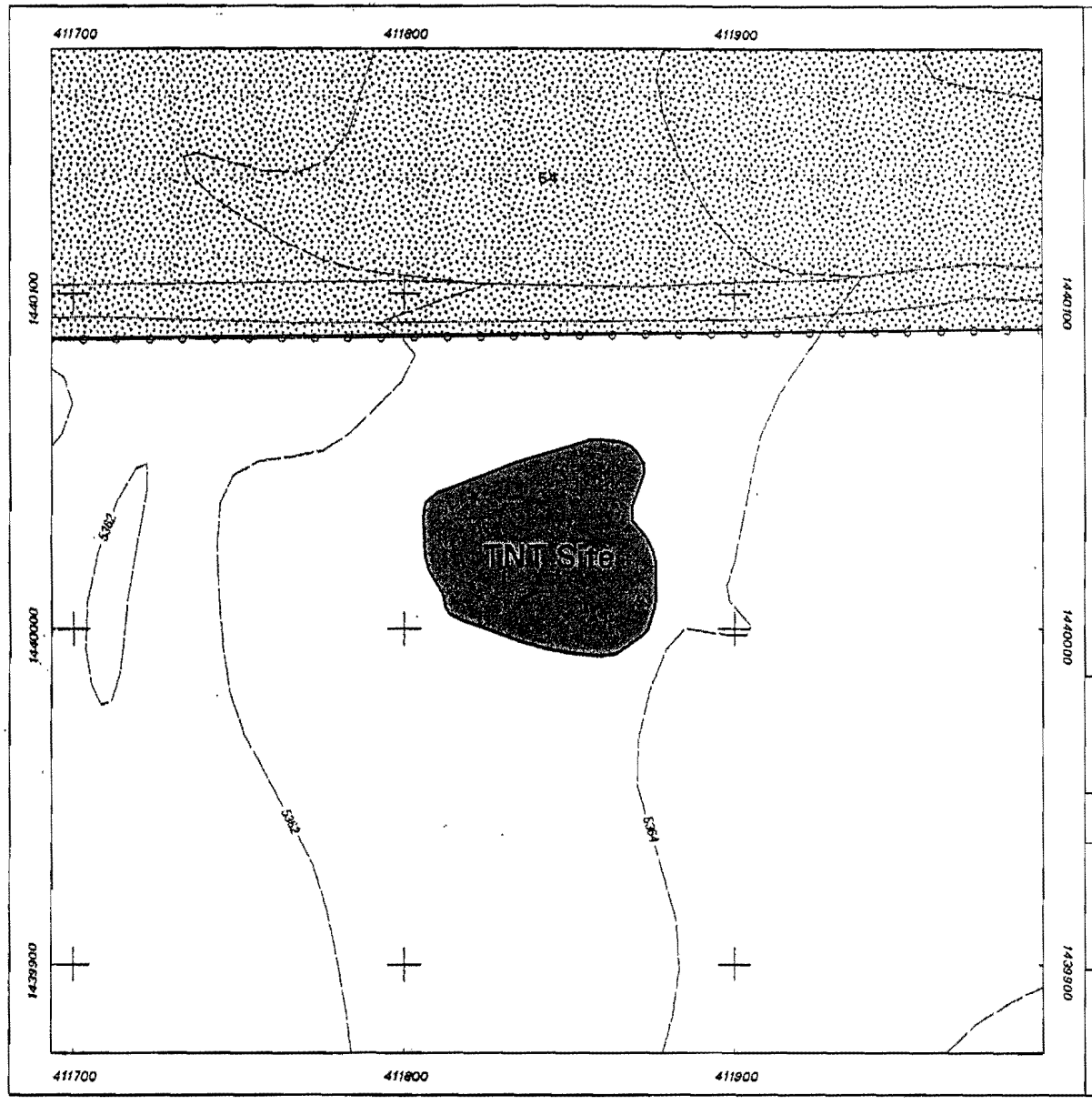
Future Work Planned

When the TNT site is deemed appropriate for NFA by the NMED a Class III Permit Modification request will be submitted and the site will undergo the permit modification and public review process prior to final approval for NFA by the NMED.

Waste Volume Estimated/Generated

Four 10-pound blocks of TNT.

Information for ER Site TNTSite was last updated Jan 22, 2003.



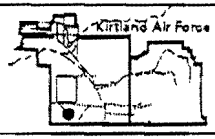
LEGEND

- KAFB Boundary
- Road
- Fence
- Index Elevation Contour
- Intermediate Elevation Contour
- Drainage
- Building
- Technical Area
- Area of Concern
- Other SWMUs

Center of Site:
X = 411843
Y = 1440023

0 25 50
Scale in Feet

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Area of Concern
TNT Site

SMorrison	08-JAN-2002
SNL EGIS DEPT 6135	
sm020121c.aml	MAPID = 020174

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NERDSS SITES
QUALIFIED TO BE ON PERMIT

Area of Concern (AOC) No. 276: Former Building 829X Silver Recovery Sump (TA-I)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: David Miller
Office Phone:

Site History

Building 829X was constructed in 1948 and was used either for office space or by the Graphic Arts Services organization throughout its lifetime. The building was demolished in 1994. Historical SNL/NM Facilities Engineering drawings indicate that a silver recovery system was housed in a below-ground sump located on the west side of the building. The site was inspected on September 14, 1999 and the sump was determined to still be intact. It consisted of a 6-foot diameter metal culvert covered with a metal lid, and the interior of the culvert was filled with 2-inch aggregate starting at approximately 5 feet below grade. The sump and aggregate were removed a short time later (see Current Status of Work, below).

Constituents of Concern

Silver

Current Hazards

There are no surface hazards at the site. Potential subsurface environmental hazards include soil

contaminated with silver and perhaps other constituents, to be determined when additional subsurface soil sampling is completed at the site.

Current Status of Work

Samples were collected of material from the bottom of the sump in February 1995 and were found to contain elevated silver concentrations. The Assessment Report for the Building 829X Silver Recovery Sump was submitted to New Mexico Environment Department (NMED) personnel in June 1995. They responded to the report in July 1996 and indicated that the sampling that had been conducted was inadequate, and that additional subsurface soil sampling was required.

On September 20, 1999, the 6-foot diameter metal culvert and the aggregate from the bottom of the sump was excavated and removed. The excavation was then filled in with clean soil.

The NMED Hazardous Waste Bureau issued a request for supplemental information (RSI) in December 2000. SNL/NM replied to this request and indicated that the additional work described below would be completed at the site. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at four locations around the former sump in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also be drilled directly beneath the former location of the unit in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

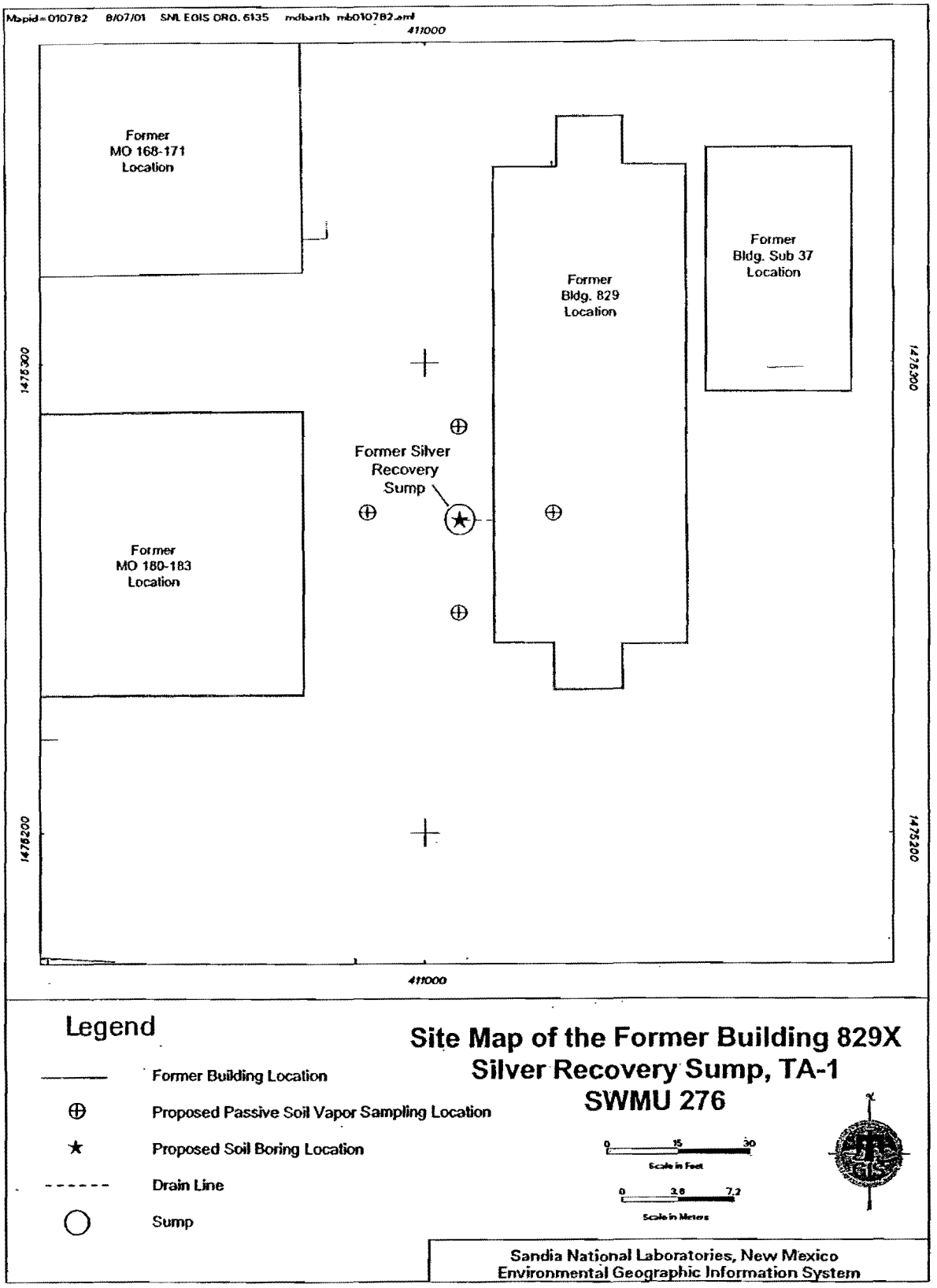
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

The September 1999 silver recovery sump excavation project generated one 55-gallon drum of potential silver-contaminated scrap metal, plastic, and personal protective equipment (PPE) waste. In addition, approximately 1 cubic yard of aggregate, and 2 cubic yards of soil located directly beneath the aggregate layer was also removed.

Information for ER Site 276 was last updated Jan 17, 2003.


Mapid=010782 8/07/01 SNL EGIS ORG. 6135 mdbarth mb010782.aml
411000
Former
MO 168-171
Location
Former
Bldg. 829
Location
Former
Bldg. Sub 37
Location
1475300
1475300
Former Silver
Recovery
Sump
Former
MO 180-183
Location
1475200
1475200
411000
Legend
Former Building Location
Proposed Passive Soil Vapor Sampling Location
Proposed Soil Boring Location
Drain Line
Sump
Site Map of the Former Building 829X
Silver Recovery Sump, TA-1
SWMU 276
0 15 30
Scale in Feet
0 3.8 7.2
Scale in Meters
Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1001: Building 898 Septic System, TA-I

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield approximately 35 and 60 feet respectively north of the north side of Building 898, in TA-I. As of June 1997, this system was no longer in use but the septic tank was being used as a holding tank for Building 898 restroom effluent. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 and 1995 for waste characterization purposes, and the residual tank contents were removed in January 1996. As of June 1997 the septic tank was disconnected from the drainfield but was still being used as a holding tank for Building 898 restroom effluent.

A backhoe was used to expose and locate the drainfield drain lines in June 1997.

Shallow soil samples were collected from three borings drilled in the drainfield area in July 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosives (HE) compounds, metals, and radionuclides.

Future Work Planned

Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed at the site to detect the presence of VOCs. These samplers are scheduled to be installed in Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at five locations in the drainfield area. This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination

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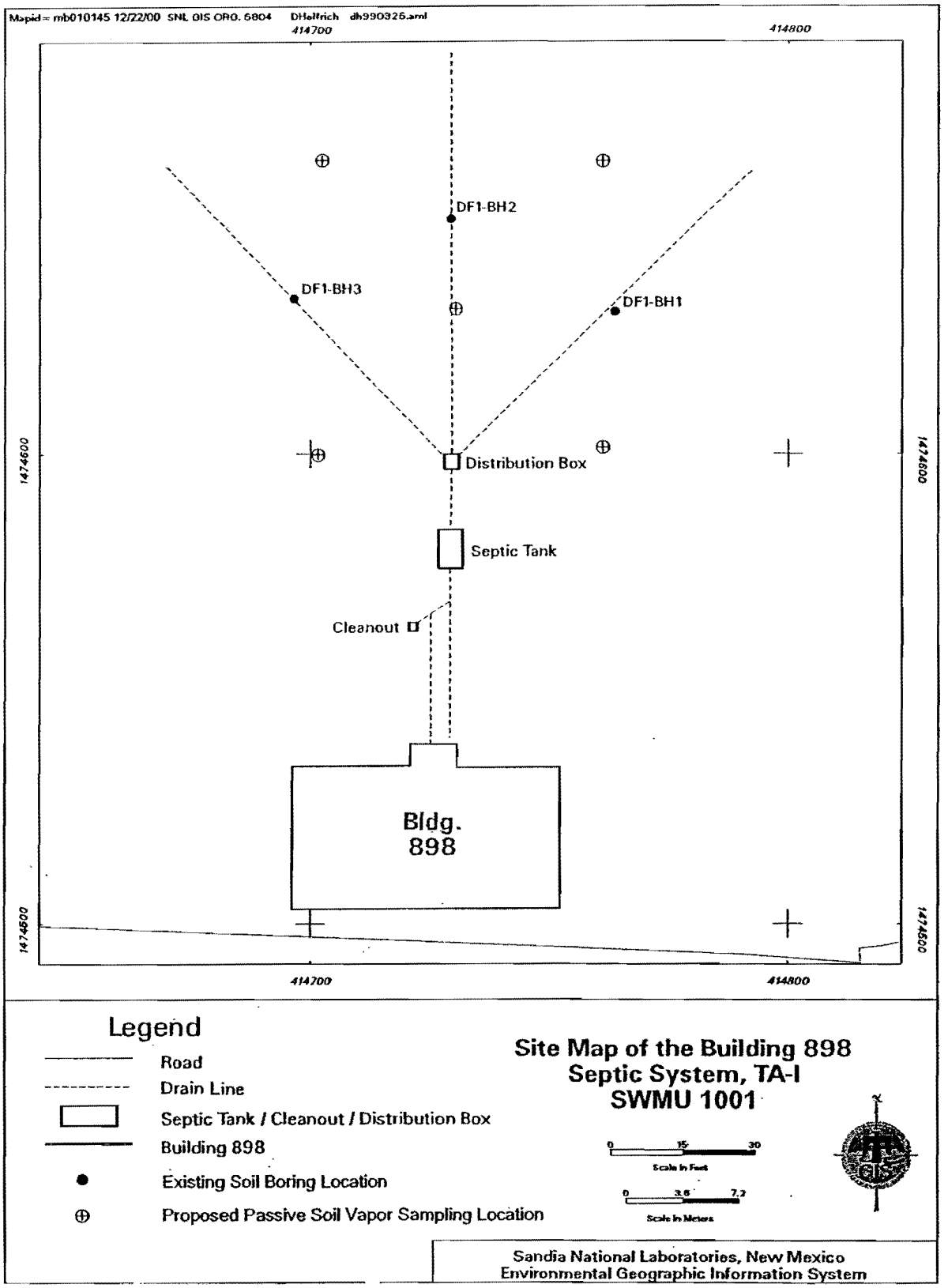
Waste Volume Estimated/Generated

A total of 426 gallons of effluent (including water added to facilitate pumping) was removed from the septic tank in January 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1001 was last updated Dec 18, 2001.


Mapid = mb010145 12/22/00 SNL GIS ORG. 6804 DHalfrich dh990326.aml
414700
414800
1474600
1474500
DF1-BH2
DF1-BH3
DF1-BH1
Distribution Box
Septic Tank
Cleanout
Bldg. 898
Legend
Road
Drain Line
Septic Tank / Cleanout / Distribution Box
Building 898
Existing Soil Boring Location
Proposed Passive Soil Vapor Sampling Location
Site Map of the Building 898
Septic System, TA-I
SWMU 1001
0 15 30
Scale in Feet
0 3.6 7.2
Scale in Meters
Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1003: Former Building 915/922 Septic System, TA-II

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank plumbed to two seepage pits on the west side of Buildings 915 and 922, in TA-II. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 for waste characterization purposes. The tank was inspected in March 1996 and was found to be dry and contained about 6 inches of dried sludge. No information has been found to indicate that the residual tank contents have been removed.

A field inspection at the site was conducted in November 1999 and the two seepage pits and septic tank were located and determined to still be intact at that time.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at six locations around the two seepage pits in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled down through the center of, and directly beneath each of the two seepage pits at this site in September 2002. Soil samples collected from these two borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

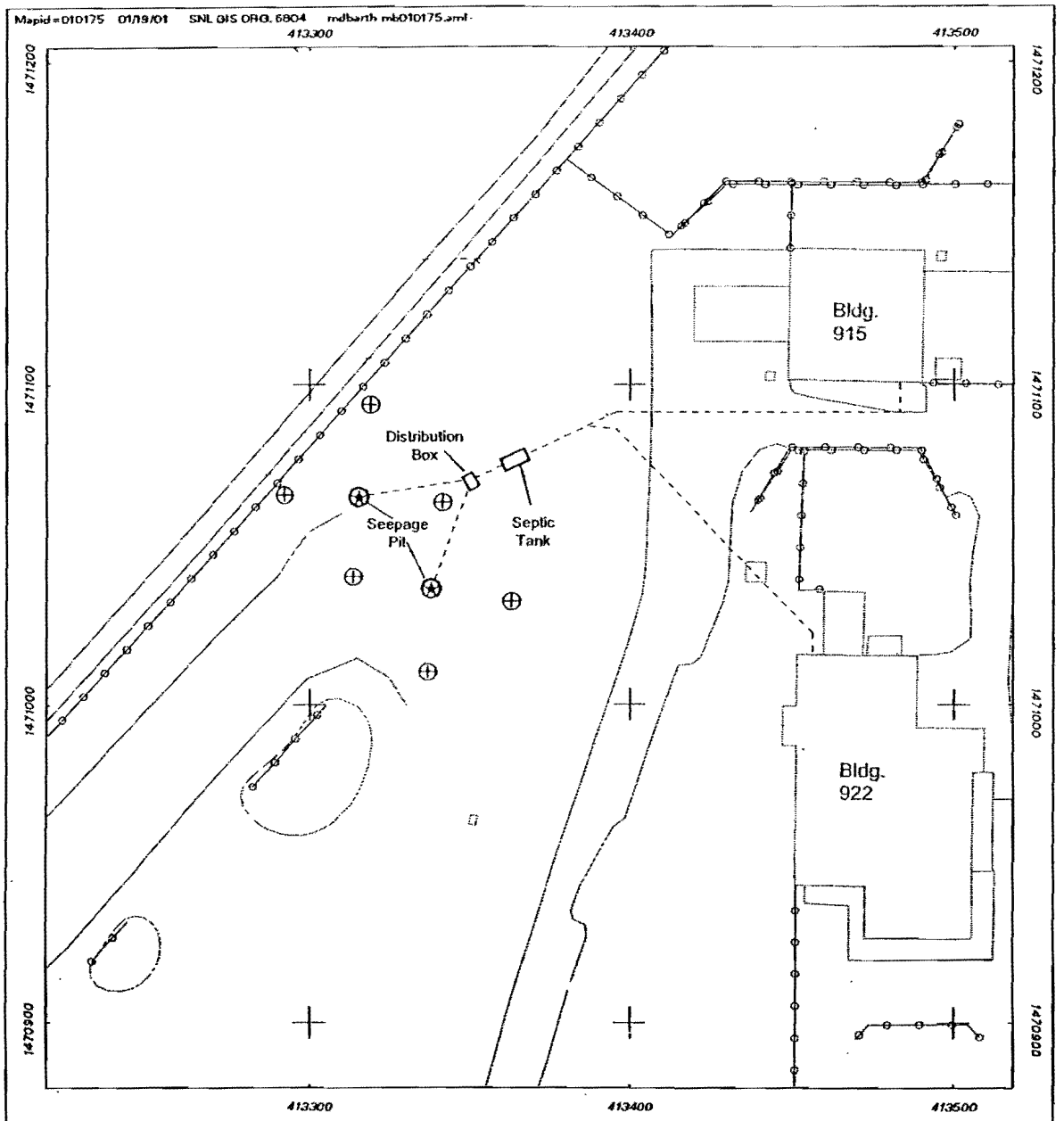
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1003 was last updated Jan 24, 2003.



Legend

- Seepage Pit
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Septic Tank/Distribution Box
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 915/922 Septic System, TA-III SWMU 1003

0 25 50 Scale in Feet

0 6 12 Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1004: Building 6969 Septic System, Robotic Vehicle Range

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consists of a septic tank and drainfield located approximately 70 feet southwest of Building 6969, which is part of the Robotic Vehicle Range facility in a remote area east of TA-II. A site inspection in September 1999 determined that this septic system at this remote facility is still in use. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

No information has been found to indicate that the septic tank contents have been sampled. Since the system is still active, it is assumed that the tank is periodically pumped out.

A field inspection at the site was conducted in September 1999 and the septic tank and distribution box were determined to be intact and in working order. A backhoe was used at the site in March 2002 to physically locate the drainfield drainlines. Care was taken not to damage the drainlines of this still-active system with the backhoe.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at five locations in the septic system drainfield area in May 2002 to detect the presence or absence of VOCs at the site. Three soil sample boring were also be drilled in the drainfield area in September 2002. In order to avoid damaging drainlines, boreholes were drilled three feet south of the location of each drainline (determined with the backhoe), instead of directly beneath them. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

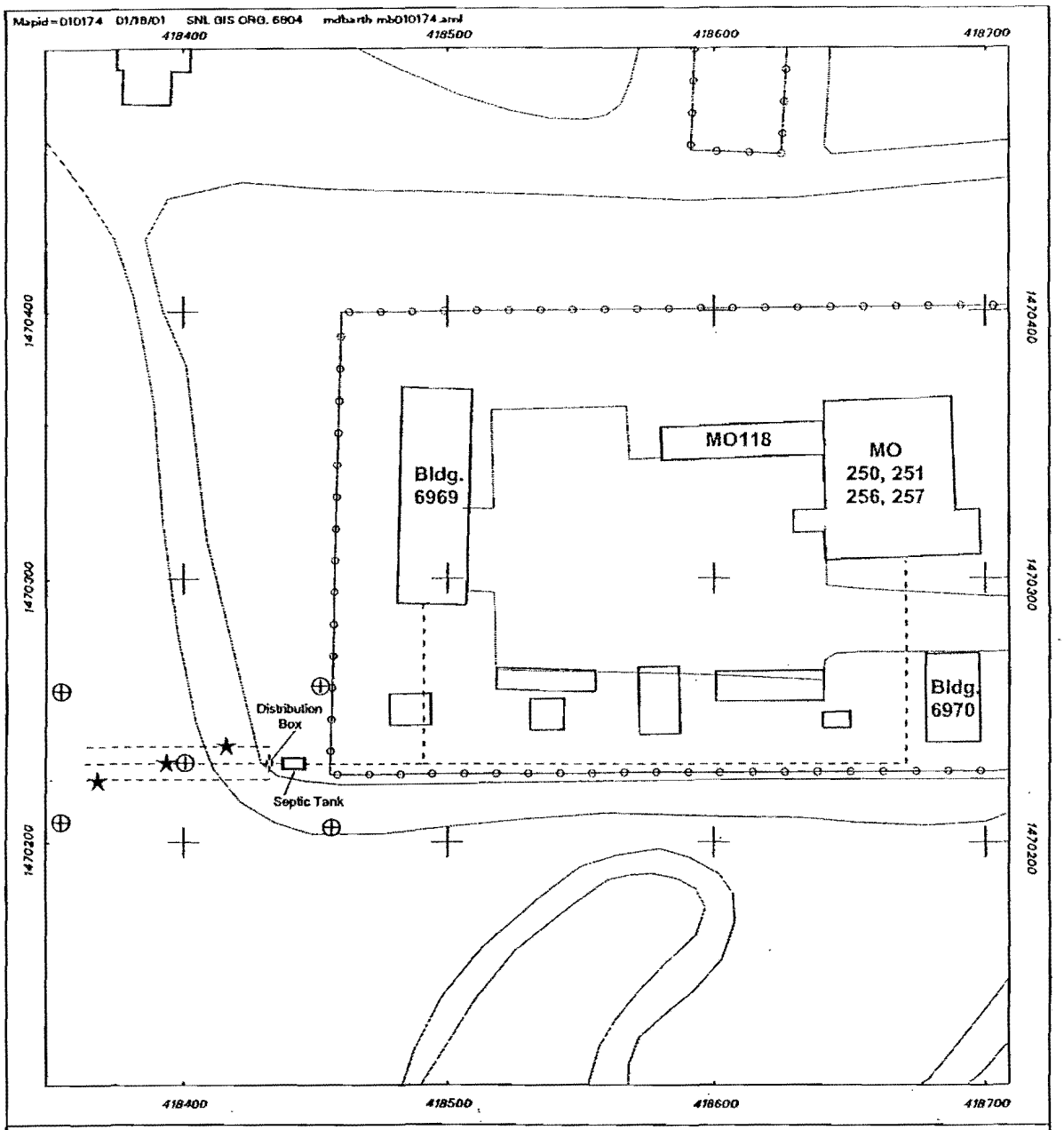
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1004 was last updated Jan 22, 2003.



Legend

- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Septic Tank/Distribution Box
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 6969 Septic System, East of TA-II, SWMU 1004

0 30 60
Scale in Feet

0 7.2 14.4
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1006: Building 6741 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield approximately 100 feet southeast of, and outside of the Building 6741 perimeter fence in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in February 1996.

A backhoe was used to expose and locate the drainfield drain lines in June 1997.

Shallow soil samples were collected from three borings drilled in the drainfield area in June 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

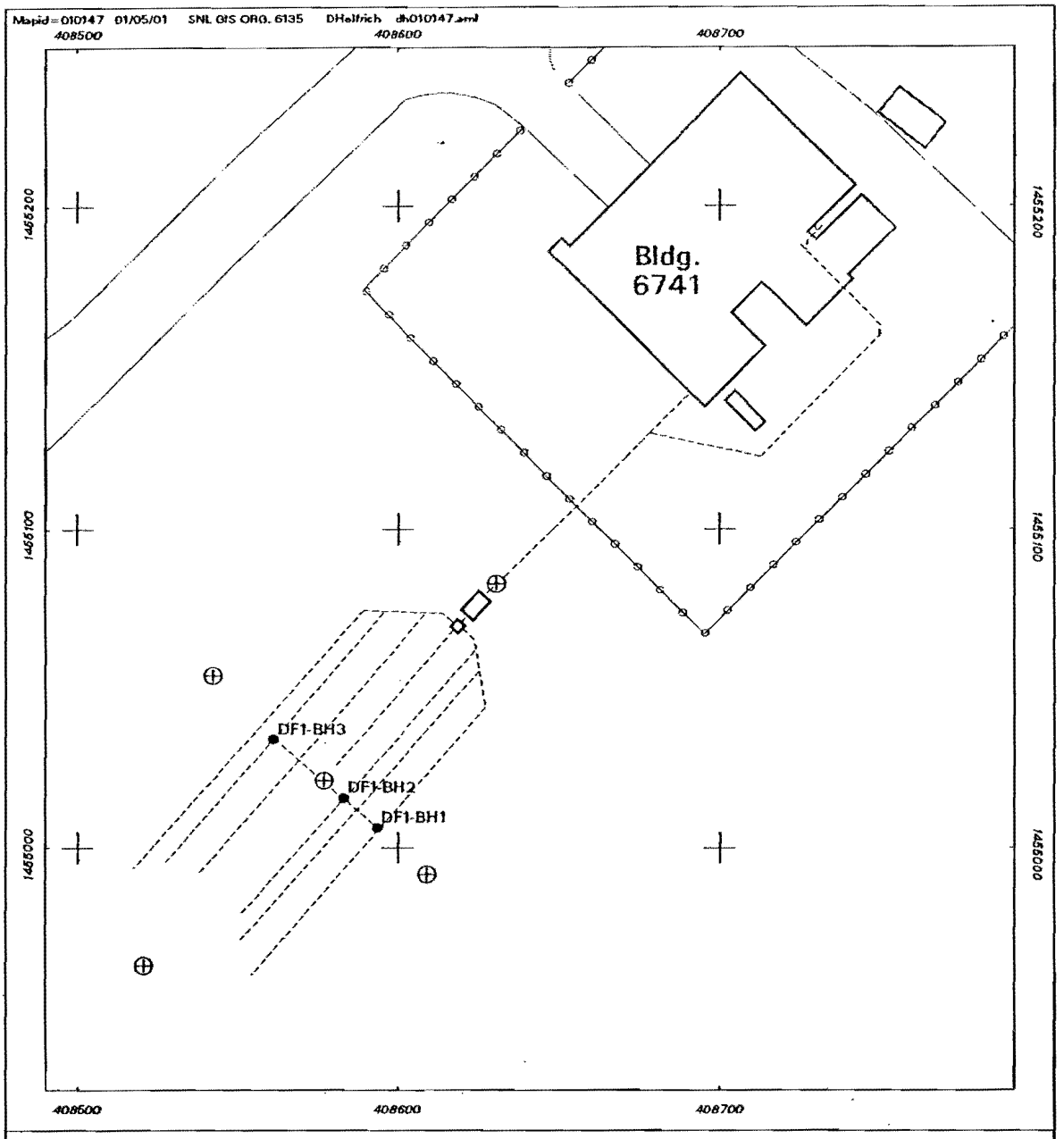
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed at the site to detect the presence of VOCs. This work is scheduled in Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at five locations in the drainfield area. This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 903 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in February 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1006 was last updated Dec 17, 2001.



Legend

- Existing Soil Boring Location
- Proposed Passive Soil Vapor Sampling Location
- Road
- Drain Line
- Fence
- Building / Structure
- Septic Tank / Distribution Box

Site Map of the Building 6741 Septic System, TA-III SWMU 1006

0 25 50
Scale in Feet

0 6 12
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1007: Building 6730 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield north of Buildings 6730 and 6731, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 and 1995. No information has been found to indicate that the residual contents (if any remain) from the tank has been pumped and cleaned out.

A backhoe was used to expose and locate the drainfield drain lines in June 1997.

Shallow soil samples were collected from four borings drilled in the drainfield area in June 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

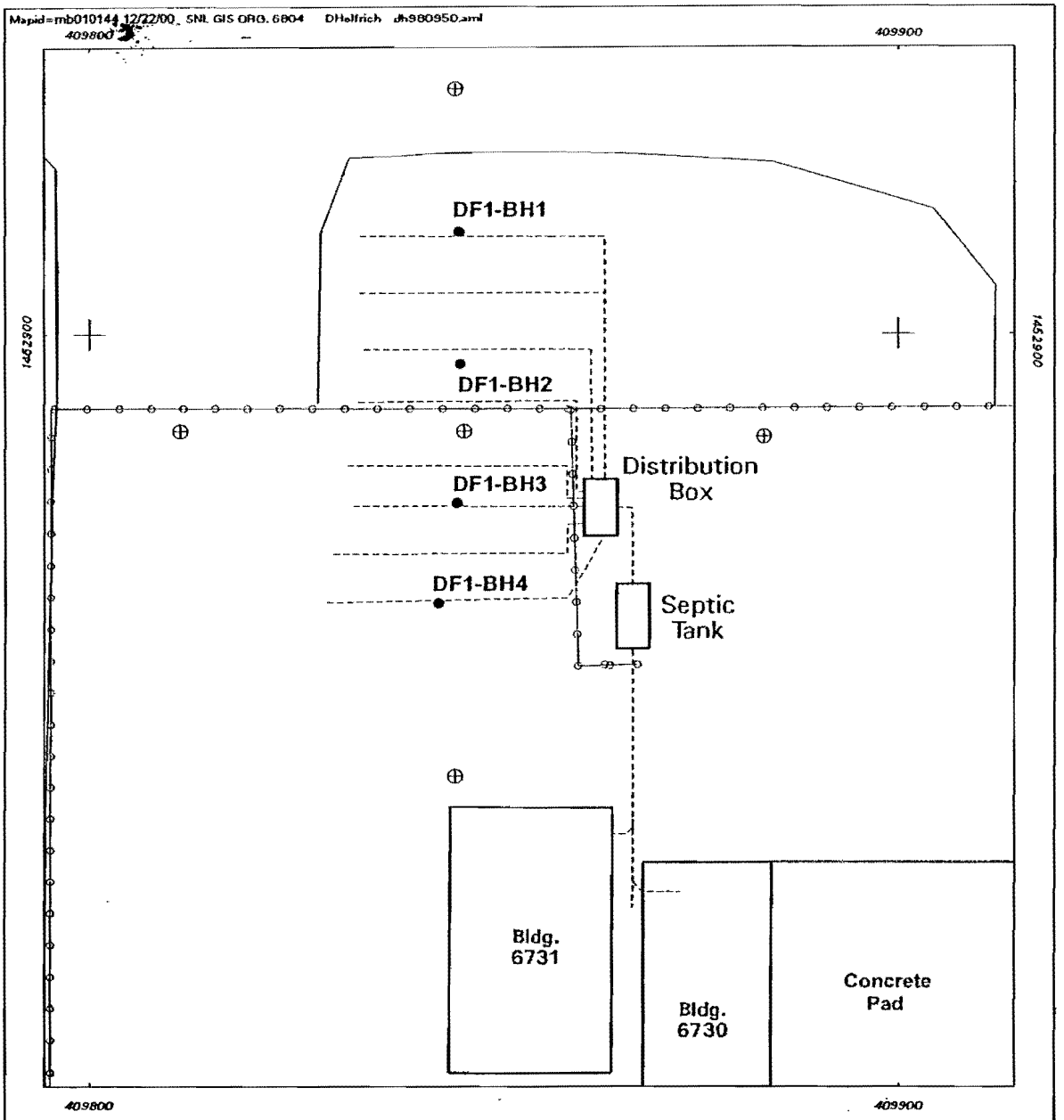
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed at the site to detect the presence of VOCs. This work is scheduled in Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at five locations in the drainfield area. This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1007 was last updated Dec 17, 2001.



Legend

- Road
- Fence
- Drain Line
- Building
- Distribution Box
- Septic Tank
- Existing Soil Boring Locations
- Proposed Passive Soil Vapor Sampling Location

Site Map for the Building 6730 Septic System, TA III SWMU 1007

0 10 20 Scale in Feet

0 2.4 4.8 Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1008: Building 6750 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield on the northwest side of Building 6750, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in March 1996.

A backhoe was used to expose and locate the drainfield drain lines in June 1997.

Shallow soil samples were collected from two borings drilled in the drainfield area in June 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

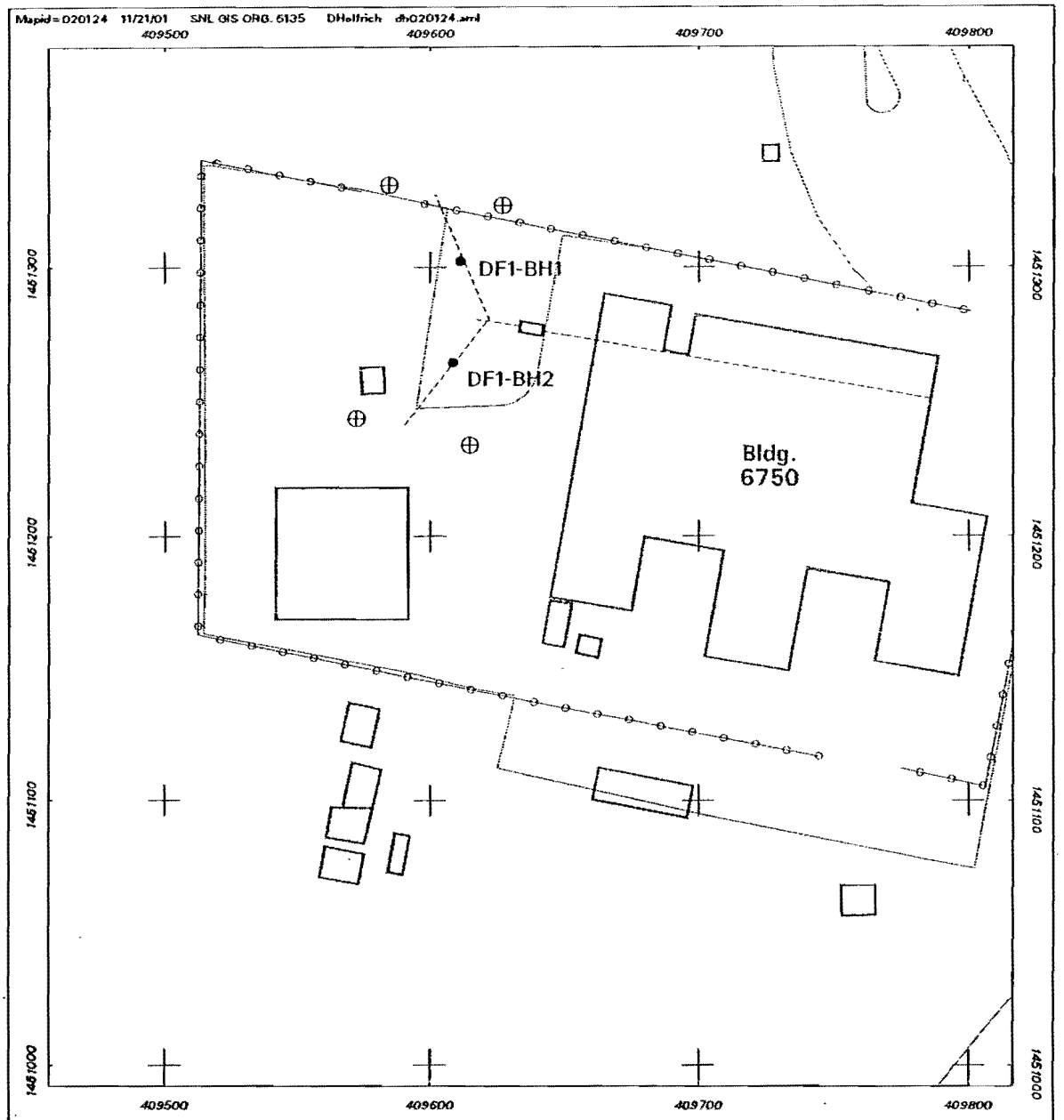
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed at the site to detect the presence of VOCs. This work is scheduled in Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at four locations in the drainfield area. This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 958 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in March 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1008 was last updated Dec 17, 2001.



Legend

- Existing Soil Boring Location
- Proposed Passive Soil Vapor Sampling Location
- Edge of Asphalt
- Fence
- Septic System Drain Line
- Building / Structure
- Septic Tank

Figure 2
Site Map of the Building 6750
Non-ER Septic System, TA-III
MapID Number 1008

0 30 60
Scale in Feet

0 7.2 14.4
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1009: Building 6620 Internal Sump, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this sump was located inside of the southwest portion of Building 6620, in TA-III. These drawings indicate that it consisted of a 6-foot by 6-foot by 8-foot-deep concrete-lined vault with a 2-foot-square by 2-foot-deep gravel-filled drywell in the center of the vault floor. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

On July 15, 1999 the interior of Building 6620 was inspected and it was determined that the sump or vault had been sealed or capped with concrete to the level of the building floor. Options for collecting soil samples from beneath the unit were discussed with New Mexico Environment Department (NMED) regulators at that time. It was later concluded that drilling an angle boring from outside the building would be the most feasible way to collect soil samples from beneath the unit.

A truck-mounted auger drilling rig was mobilized to the site on November 1, 2002, and a single soil sample boring angled at 45 degrees was drilled beneath the building, and sump. Soil samples were collected starting at borehole depths of 25 and 30 feet, and were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

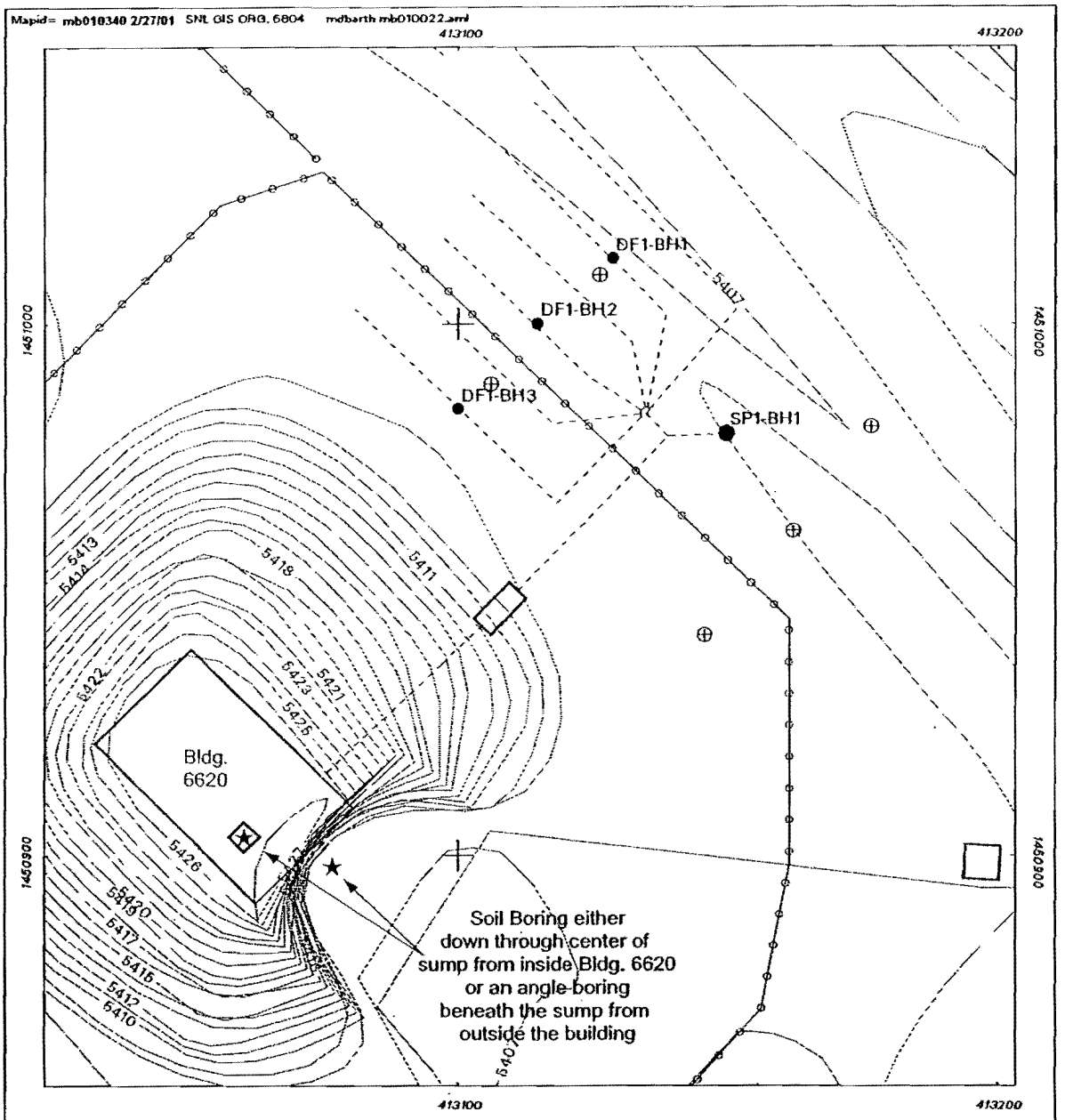
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1009 was last updated Jan 23, 2003.



Legend

- Internal Sump
- Seepage Pit
- Septic Tank/Distribution Box
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Locations
- Existing Soil Boring Locations

Site Map of the Bldg. 6620 Sump and Septic System, TA-III SWMU 1009 (Internal Sump), and 1082 (Septic System)

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

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Area of Concern (AOC) No. 1010: Building 6536 Septic System and Seepage Pit, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that a septic system (consisting of a septic tank connected to a single seepage pit), and a second seepage pit (without a septic tank) are located on the southeast side of Building 6536, in TA-III. Apparently the second seepage pit was constructed after the septic system to accommodate additional waste discharges from the building. It is assumed that these septic and drain systems were abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. The tank was pumped out and cleaned in August 1996.

A field inspection was conducted at the site in July 1999 and the septic system and second seepage pit were located and determined to still be intact.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at six locations around the septic system and seepage pit at this site in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled directly beneath each of the two seepage pits at this site in August 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

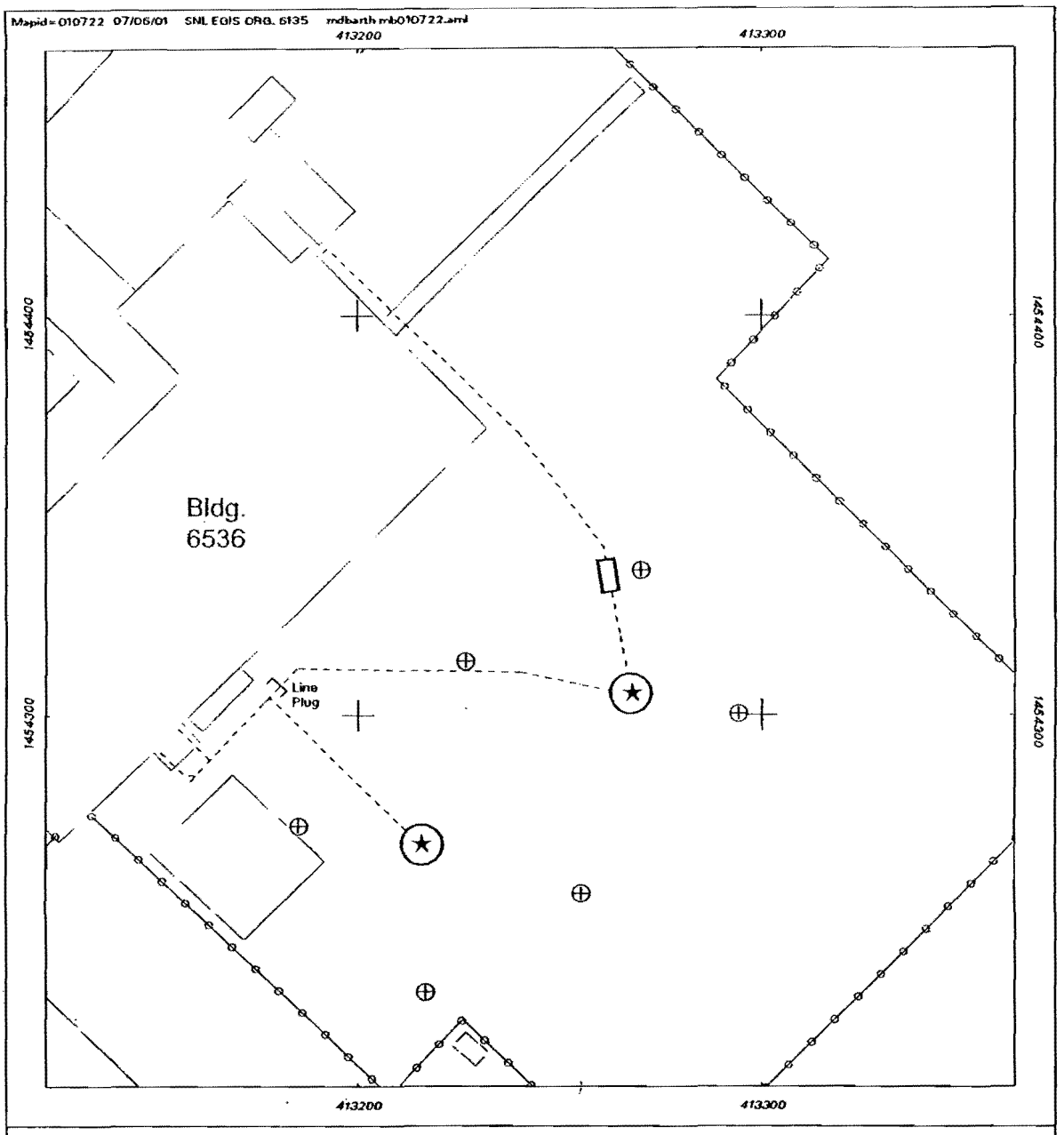
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 1000 gallons of effluent (including water added to facilitate pumping) was removed from the septic tank in August 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1010 was last updated Jan 24, 2003.



Legend

- Septic Tank
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Seepage Pit
- Fence
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 6536
Septic and Drain Systems, TA-III
SWMU 1010

0 20 40
Scale In Feet

0 4.8 9.6
Scale In Meters

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Area of Concern (AOC) No. 1014: Former T-12, T-42, and T-43 Septic System, TA-V

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank plumbed to a single seepage pit, and was located about 30 feet north of the former group of "T" (temporary) buildings identified as T-12, T-42, and T-43, in TA-V. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled or analyzed as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes.

A field inspection at the site was conducted in June 1995 and the system was located and determined to be intact at that time.

The location of the system was surveyed with Global Positioning System (GPS) equipment in September 1995 when it was learned that it would be demolished, so it could be re-located for purposed of future characterization work.

The tank was inspected in January 1996 with the intention of removing the remaining contents, but it was found to be dry and empty at that time.

This septic system was demolished in approximately 1997 and was covered over by a parking lot associated with construction of the new Building 6585.

Shallow soil samples were collected from a single boring drilled through the Building 6585 parking lot asphalt, and at the location of the former seepage pit (relocated with GPS equipment) in July 1998 and again in August 1999. The samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

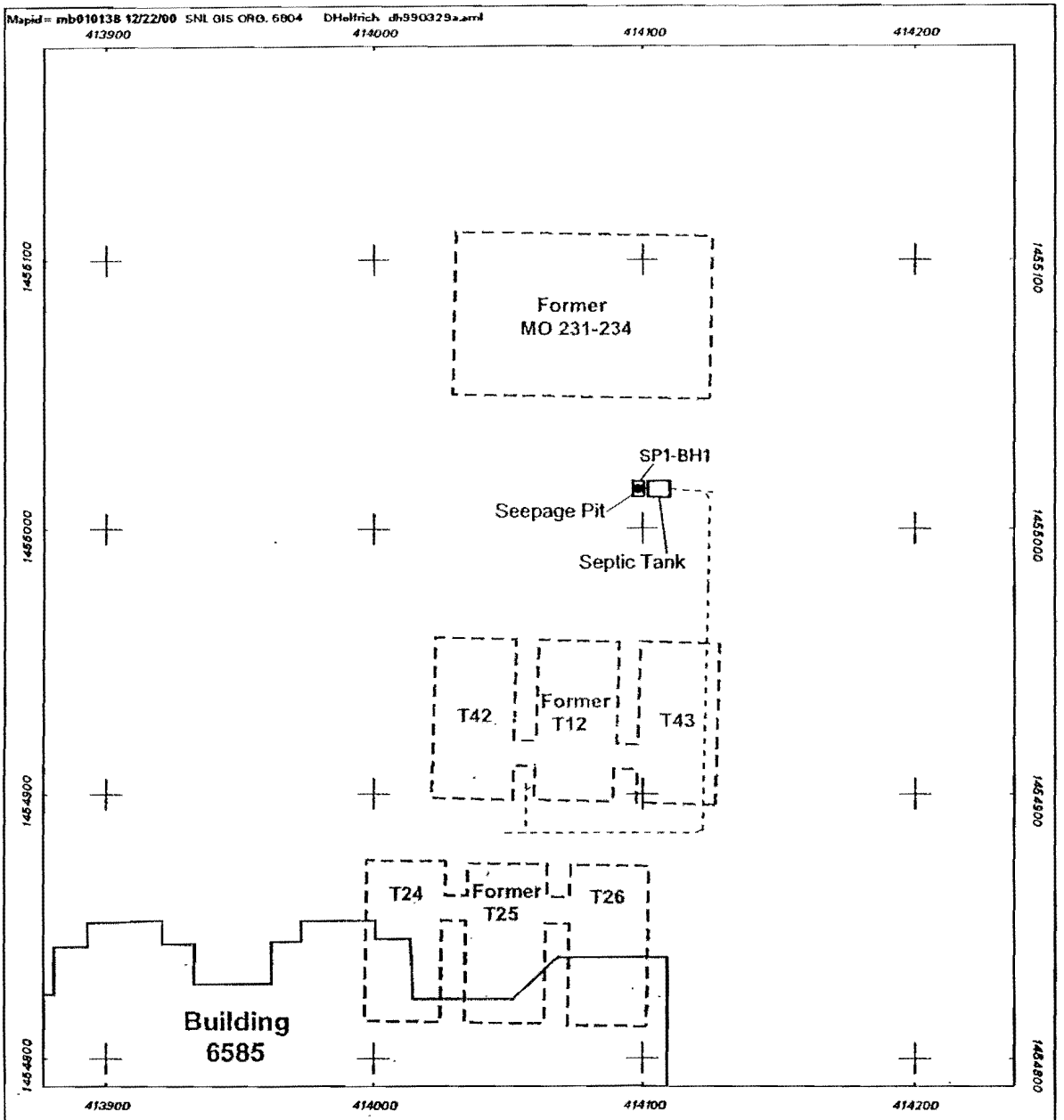
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1014 was last updated Jan 24, 2003.



Legend

- Existing Soil Boring Location
- Building 6585
- Former Building Location
- Septic Tank, Seepage Pit
- Drain Line

Site Map of the Former T12, T42 & T43 Septic System North of Bldg. 6585, TA-V SWMU 1014

0 30 60
Scale in Feet

0 7.2 14.4
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1015: Former MO 231-234 Septic System, TA-V

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield located about 40 feet north of the north side the former mobile office (MO) 231-234 group of buildings, in TA-V. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III and TA-V. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in January 1996.

A backhoe was used to expose and locate the drainfield drain lines in June 1995.

This septic system was demolished in approximately 1997 and was covered over by a parking lot associated with construction of the new Building 6585.

Shallow soil samples were collected from two borings drilled in the drainfield area in July 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

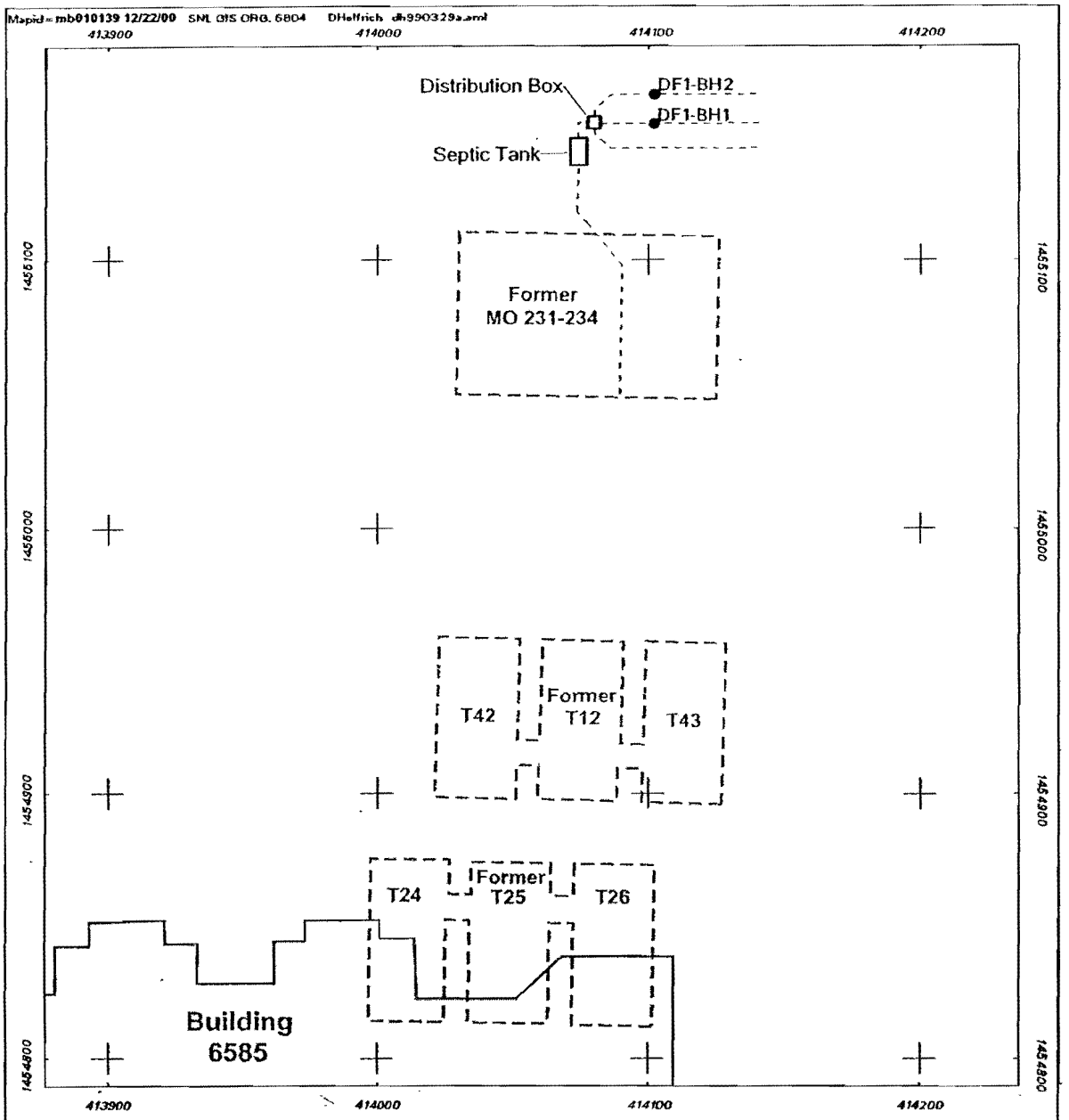
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 978 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in January 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1015 was last updated Jan 24, 2003.



Legend

- Existing Soil Boring Location
- Building 6585
- Former Building Location
- Septic Tank, Distribution Box
- Sanitary Sewerline, Drainfield Drainline

Site Map of the Former MO 231-234 Septic System North of Bldg. 6585, TA-V SWMU 1015

0 30 60
Scale in Feet

0 7.2 14.4
Scale in Meters

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Area of Concern (AOC) No. 1020: MO-146, MO-235, and T-40 Septic System (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact:
Office Phone:

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield located on the southeast side of this 3-building complex, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in February 1996.

A backhoe was used to expose and locate the drainfield drain lines in May 1997.

Shallow soil samples were collected from two borings drilled in the drainfield area in June 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

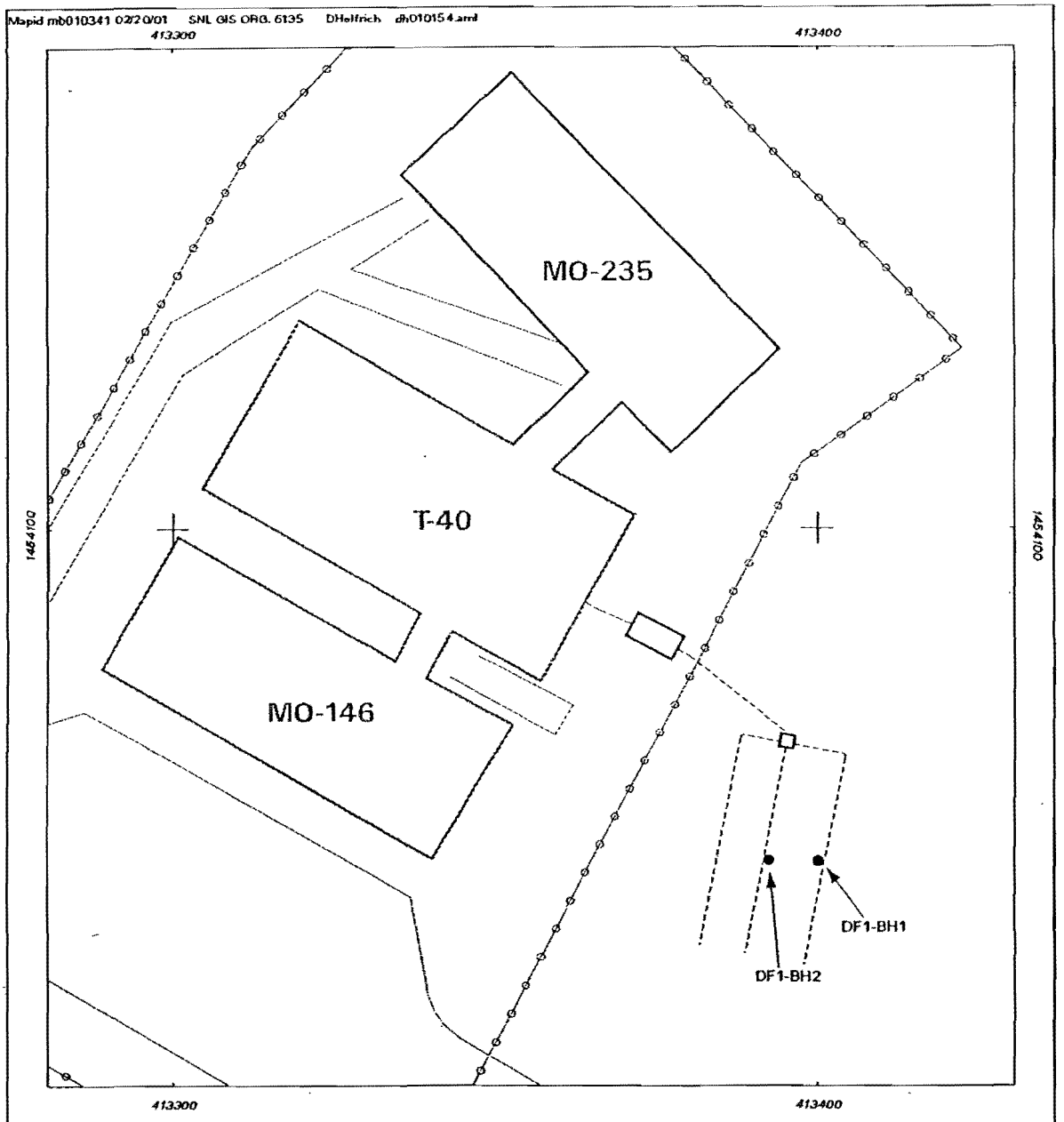
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 525 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in February 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1020 was last updated Dec 17, 2001.



Legend

- Existing Soil Boring Location
- Septic Tank / Distribution Box
- Road
- Drain Line
- Fence
- Building / Structure

Site Map of the MO-146/T-40/MO-235 Septic System, TA-III SWMU 1020

0 12.5 25
Scale in Feet

0 3 6
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1024: MO 242-245 Septic System (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield located approximately 90 feet northwest of the mobile office (MO) complex that included MOs 242 through 245. This system was located immediately north of the northern TA-III perimeter fence. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in February 1996.

A backhoe was used to expose and locate the drainfield drain lines in May 1997.

Shallow soil samples were collected from three borings drilled in the drainfield area in July 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

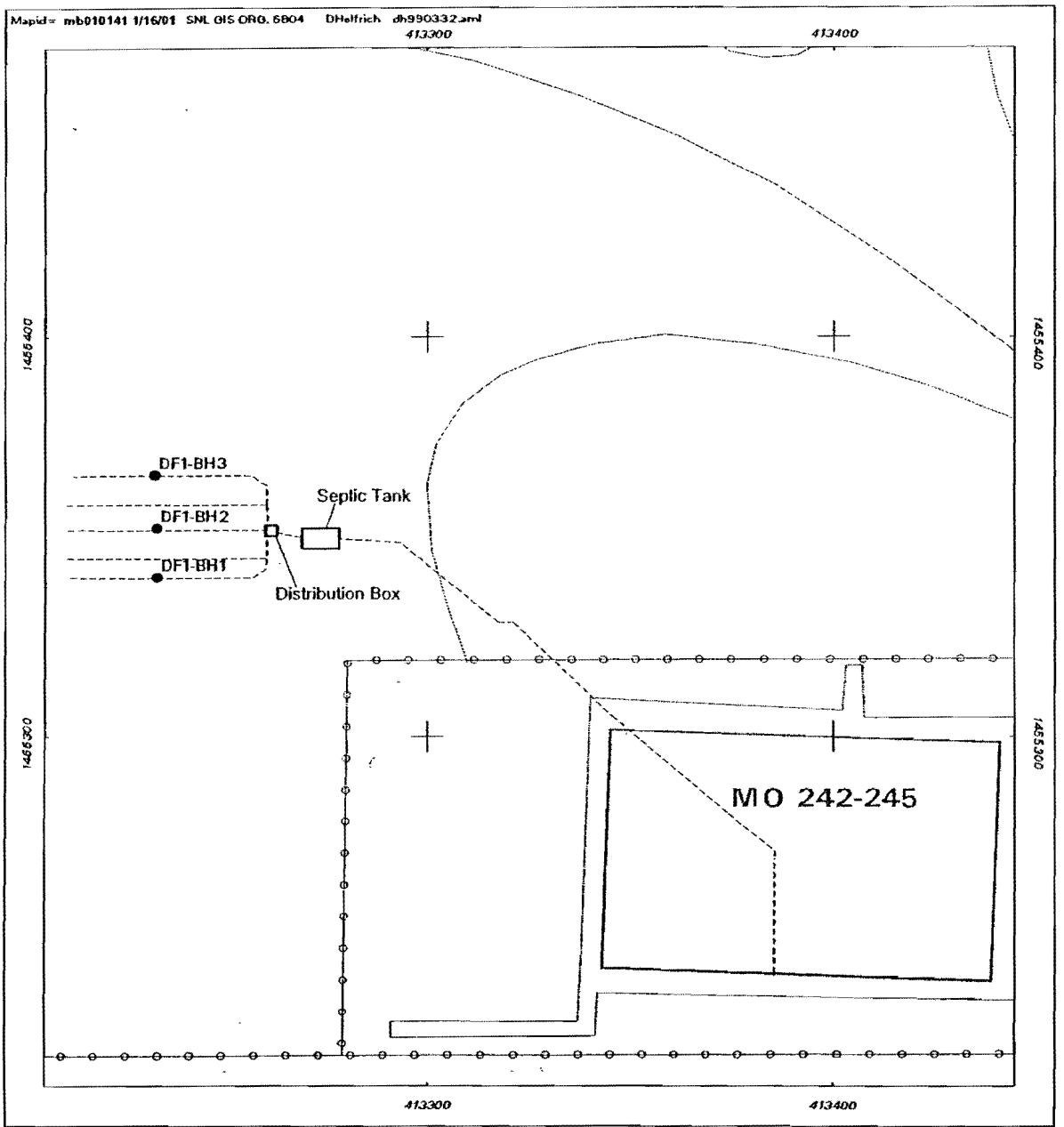
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 775 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in February 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1024 was last updated Jan 24, 2003.



Legend

- Existing Soil Boring Location
- Road / Edge of Pavement
- Sanitary Sewerline / Drainfield Drainline
- Fence
- MO 242-245
- Septic Tank, Distribution Box

Site Map of the MO 242-245 Septic System, TA-III SWMU 1024

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1025: Building 6501 East Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank plumbed to a single seepage pit, and was located approximately 30 feet north of the center of Building 6501 in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 and 1995 for waste characterization purposes. The tank was pumped out and cleaned in March 1996.

A field inspection was conducted at the site in September 1999 and the septic tank and seepage pit were located and determined to still be intact. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at three locations around the septic system in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also be drilled directly beneath the former location of the septic system seepage pit in August 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

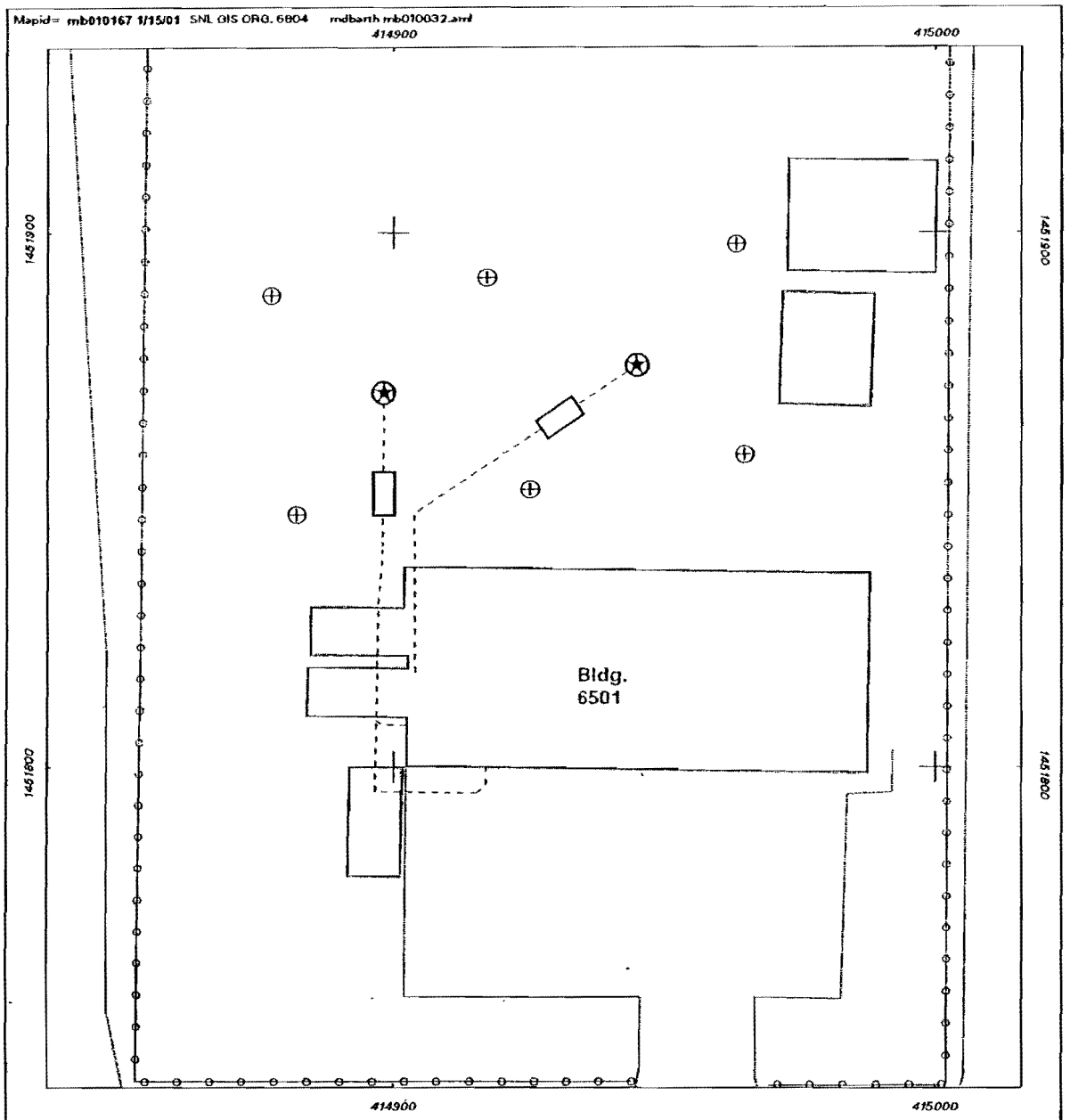
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 1,433 gallons of effluent (including water added to facilitate pumping) was removed from the Building 6501 east septic tank in March 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1025 was last updated Jan 17, 2003.



Legend

- Seepage Pit
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Septic Tank/Distribution Box
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 6501 Septic Systems, TA-III SWMU 1025 (East System), SWMU1026 (West System)

0 15 30
Scale in Feet

0 3.5 7.2
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1026: Building 6501 West Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank plumbed to a single seepage pit, and was located approximately 20 feet north of the northwest corner of Building 6501 in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 and 1995 for waste characterization purposes. The tank was pumped out and cleaned in March 1996.

A field inspection was conducted at the site in September 1999 and the septic tank and seepage pit were located and determined to still be intact. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at three locations around the septic system in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also be drilled directly beneath the former location of the septic system seepage pit in August 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

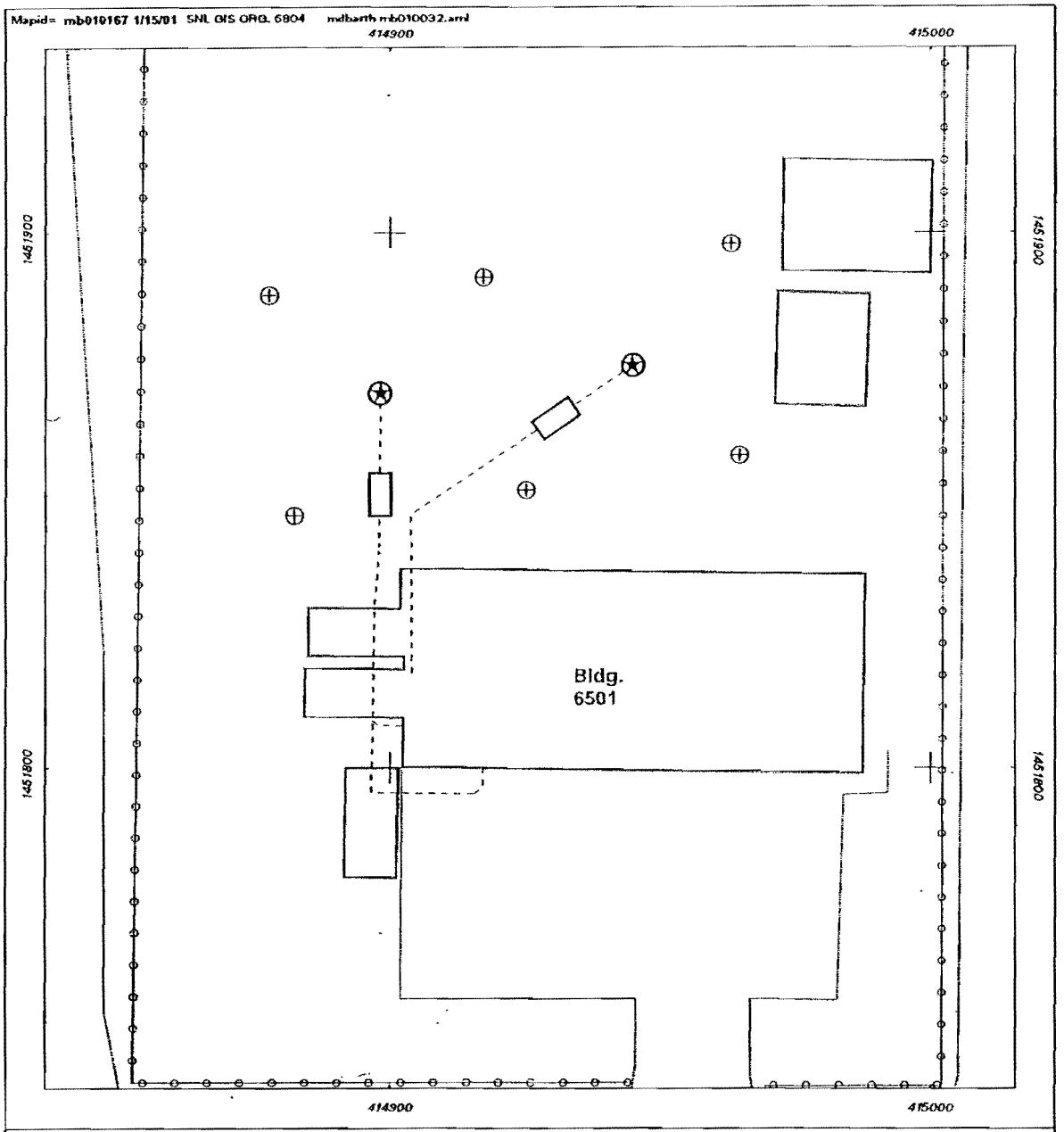
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 1,000 gallons of effluent (including water added to facilitate pumping) was removed from the Building 6501 west septic tank in March 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1026 was last updated Jan 17, 2003.



Legend

- Seepage Pit
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Septic Tank/Distribution Box
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 6501 Septic Systems, TA-III SWMU 1025 (East System), SWMU1026 (West System)

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1027: Building 6530 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system was connected to Building 6530 and consisted of a septic tank plumbed to two seepage pits. The septic tank is located approximately 100 feet north of Building 6530 and about 30 feet west of Building 6536, in TA-III. The septic tank was plumbed to two seepage pits located about 80 feet northwest of the septic tank. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. The tank was pumped out and cleaned in March 1996.

A field inspection was conducted at the site in July 1999 and the septic tank and south seepage pits were located and determined to still be intact. The north seepage pit was not located at that time, and appeared to have been removed as a result of construction at the site. A backhoe was therefore used at the site in September 2002 to attempt to locate the north seepage pit. A portion of the drainline from the seepage pit distribution box to the north seepage pit was found, but the seepage pit itself was not found.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at five locations around the two seepage pits in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled through the center of, and directly beneath the southern seepage pit in September 2002. A second boring was also drilled at the assumed former location of the north seepage pit as shown on engineering drawings at that time. Soil samples collected from these two borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

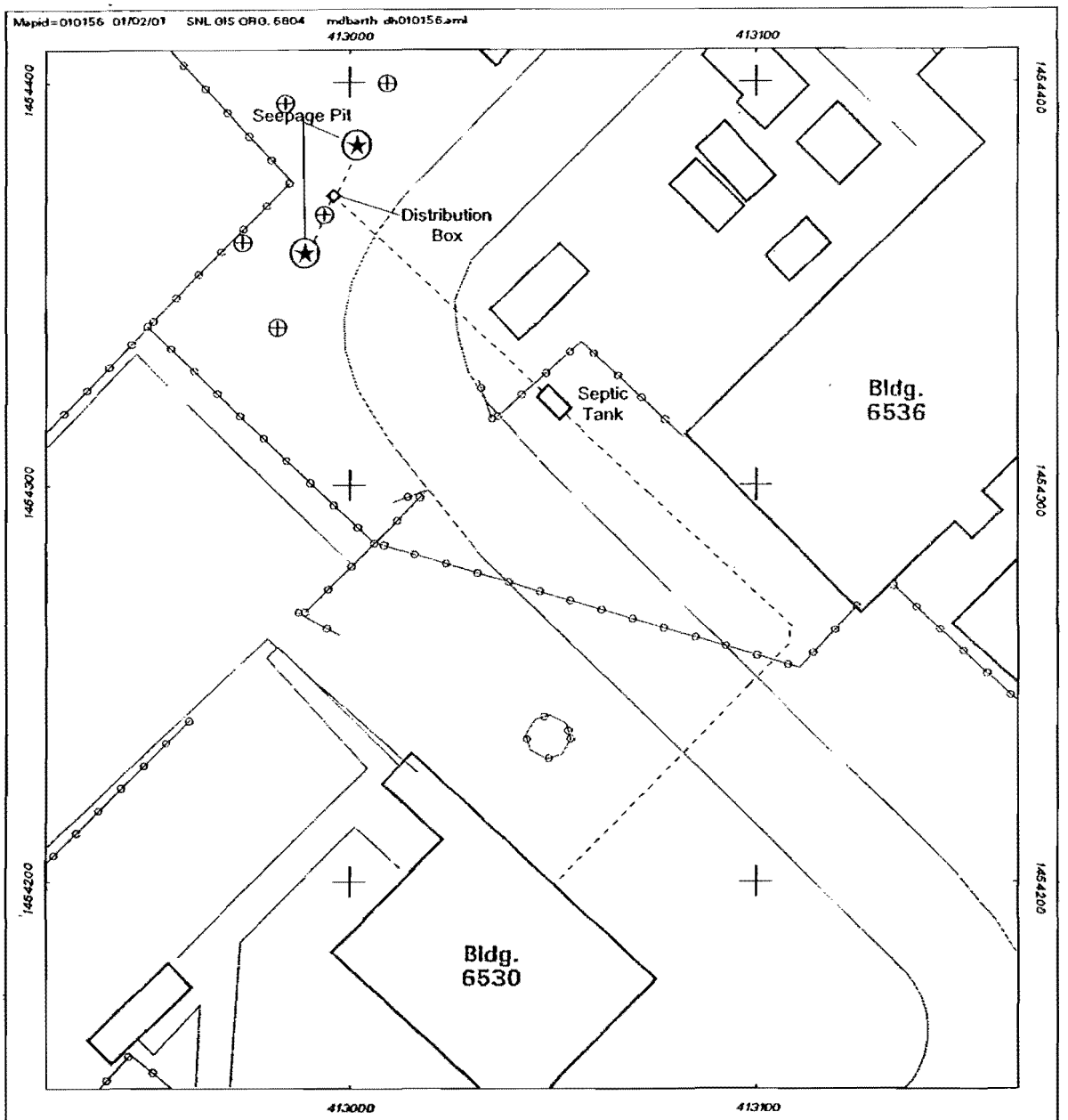
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 585 gallons of effluent (including water added to facilitate pumping) was removed from the septic tank in March 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1027 was last updated Jan 21, 2003.



Legend

- ★ Proposed Soil Boring Location
- ⊕ Proposed Passive Soil Vapor Sampling Location
- Fence
- Building / Structure
- Edge of Pavement
- Septic System Drain Line
- Septic Tank / Distribution Box Seepage Pit

Site Map of the Bldg. 6530 Septic System, TA-III SWMU 1027

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1028: Building 6560 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank plumbed to a single seepage pit and was located approximately 70 feet southwest of southwest corner of Building 6560, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. The tank was pumped out and cleaned in March 1996.

A field inspection was conducted at the site in September 1999 and the septic system (septic tank and seepage pit in the southwest corner of the fenced facility yard) were located and determined to still be intact. A second seepage pit on the east side of the facility was also subsequently identified approximately two years after the initial inspection with NMED was conducted. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at four locations around the septic system seepage pit in April 2002 to detect the presence or absence of VOCs at the site. Passive soil vapor sampling around the east seepage pit was not conducted, as this unit was undiscovered when the site inspection was conducted with NMED in September 1999. One soil sample boring was also drilled directly beneath the center of the septic system seepage pit, and a second boring was also drilled in the center of, and beneath the east seepage pit in August 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

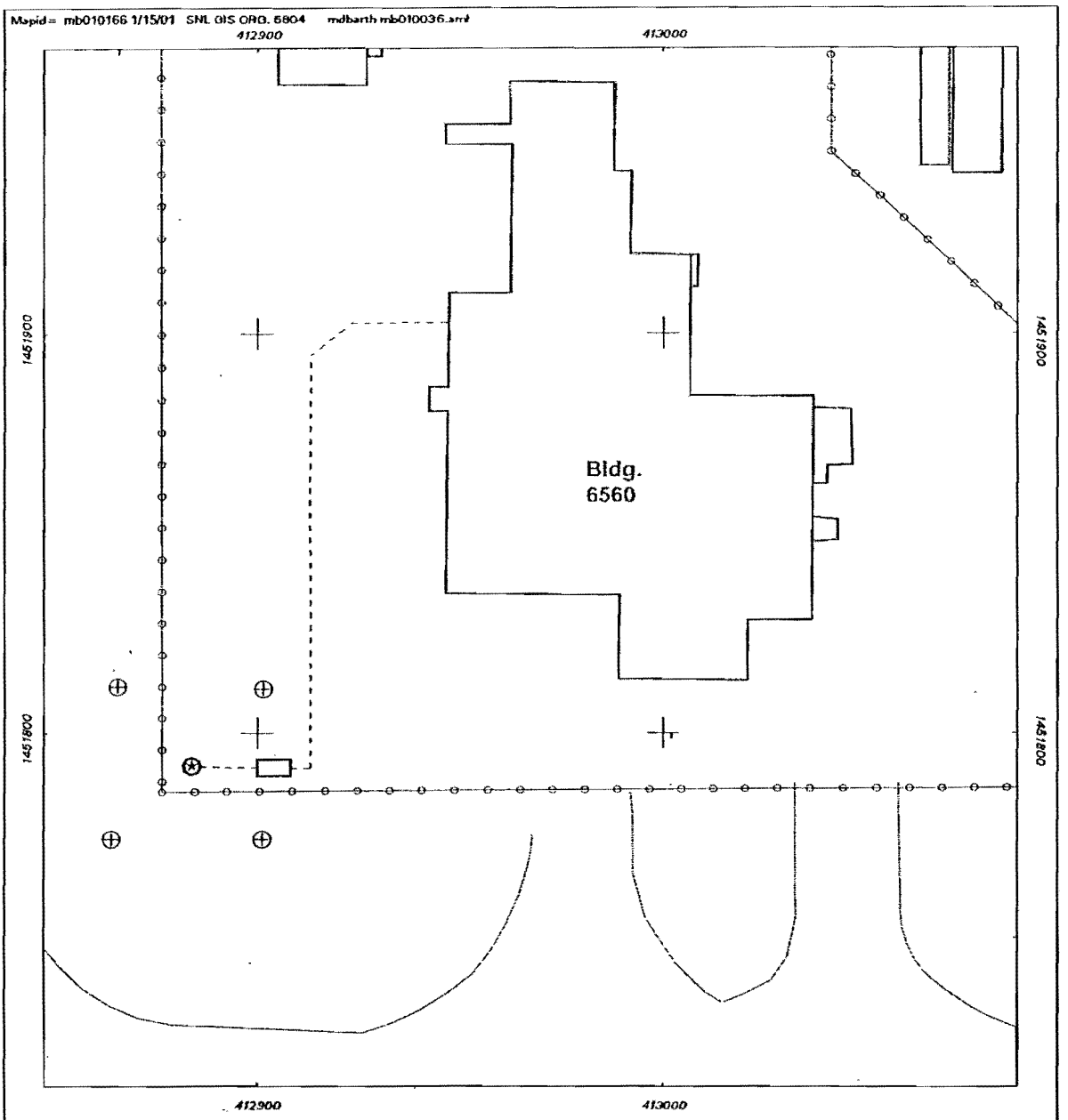
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 350 gallons of effluent (including water added to facilitate pumping) was removed from the septic tank in March 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1028 was last updated Jan 17, 2003.



Legend

- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Septic Tank
- Seepage Pit
- Proposed Soil Boring Location
- Proposed Passive Soil Vapor Sampling Location

Site Map of the Bldg. 6560 Septic System, TA-III SWMU 1028

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1029: Building 6584 North Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank on the north side of Building 6584 and a large drainfield approximately 250 feet northwest of Building 6584, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992 and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in February 1996.

A backhoe was used to expose and locate the drainfield drain lines in May 1997.

Shallow soil samples were collected from three borings drilled in the drainfield area in July 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

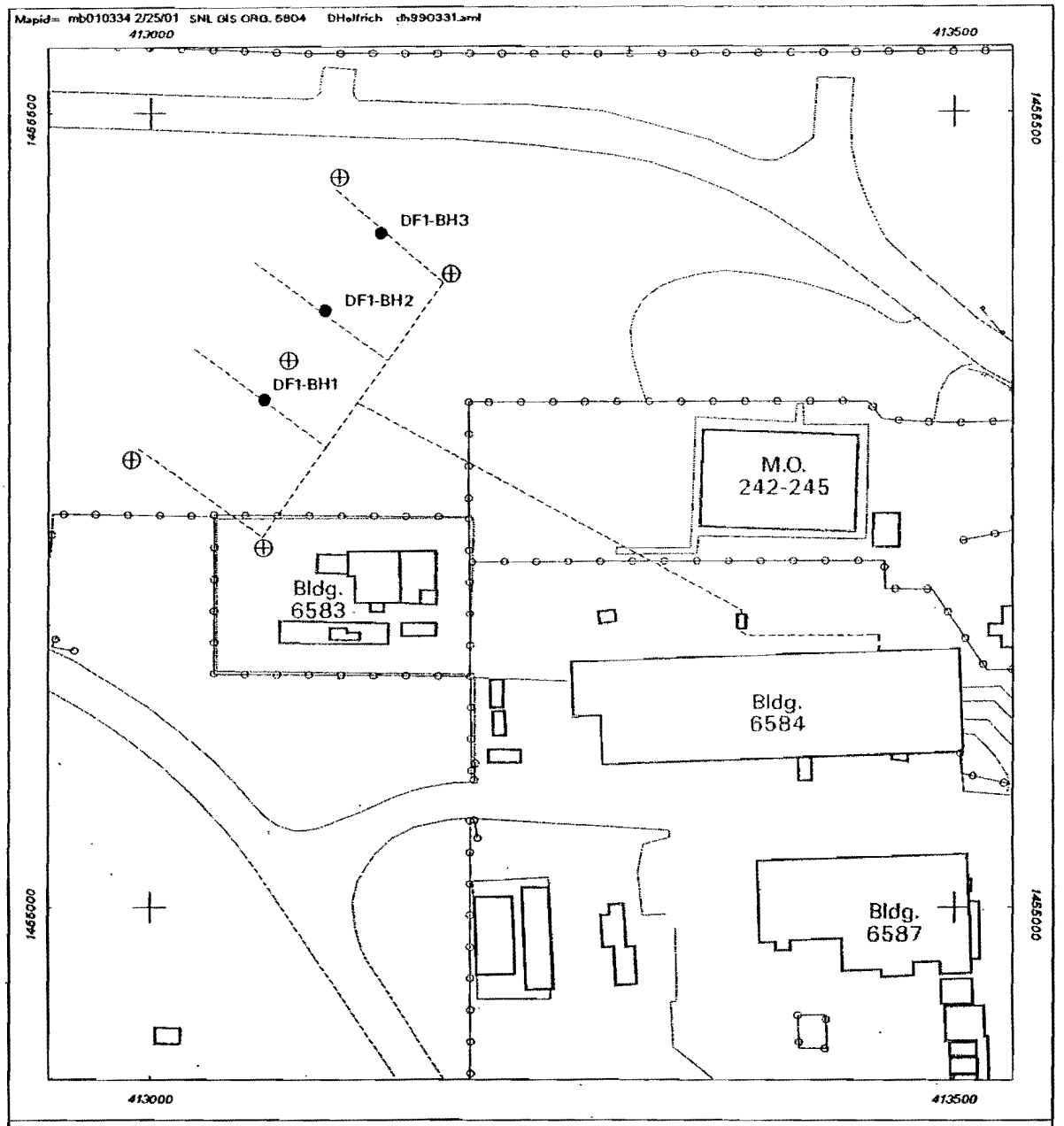
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed to determine the presence or absence of VOCs at the site. This work is scheduled in Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at five locations in the drainfield area. This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 1,800 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in February 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1029 was last updated Dec 17, 2001.



Legend

- Septic Tank
- Road / Edge of Pavement
- Sanitary Sewerline / Drainfield Drainline
- Fence
- Building / Structure
- Proposed Passive Soil Vapor Sampling Location
- Existing Soil Boring Locatioin

Site Map of the Building 6584 North Septic System, TA-III SWMU 1029

0 50 100
Scale in Feet

0 12 24
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1030: Building 6587 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank plumbed to two seepage pits. The septic tank and seepage pits are located about 200 and 430 feet respectively west of Building 6587, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in March 1996.

Shallow soil samples were collected from two borings drilled down through the center of and below each of the two seepage pits in June 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

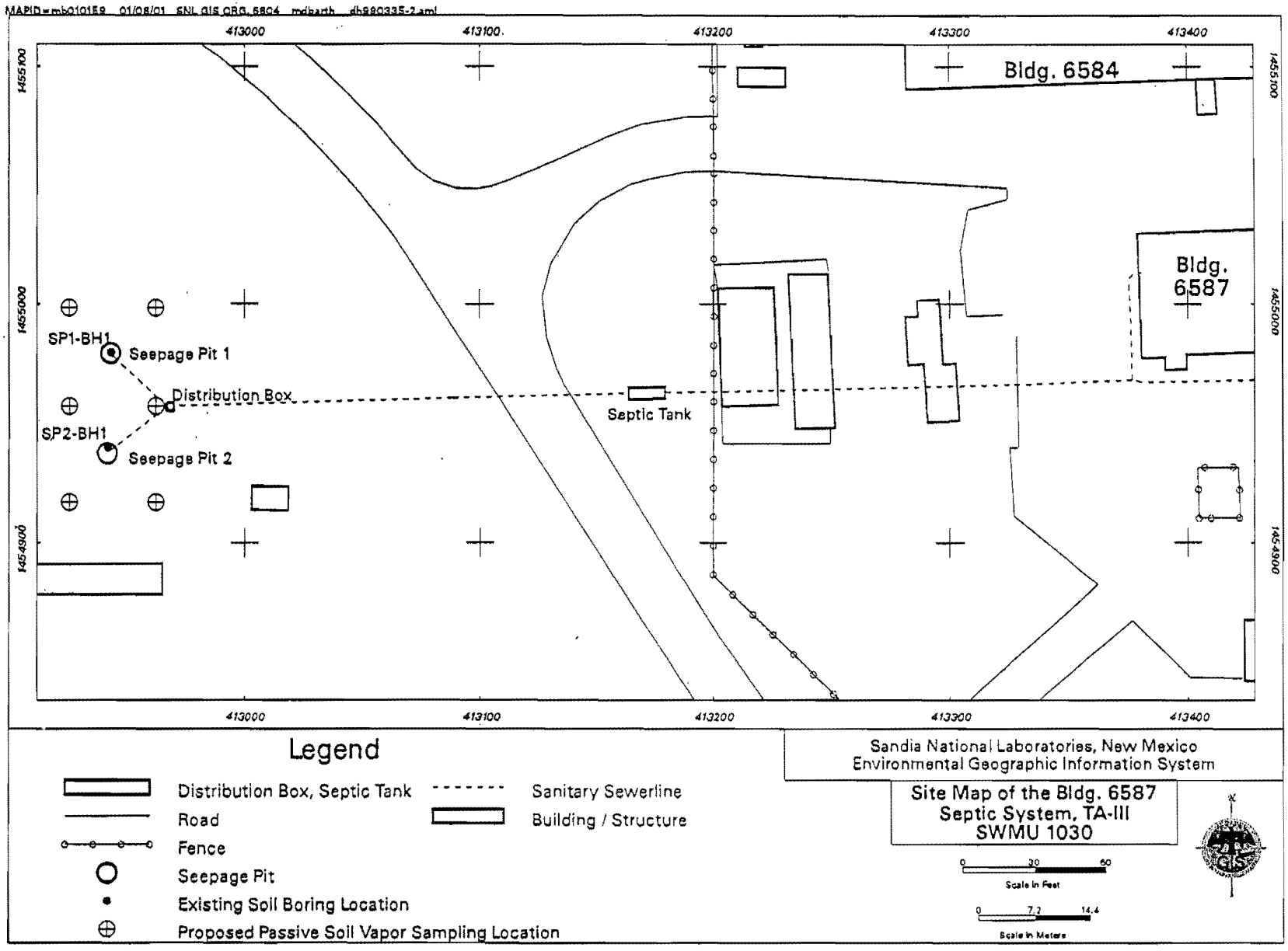
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed at the site. These samplers will be used to detect the presence or absence of VOCs and are scheduled to be installed in Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at six locations in the area of the two seepage pits. This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 2,595 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in March 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1030 was last updated Dec 17, 2001.


MAPID=mb010159 01/08/01 SNL GIS ORG. 6804 mdbarth db990335-2.aml
413000
413100
413200
413300
413400
1455100
1455000
1454900
Bldg. 6584
Bldg. 6587
SP1-BH1
Seepage Pit 1
Distribution Box
Septic Tank
SP2-BH1
Seepage Pit 2
Legend
Distribution Box, Septic Tank
Road
Fence
Seepage Pit
Existing Soil Boring Location
Proposed Passive Soil Vapor Sampling Location
Sanitary Sewerline
Building / Structure
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
Site Map of the Bldg. 6587
Septic System, TA-III
SWMU 1030
0 30 60
Scale in Feet
0 7.2 14.4
Scale in Meters

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Area of Concern (AOC) No. 1031: Former Buildings 6589 and 6600 Septic System. TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and two seepage pits located on the north side of Building 6584 and west of Buildings 6589 and 6600, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in February 1996.

A field inspection at the site was conducted in July 1999. The septic tank was still intact and was located, but no surface expression of the two seepage pits were found. As of November 2001 it was unknown if this system was intact or still in existence, or if it had been demolished as a result of the Building 6584 remodeling and expansion project. A backhoe was therefore used at the site in February 2002 and two large (13-ft. diameter) seepage pits were located and found to still be intact.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at four locations around the two seepage pits in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled directly beneath each of the two seepage pits in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

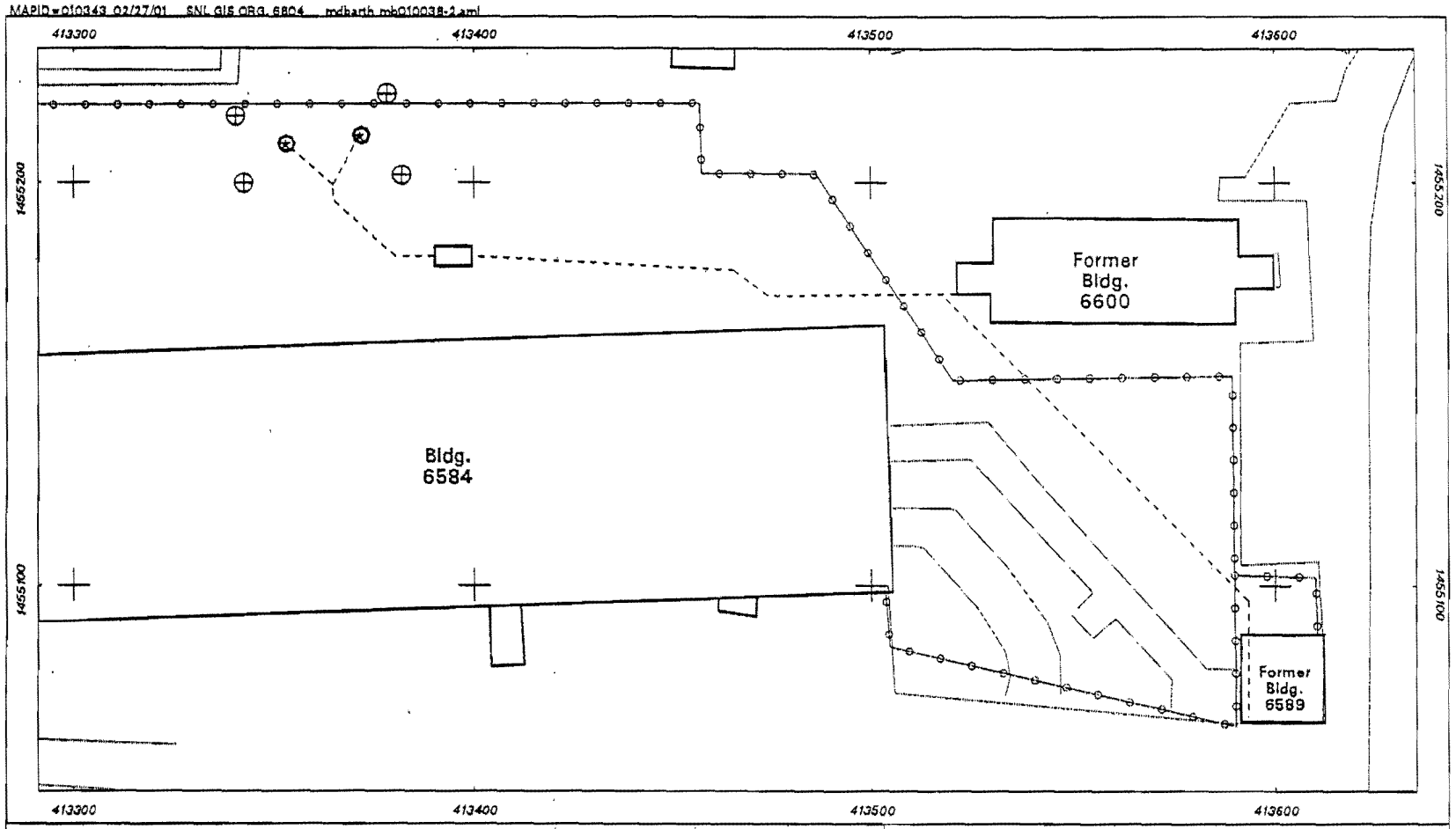
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 790 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in February 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1031 was last updated Jan 24, 2003.



Legend

- Septic System Drain Line
- Building / Structure
- Septic Tank / Distribution Box
- Seepage Pit
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Site Map of the Bldg. 6589/6600
Septic System, TA-III
SWMU 1031

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

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Area of Concern (AOC) No. 1032: Building 6610 Septic System (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of two septic tanks and two seepage pits located south of Building 6610, in TA-III. These drawings indicate that the original (northern) septic tank was plumbed to the seepage pit on the east side of and outside of the facility perimeter fence. At some point this original system was apparently augmented or replaced by a second (southern) septic tank and a second seepage pit located inside of the fence. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been

conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in March 1996.

A field inspection at the site was conducted in September 1999. The two septic tanks and the buried seepage pit (marked by yellow protective posts) inside the fence appeared to still be intact. However, no surface indication of the east seepage pit outside of the fence was found. A backhoe was therefore used at the site in March 2002 to successfully locate the seepage pit inside the fence, and attempt to locate a second seepage pit outside of and east of the facility fence. No east seepage pit was found, and only the end of a 1-ft. diameter pipe in the suspected location of the seepage pit was located. It is not known what the purpose of this small culvert or pipe was, but was assumed to be some sort of outfall from the facility. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at six locations in the septic system and outfall area in April 2002 to detect the presence or absence of VOCs at the site. One soil sample boring was also drilled directly beneath the center of the seepage pit inside the facility fence, and a second boring was drilled at the end of the assumed outfall outside the facility fence in August 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

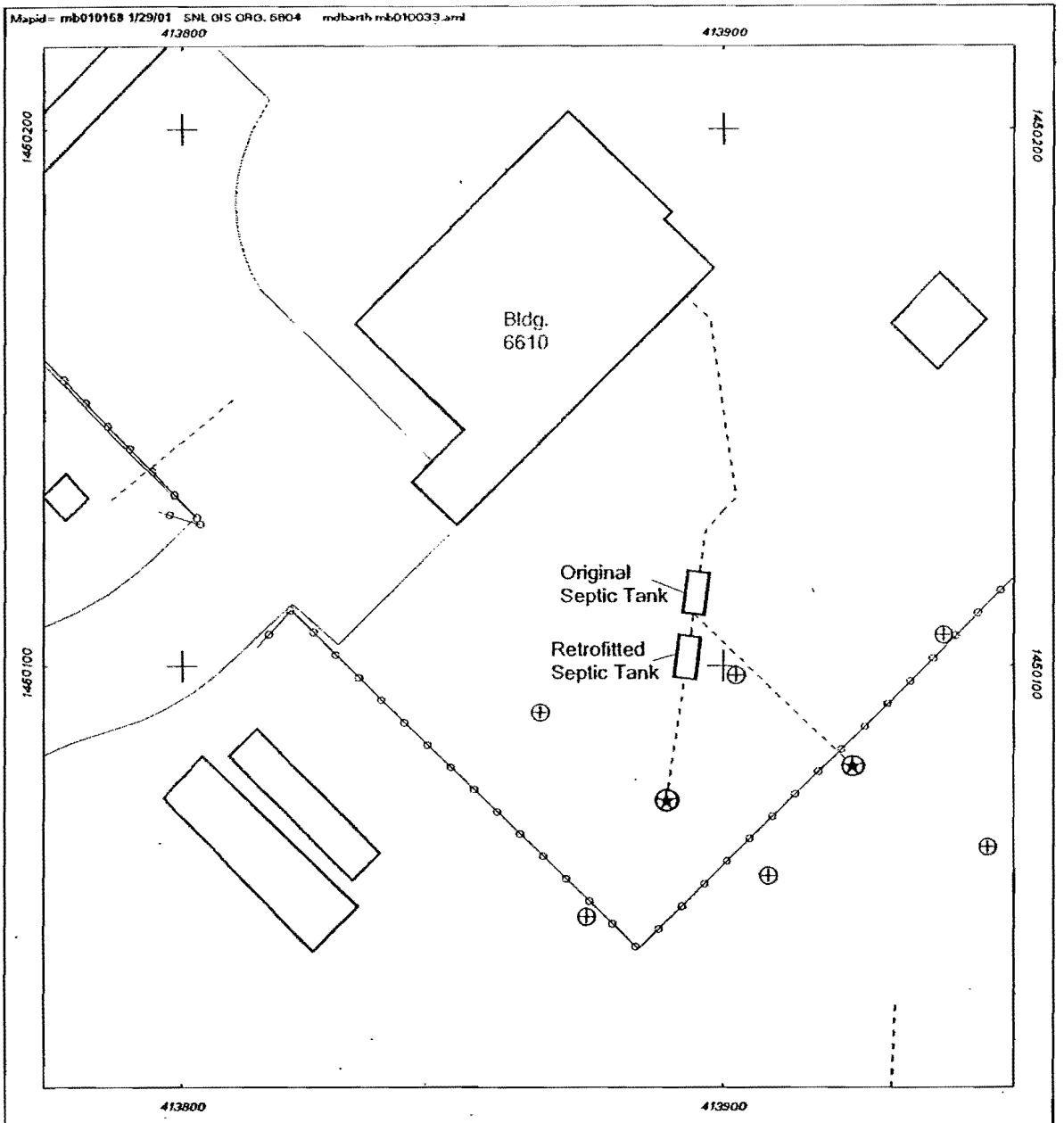
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 575 gallons of effluent (including introduced water added to facilitate pumping) was removed from the septic tank in March 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1032 was last updated Jan 17, 2003.



Legend

- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Septic Tank
- Seepage Pit
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 6610 Septic System, TA-III SWMU 1032

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1033: Building 6631 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield located approximately 80 and 100 feet respectively west-northwest of Building 6631, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 and 1995 for waste characterization purposes. The tank was inspected with the intention of pumping the remaining residual contents in February 1996, but it was found to be empty and dry.

A backhoe was used to expose and locate the drainfield drain lines in May 1997.

Shallow soil samples were collected from two borings drilled in the drainfield area in June 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

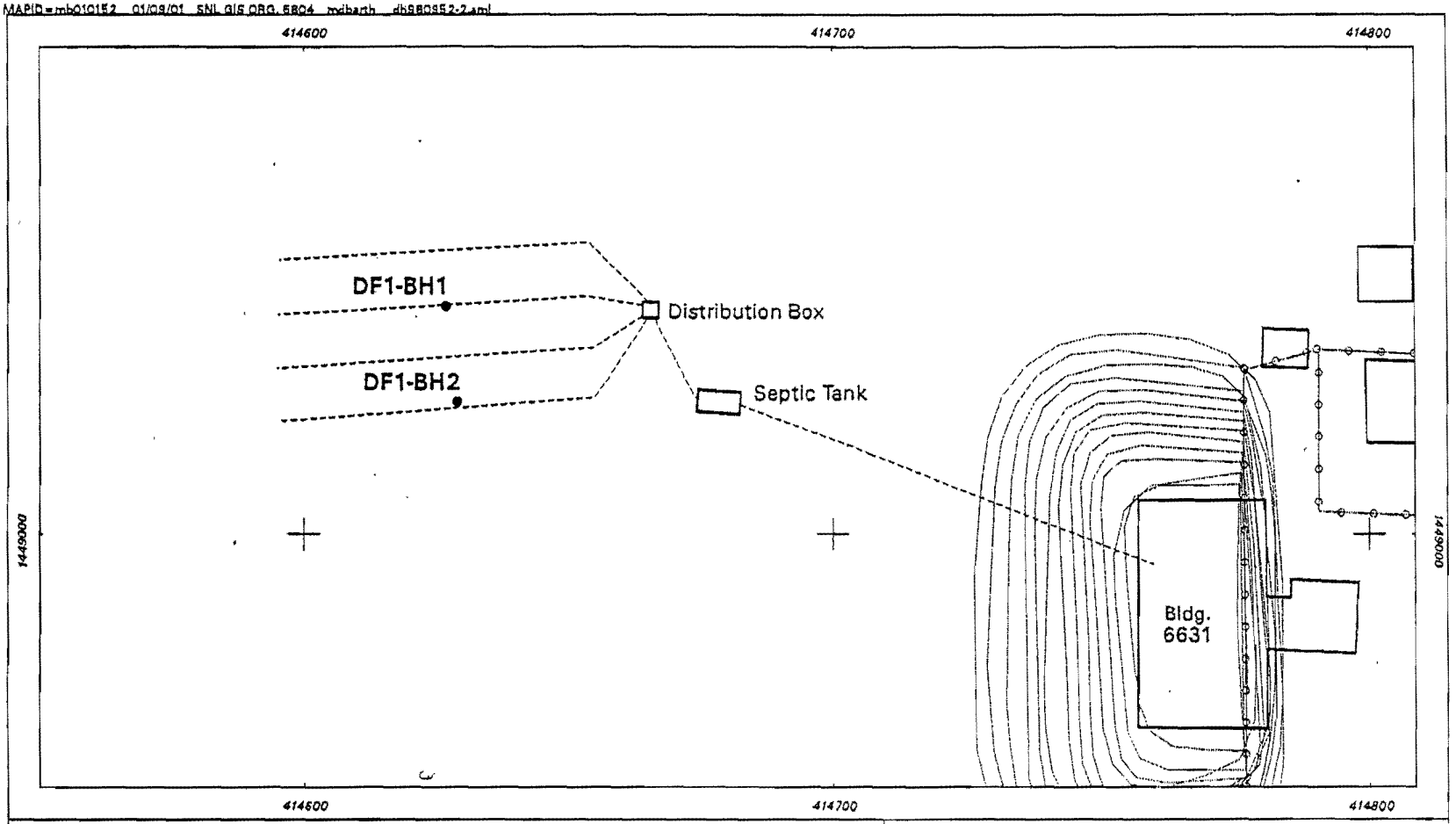
This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1033 was last updated Dec 17, 2001.

MAPID=mb010152 01/09/01 SNL GIS ORG. 6804 mdbarth db980852-2.aml



Legend

- Existing Soil Boring Location
- Fence
- 1 Foot Contour
- Building / Concrete Pad
- Drain Line
- Septic Tank, Distribution Box

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Site Map for the Building 6631 Septic System, TA-III SWMU 1033

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

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Area of Concern (AOC) No. 1034: Building 6710 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank plumbed to a single seepage pit, and was located approximately 100 feet west of the southwest corner of Building 6710, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization. Residual tank contents were pumped out and the tank cleaned in March 1996. A field inspection at the site was conducted in September 1999 and the system was located and determined to be intact at that time.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at four locations around the seepage pit in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled directly beneath the seepage pit in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

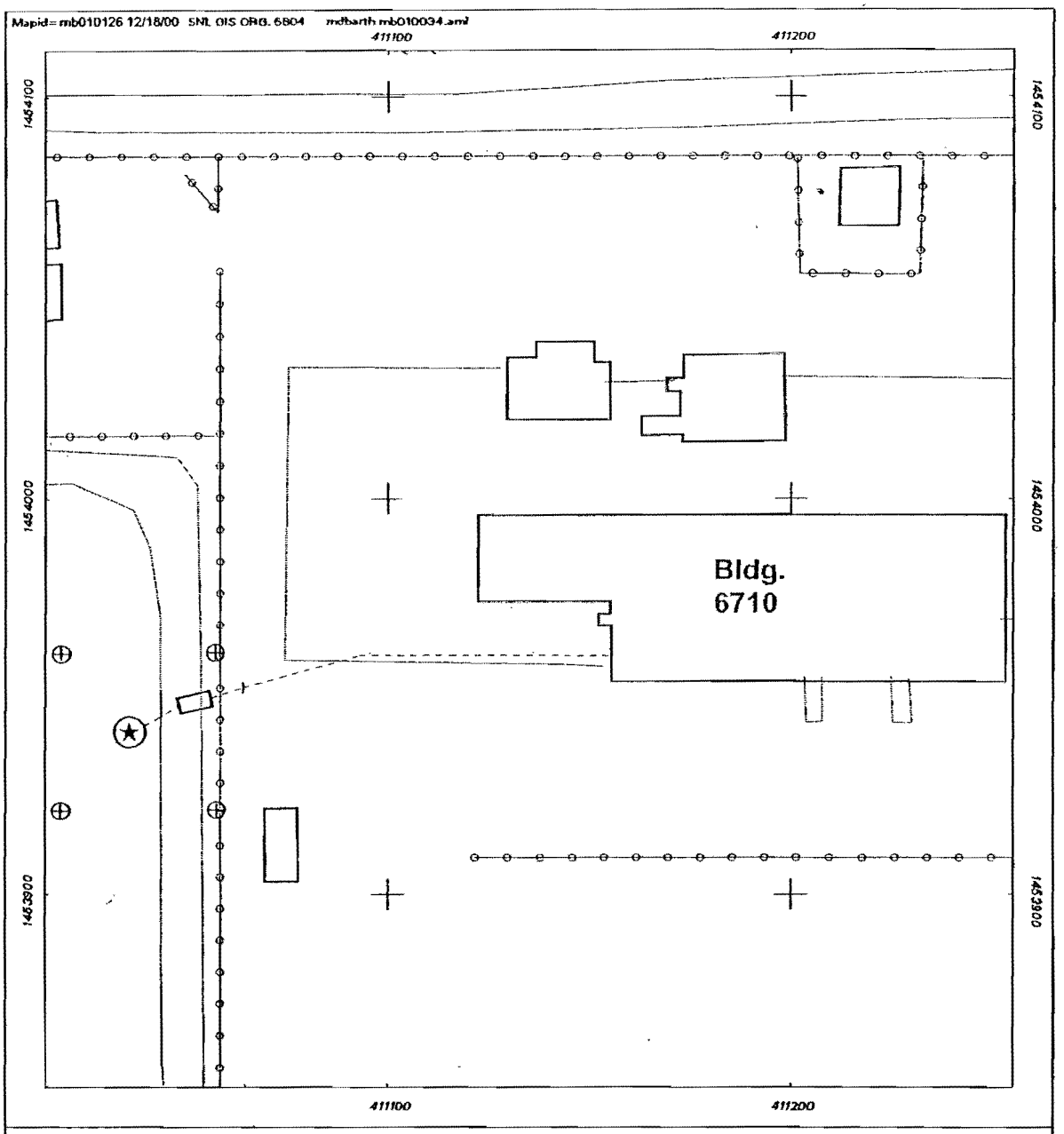
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 230 gallons of effluent (including introduced water added to facilitate pumping) was removed from the septic tank in March 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1034 was last updated Jan 21, 2003.



Legend

- ⊕ Proposed Passive Soil Vapor Sampling Location
- O Seepage Pit
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Septic Tank
- ★ Proposed Soil Boring Location

Site Map of the Bldg. 6710 Septic System, TA-III SWMU 1034

0 20 40
Scale in Feet

0 4.8 8.6
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1035: Building 6715 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and seepage pit located approximately 70 feet west of and outside of the Building 6715 perimeter fence, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in March 1996.

A field inspection was conducted at the site in September 1999 and the septic tank and seepage pit were located and determined to be intact at that time.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at four locations around the seepage pit in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled directly beneath the seepage pit in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

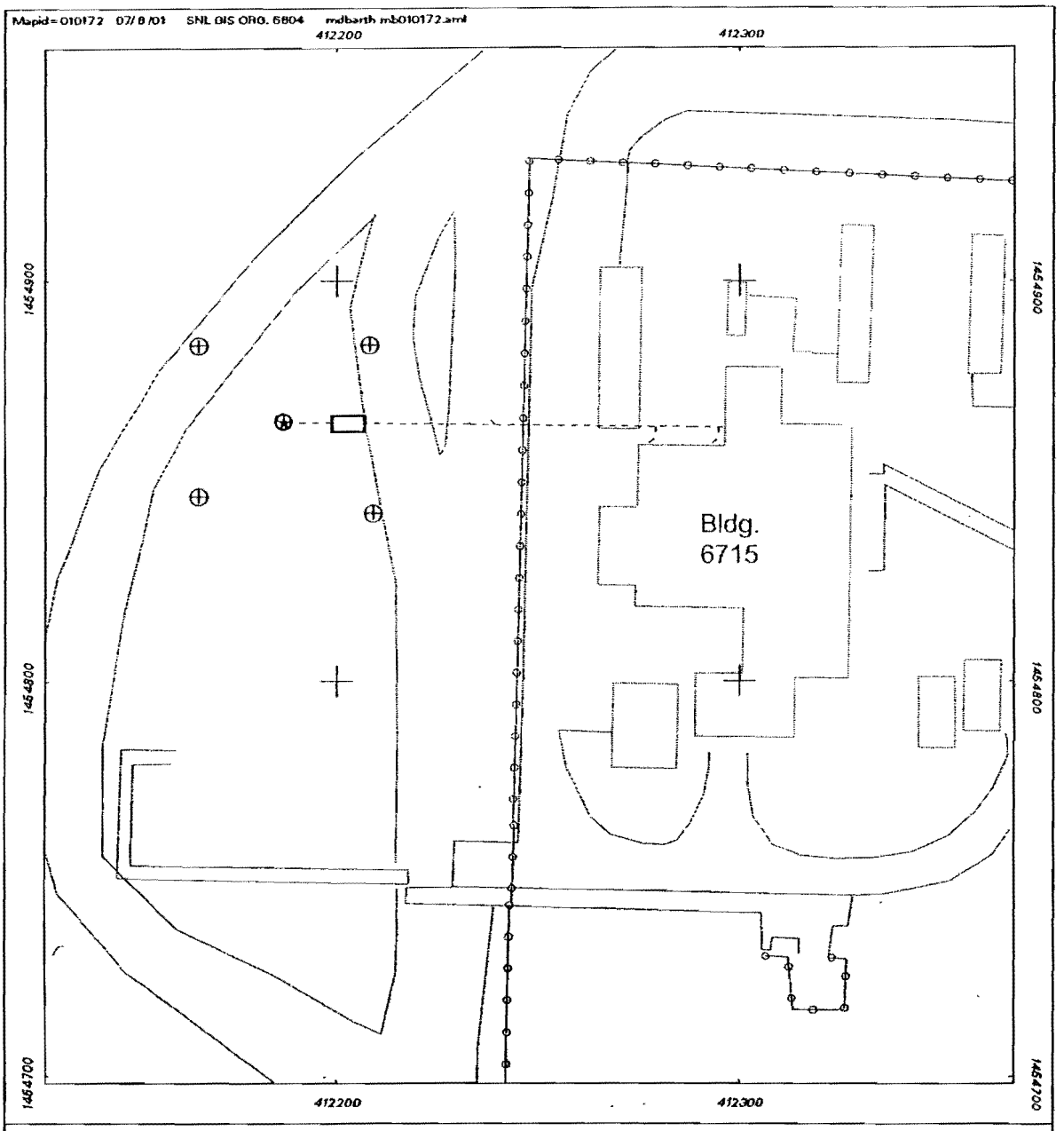
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 615 gallons of effluent (including introduced water added to facilitate pumping) was removed from the septic tank in March 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1035 was last updated Jan 21, 2003.



Legend

- Building / Structure
- Edge of Pavement
- Fence
- Seepage Pit
- Septic System Drain Line
- Septic Tank
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 6715 Septic System, TA-III SWMU 1035

0 20 40
Scale in Feet

0 4.8 8.8
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1036: Building 6922 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield located approximately 80 feet west-northwest of Building 6922, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992 and 1995 for waste characterization purposes. The tank was inspected with the intention of pumping the remaining residual contents in January 1996, but it was found to be empty and dry. It was flushed and cleaned out with 220 gallons of clean water from Building 6922.

A backhoe was used to expose and locate the drainfield drain lines in May 1997.

Shallow soil samples were collected from two borings drilled in the drainfield area in June 1998 and again in August 1999. The samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

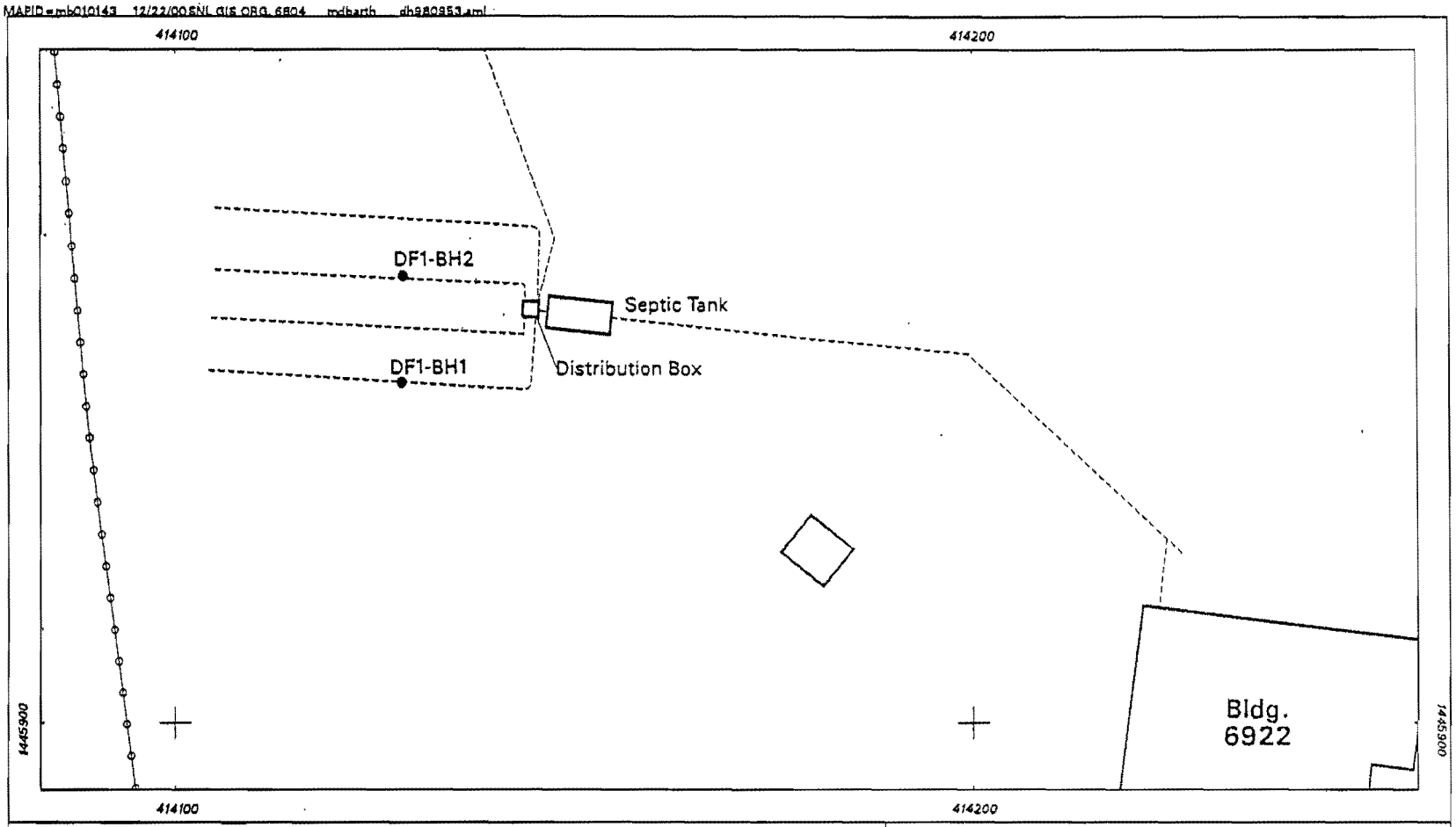
This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1036 was last updated Dec 17, 2001.

MAPID=mb010143 12/22/00SNL GIS ORG. 6804 mdbarth dh980953.aml



Legend

- Existing Soil Boring Location
- Fence
- Building / Structure
- Drainline
- Septic Tank
  Distribution box

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Site Map for the Building 6922 Septic System, TA-III SWMU 1036

0 10 20
Scale in Feet

0 2.4 4.8
Scale in Meters

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Area of Concern (AOC) No. 1052: Building 803 Seepage Pit, TA-I

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a single seepage pit located approximately 20 feet west of Building 803. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection at the site was conducted in September 1999 and the seepage pit was located and determined to still be intact at that time.

As shown on the site map, passive soil vapor samplers were installed at four locations around the seepage pit in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled directly beneath the seepage pit in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

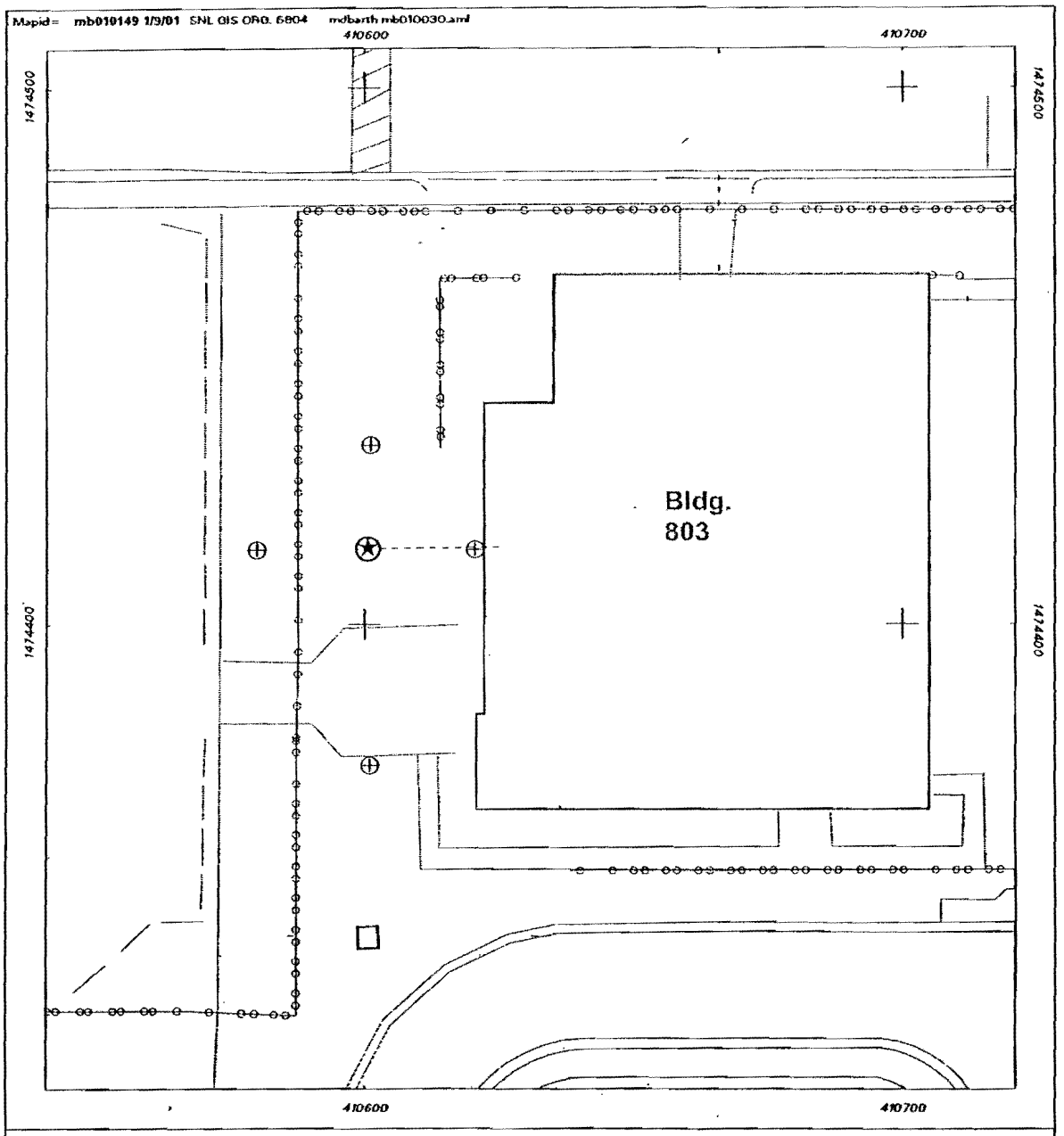
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1052 was last updated Jan 22, 2003.



Legend

- Seepage Pit
- Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 803 Drain System, TA-I SWMU 1052

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1072: Bldg. T-52 and Former Bldg. 6500 Septic System, TA-V

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield located on the north side of Building T-52, in TA-V. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III and TA-V. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled or analyzed as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in 1992 and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in August 1996.

A backhoe was used to expose and locate the drainfield drain lines in June 1997.

Shallow soil samples were collected from five borings drilled in the drainfield area in July 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

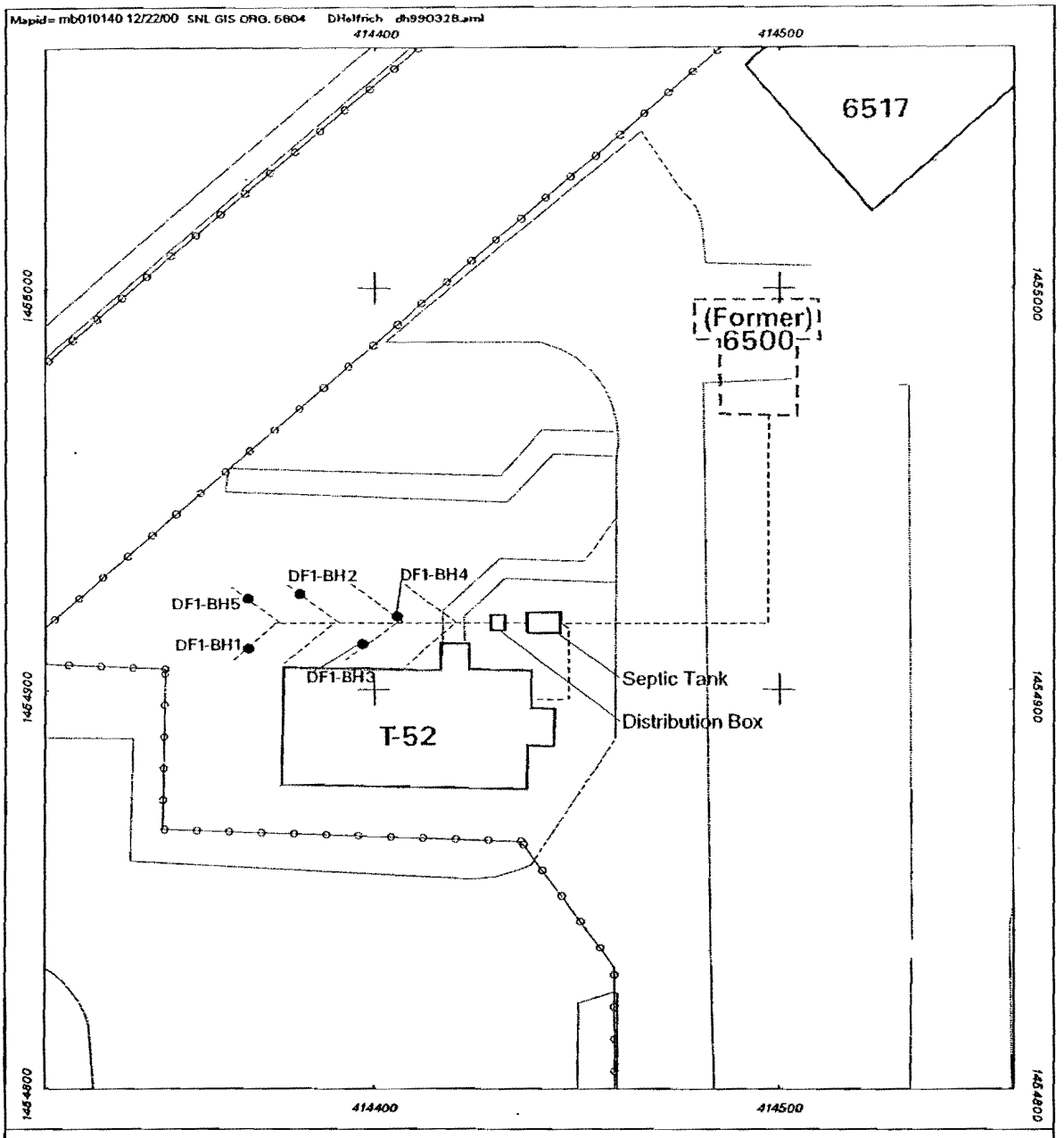
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 530 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in August 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1072 was last updated Dec 17, 2001.



Legend

- Existing Soil Boring Location
- Septic Tank , Distribution Box
- Road / Sidewalk
- Drain Line
- Fence
- Building / Structure
- Approximate Location of Former Building 6500

Site Map of the Building T-52, and Former Bldg. 6500 Septic System, TA-V, SWMU 1072

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1073: Building 6580 Seepage Pit (TA-V)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this seepage pit is located approximately 50 feet west of the northwest corner of Building 6580, in a landscaped median in TA-V. It is assumed that this unit was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III and TA-V. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified.

Current Status of Work

A field inspection was conducted at the site in July 1999 and the seepage pit was located and determined to still be intact at that time. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, sampling was conducted at this site. As shown on the site map, a single soil sample boring was drilled directly beneath the seepage pit in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

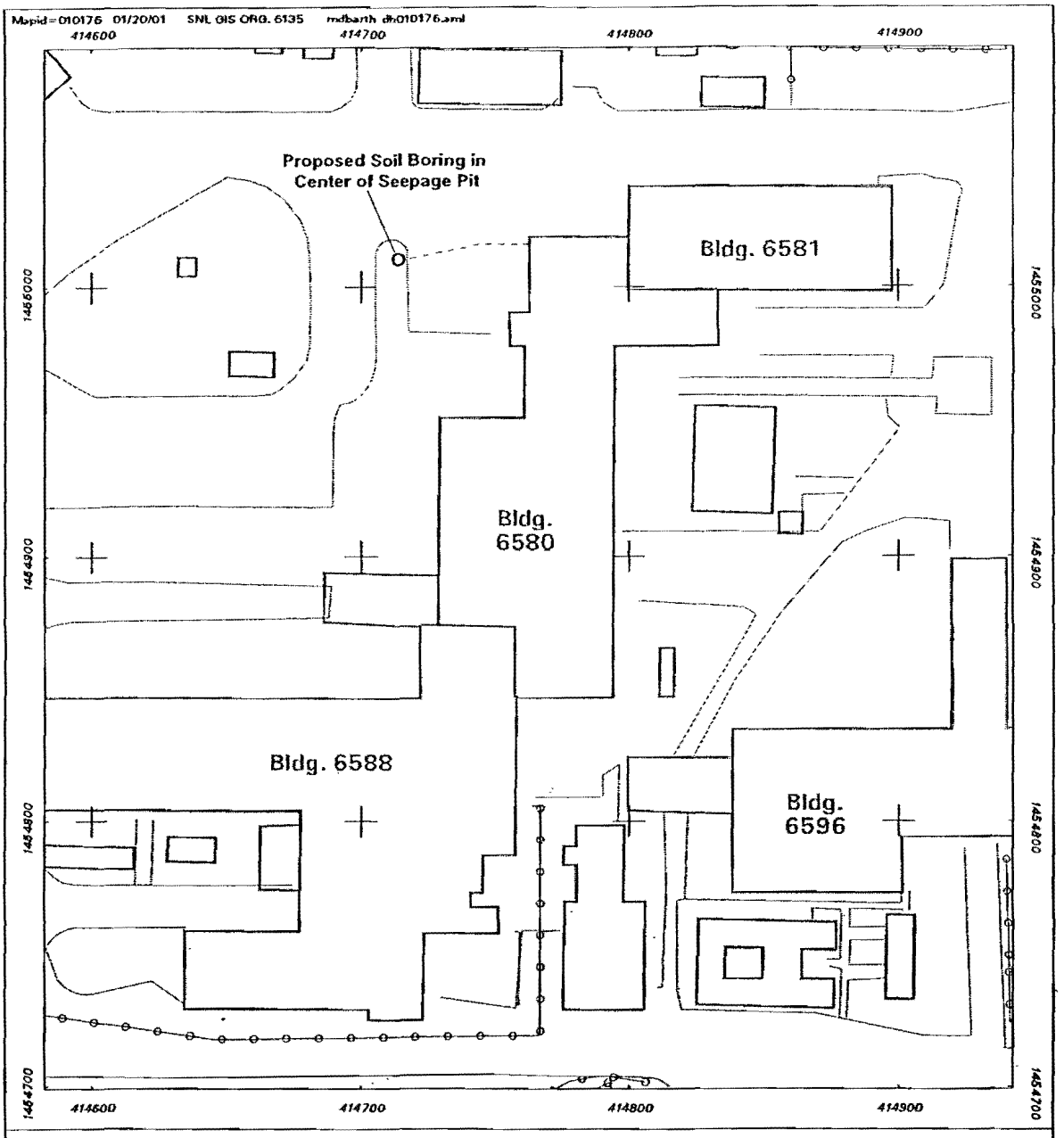
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1073 was last updated Jan 23, 2003.



Legend

- O — Seepage Pit / Proposed Sample Boring Location
- Drain Line
- Building / Structure
- Edge of Pavement
- Fence

Site Map of the Bldg. 6580 Drain System, TA-V SWMU 1073

0 30 60
Scale in Feet

0 7.2 14.4
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1077: Building 6920 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield plumbed to Building 6920, and was located approximately 60 feet northwest of Building 6920 in TA-III. This system was constructed after October 1989 and was abandoned in June 1991 when the City of Albuquerque sanitary sewer system was extended into TA-III, including this facility. Therefore, the septic system was operational for less than two years. At some point after 1991 the septic tank was filled in with dirt. Building 6926 was expanded to the east and over the area of the former drainfield in approximately 1998.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical results for soil samples collected beneath the drainfield indicated that constituents of concern were not released to the environment

from this system.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991 for waste characterization purposes. Although no information has been found to indicate that the residual tank contents (if any remain) were removed from the tank, it is very likely that it was pumped before being filled with dirt.

Shallow soil samples were collected from two borings drilled in the drainfield area in May 1998 in order to clear the site for the Building 6926 expansion project. The drainfield area was covered with asphalt pavement at the time of the sampling, so it was not considered feasible to use a backhoe to physically locate the lines. Line locations were instead based on SNL/NM engineering drawings which were determined to be accurate based on surface indications (cleanouts) of the septic system location. Soil samples collected at the site were analyzed for volatile organic compounds (VOCs), high explosive (HE) compounds, metals, and radionuclides by gamma spectroscopy.

The results of this investigation were summarized in a brief letter report dated May 21, 1998, which was distributed internally to SNL/NM and Department of Energy personnel. Analytical results for soil samples collected beneath the drainfield indicated that significant concentrations of contaminants had not been released to the environment for the brief period of time that this system was operational.

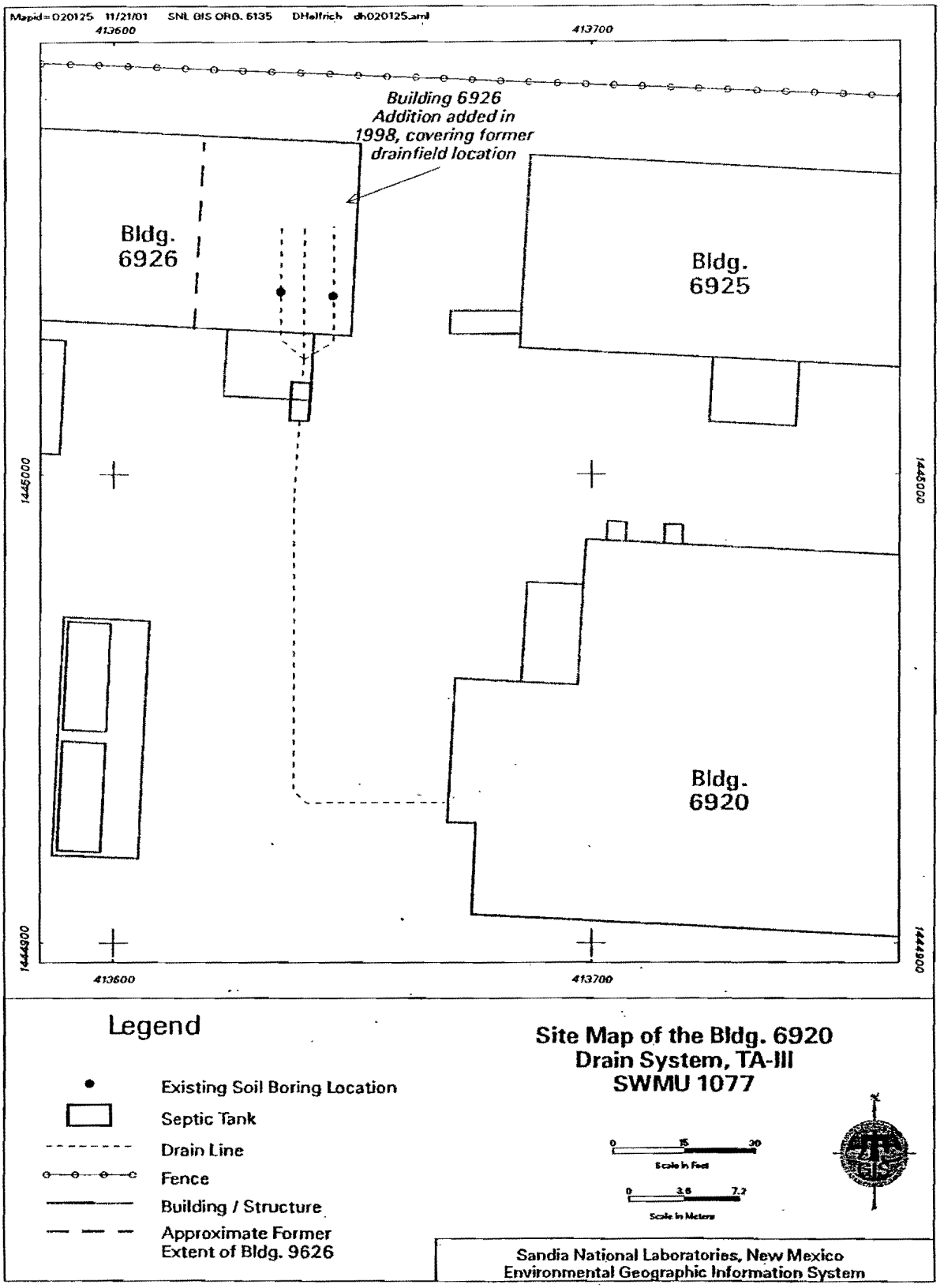
Future Work Planned

No future work is planned for this site. The area of the former drainfield is now covered by the expanded Building 6926.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date. Effluent was most likely removed from the septic tank before it was filled with dirt.

Information for ER Site 1077 was last updated Dec 17, 2001.


Mapid=020125 11/21/01 SNL GIS ORD. 6135 DHelfrich dh020125.aml
413600
413700
Building 6926
Addition added in
1998, covering former
drainfield location
Bldg.
6926
Bldg.
6925
Bldg.
6920
1445000
1444900
Legend
Existing Soil Boring Location
Septic Tank
Drain Line
Fence
Building / Structure
Approximate Former
Extent of Bldg. 9626
Site Map of the Bldg. 6920
Drain System, TA-III
SWMU 1077
0 15 30
Scale in Feet
0 3.6 7.2
Scale in Meters
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Environmental Geographic Information System

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Area of Concern (AOC) No. 1078: Building 6640 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank and a drainfield located approximately 60 and 70 feet north and west respectively of Building 6640, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991 for waste characterization purposes. No information has been found to indicate that residual septic tank contents (if any remain) have been removed.

A field inspection at the site was conducted in September 1999 and the system was not located. A backhoe was used at the site in March 2002 to physically locate the drainfield drainlines. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, three soil sample boring were drilled directly beneath drainfield drainlines in August 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

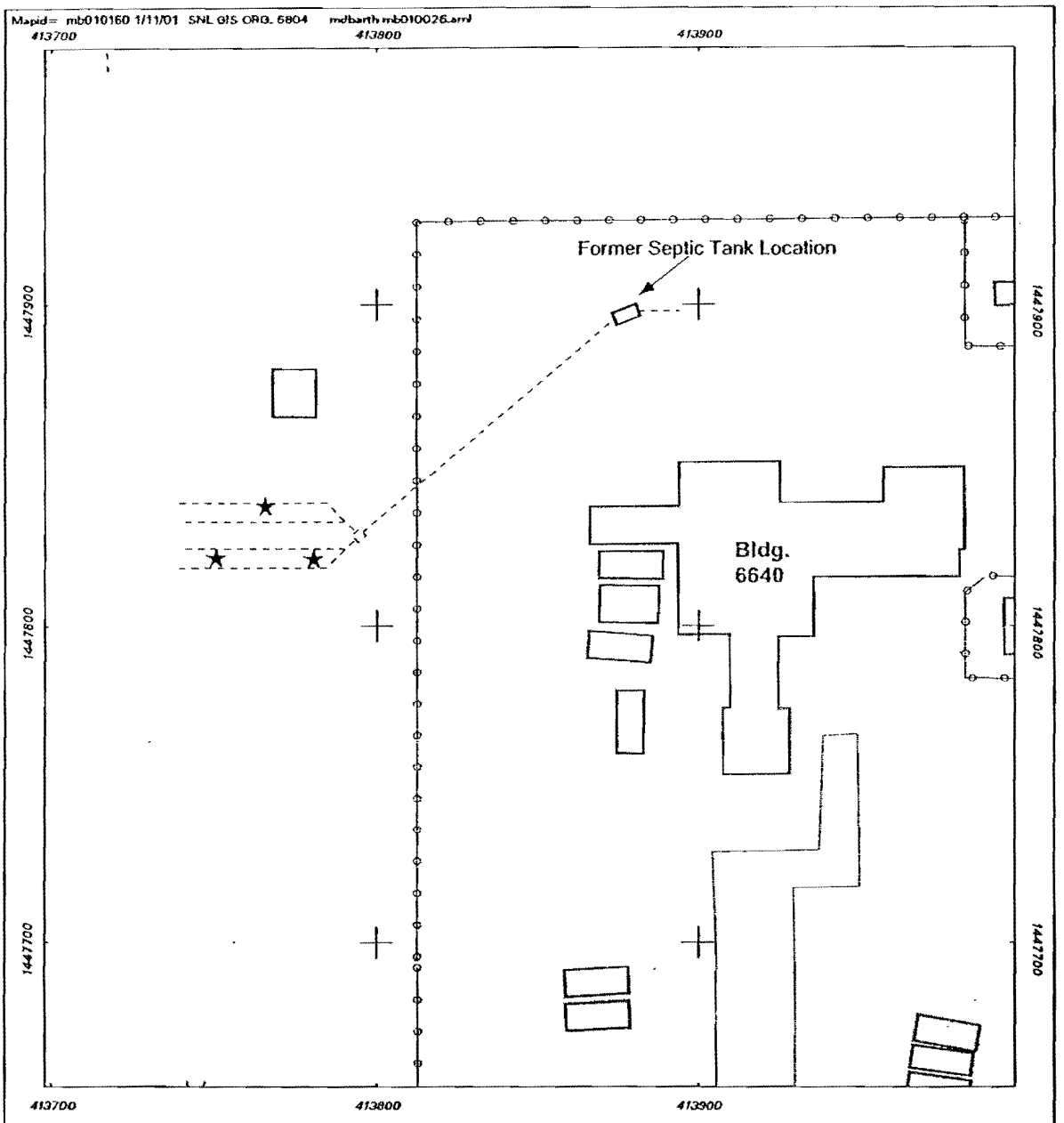
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1078 was last updated Jan 17, 2003.



Legend

- Former Septic Tank/Distribution Box
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Proposed Soil Boring Location

Site Map of the Bldg. 6640 Septic System, TA-III SWMU 1078

0 25 50
Scale in Feet

0 6 12
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1079: Building 6643 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank and a drainfield located about 60 and 110 feet respectively north of the northeast corner of Building 6643, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in January 1996.

A field inspection at the site was conducted in September 1999 and the septic tank and drainfield distribution box were located. It is assumed that the drainfield was also intact at that time. A backhoe was used at the site in March 2002 to physically locate the drainfield drainlines. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, three soil sample boring were drilled directly beneath drainfield drainlines in August 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

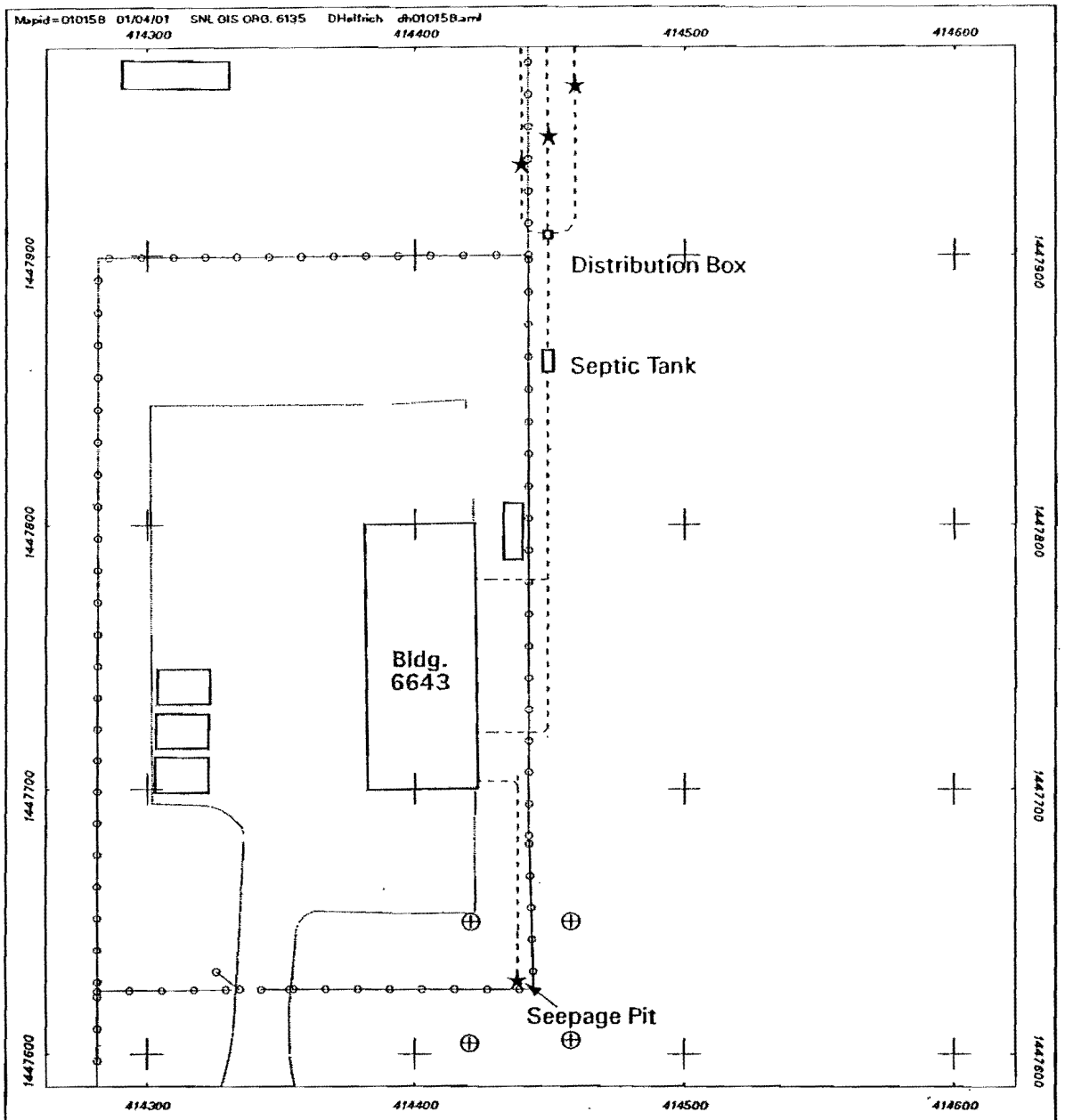
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 220 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in January 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1079 was last updated Jan 17, 2003.



Legend

- ★ Proposed Soil Boring Location
- ⊕ Proposed Passive Soil Vapor Sampling Location
- Fence
- Building / Structure
- Edge of Pavement
- Septic System Drain Line
- Septic Tank / Distribution Box
- Seepage Pit

Site Map of the Bldg. 6643 Drain & Septic System, TA-III SWMU 1079 (Septic System), and SWMU 1120 (Seepage Pit)

0 30 60
Scale in Feet

0 7.2 14.4
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1080: Building 6644 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank and a drainfield located on the southwest side of Building 6644, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in February 1996. A backhoe was used at the site in March 2002 to physically locate the drainfield drainlines. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, three soil sample boring were drilled directly beneath drainfield drainlines in August 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

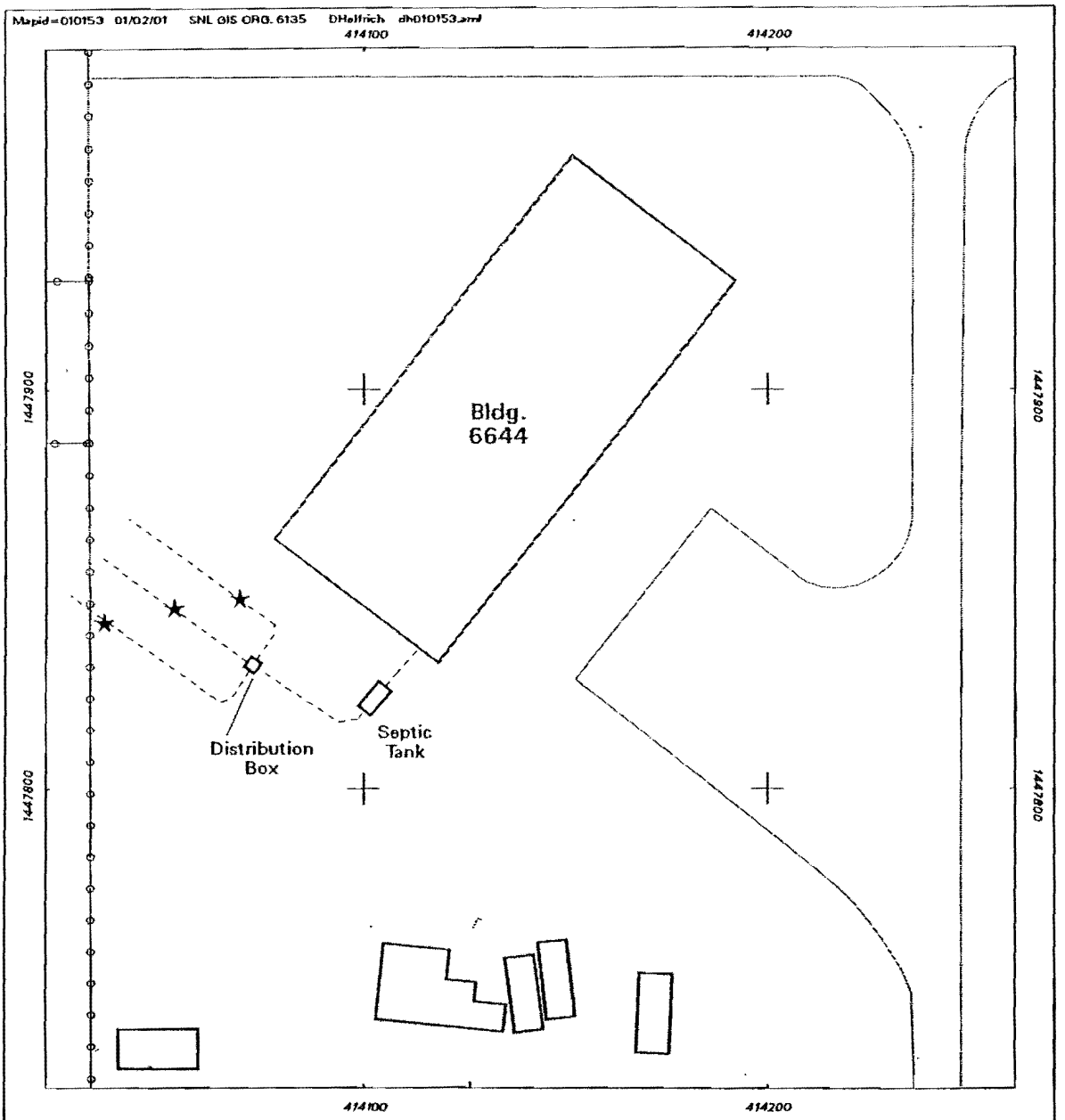
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 395 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in February 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1080 was last updated Jan 17, 2003.



Legend

- ★ Proposed Soil Boring Location
- Septic Tank / Distribution Box
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence

Site Map of the Bldg. 6644 Septic System, TA-III SWMU 1080

0 20 40
Scale In Feet

0 4.8 9.6
Scale In Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1081: Building 6650 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that two individual septic systems were present at this site. Each system consisted of a septic tank connected to a pair of seepage pits and were located west of the northwest corner of Building 6650, in TA-III. It is assumed that an original (northern) system was constructed, and then at some point was apparently augmented or replaced by a second (southern) system. It is also assumed that these systems were abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the (assume southern) septic tank in 1992 and 1995 for waste characterization purposes. Residual tank contents were pumped out from the southern tank and the tank cleaned in February 1996. No information has been found to indicate that samples or residual effluent (if any) have been removed from the north septic tank.

A field inspection at the site was conducted in September 1999 and the two systems were located and determined or assumed to be intact at that time. There was no access manhole or surface expression found for the northern septic tank, but the apparent tank location was marked by yellow guard posts and was in agreement with the location for that tank shown on engineering drawings. The southern system septic tank was located inside of the facility perimeter fence, and in the parking lot on the west side of Building 6650. All four seepage pits were intact at that time.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at seven locations around the septic system in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled directly beneath each of the four seepage pits at this site in August 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

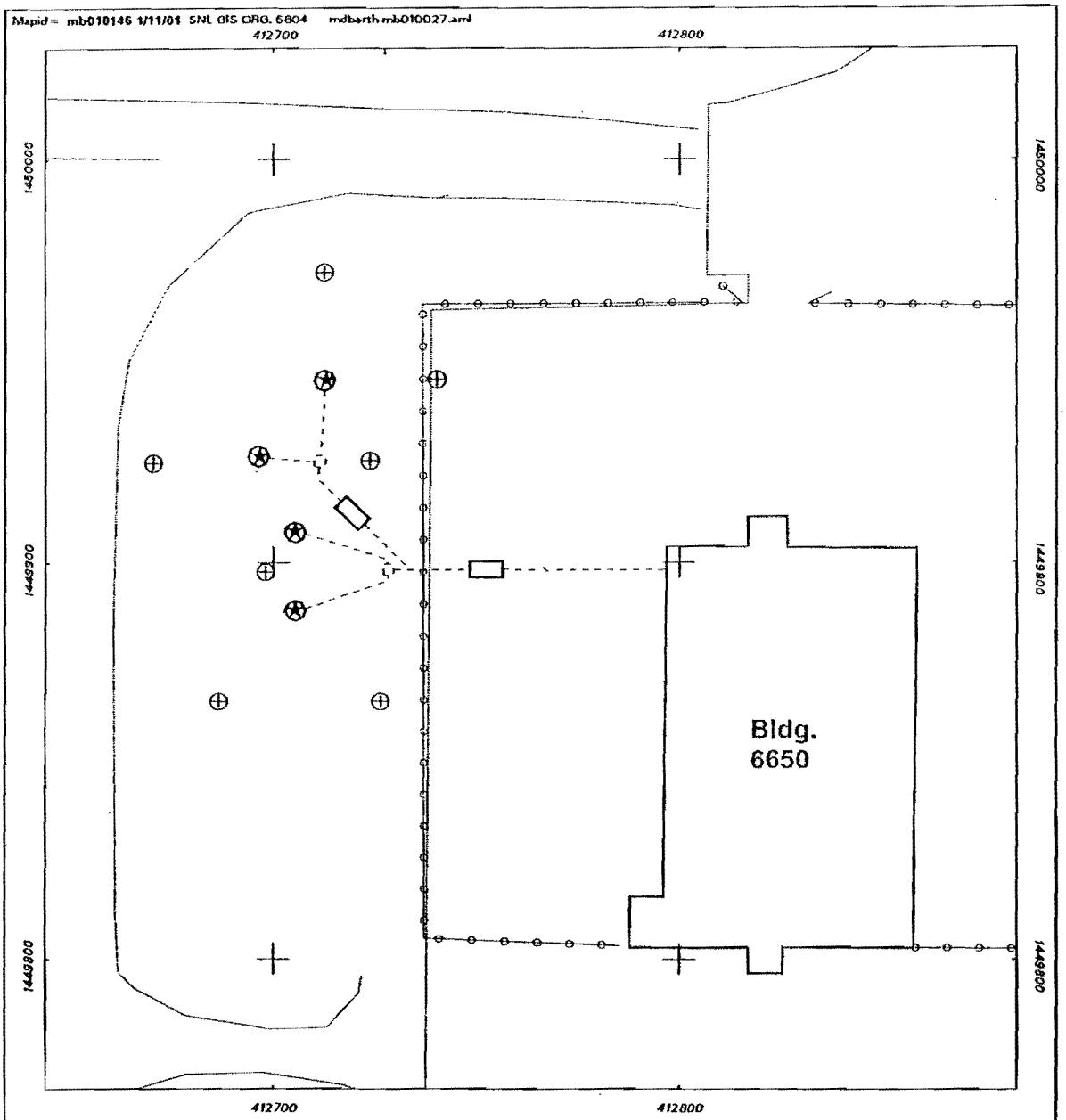
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 710 gallons of effluent (including introduced water added to facilitate pumping) was removed from the southern septic tank in February 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1081 was last updated Jan 20, 2003.



Legend

- Building / Structure
- Edge of Pavement
- Fence
- Septic Tank
- Seepage Pit
- Septic System Drain Line
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 6650
Septic Systems, TA-III
SWMU 1081

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1082: Building 6620 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank plumbed to both a seepage pit and drainfield on the northeast side of Building 6620, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled or analyzed as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

No information has been found to indicate that the septic tank contents have ever been sampled, or removed from the tank. It is also not known if any effluent remains in the tank.

A backhoe was used to expose and locate the drainfield drain lines in May 1997.

Shallow soil samples were collected from three borings drilled in the drainfield area in June 1998 and again in August 1999. Soil samples were also collected from a single boring drilled down through the center of and beneath the seepage pit in January 1999, and again in August 1999. Soil samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

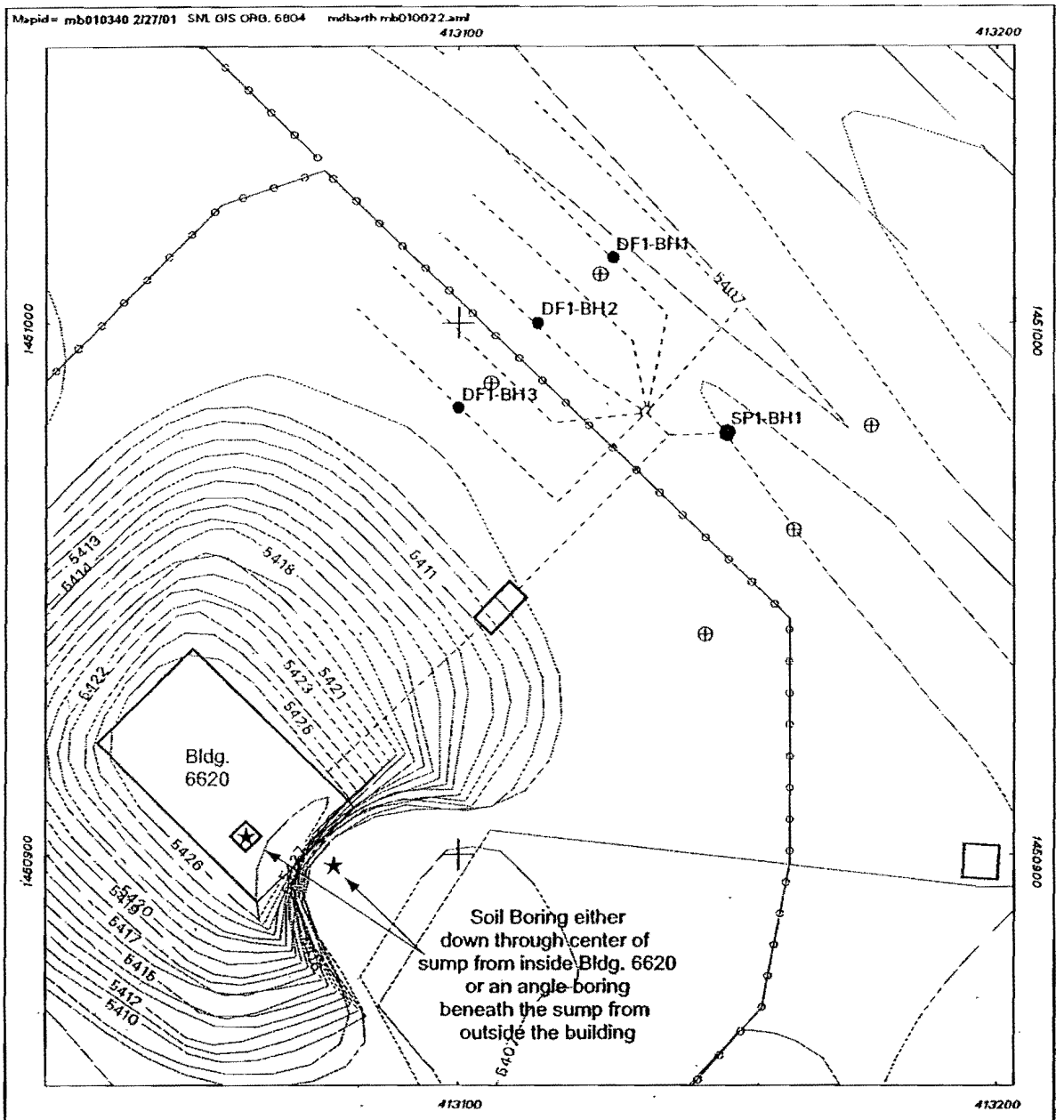
Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed at the site to determine the presence or absence of VOCs at the site. This work is scheduled in Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at five locations in the drainfield area. This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1082 was last updated Dec 17, 2001.



Legend

- Internal Sump
- Seepage Pit
- Septic Tank/Distribution Box
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Locations
- Existing Soil Boring Locations

Site Map of the Bldg. 6620 Sump and Septic System, TA-III SWMU 1009 (Internal Sump); and 1082 (Septic System)

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1083: Building 6570 Septic System (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and seepage pit located approximately 100 feet west of Building 6570, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991 for waste characterization purposes. No information has been found to indicate that the residual septic tank contents have been removed.

A field inspection at the site was conducted in September 1999 and the system was not located. Yellow metal protective posts at the location of the system indicated on engineering drawings were found, but no above-grade system components were identified. It was therefore unknown at that time if this system was intact or still in existence. A backhoe was therefore used at the site in March 2002 to physically locate the unit within the yellow posts, and it was determined to consist of a 6-ft. by 6-ft gravel drywell.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at four locations around the drywell in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled directly beneath the drywell in August 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

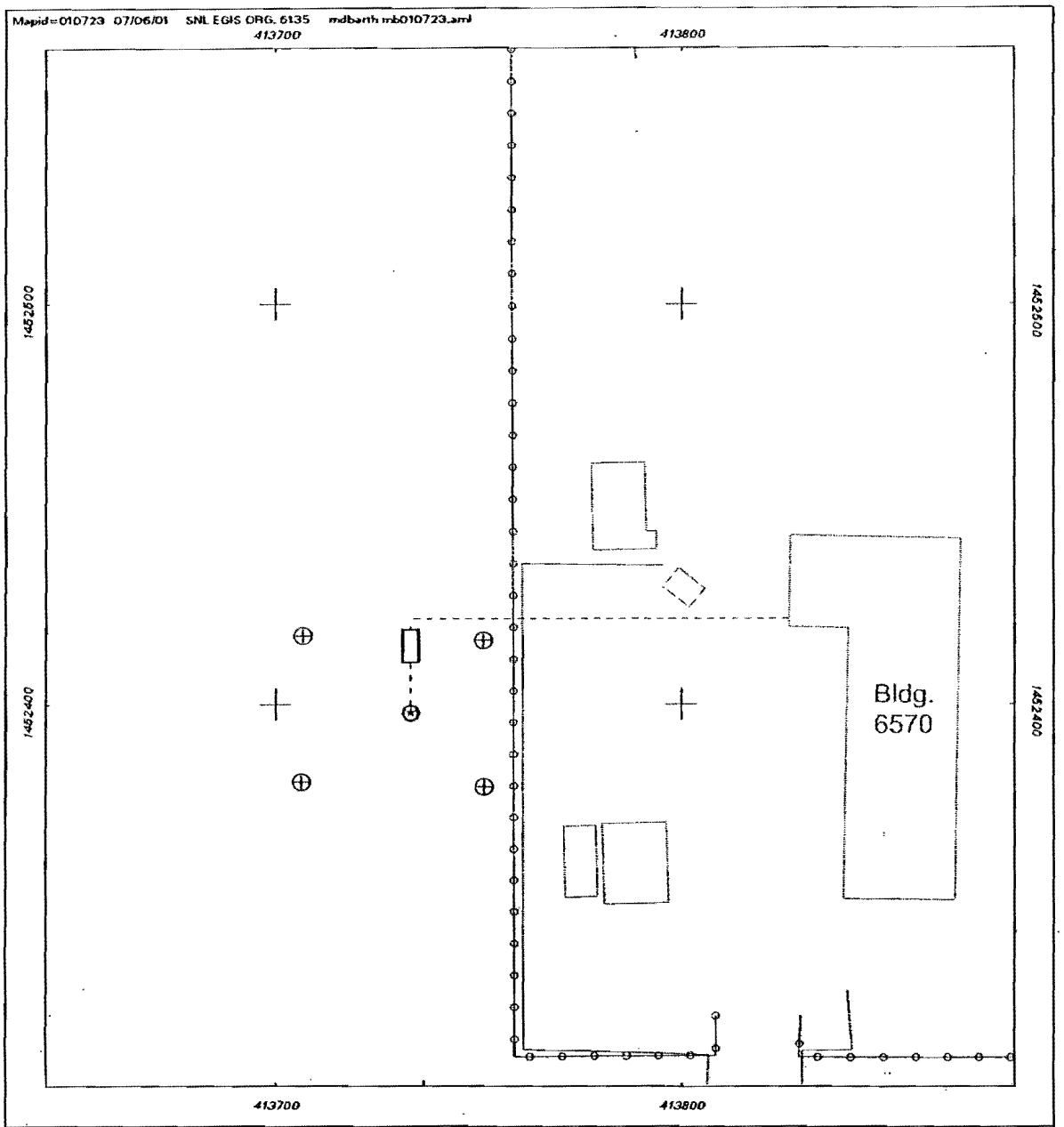
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1083 was last updated Jan 20, 2003.



Legend

- Septic Tank
- Seepage Pit
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 6570 Septic System, TA-III SWMU 1083

0 20 40
Scale in Feet

0 4.8 8.6
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1084: Building 6505 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield located approximately 80 feet west of the southwest corner of Building 6505, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991 for waste characterization purposes. No information has been found to indicate that the residual septic tank contents have been removed.

A field inspection at the site was conducted in September 1999 and no surface expression of this system was found. A backhoe was therefore used at the site in March 2002 to physically locate the drainfield drainlines. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at five locations in the septic system drainfield area in April 2002 to detect the presence or absence of VOCs at the site. Three soil sample boring were also be drilled directly beneath drainfield drainlines in August 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

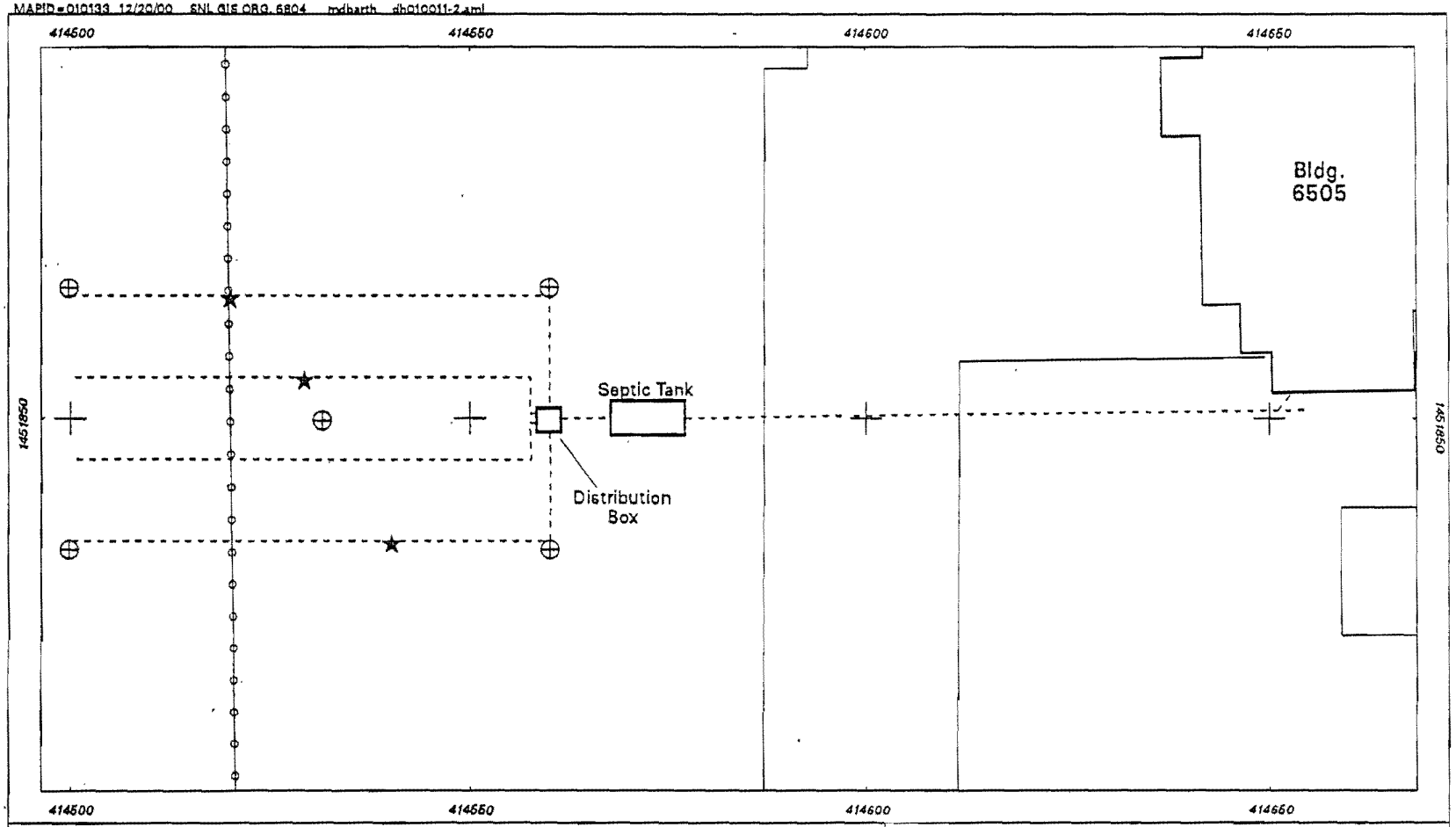
This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1084 was last updated Jan 17, 2003.

MAPID=010133 12/20/00 SNL GIS ORG. 6804 mdbarth dh010011-2.aml



Legend

- Proposed Soil Boring Location
- Proposed Passive Soil Vapor Sampling Location
- Septic System Drain Line
- Building 6505
- Septic Tank / Distribution Box
- Fence
- Road / Pavement

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Environmental Geographic Information System

Site Map of the Bldg. 6505 Septic System, TA-III SWMU 1084

0 10 20
Scale in Feet

0 3.4 6.8
Scale in Meters

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Area of Concern (AOC) No. 1086: Building 6523 Septic System, TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that the septic system consisted of a septic tank plumbed to a single seepage pit, and are located 15 feet and 45 respectively northwest of the west corner of Building 6523. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991 for waste characterization purposes. No information has been found to indicate that the residual tank contents have been removed.

A field inspection was conducted at the site in July 1999 and the septic tank and seepage pit were located and determined to still be intact. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, a single soil sample boring was drilled directly beneath the seepage pit in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

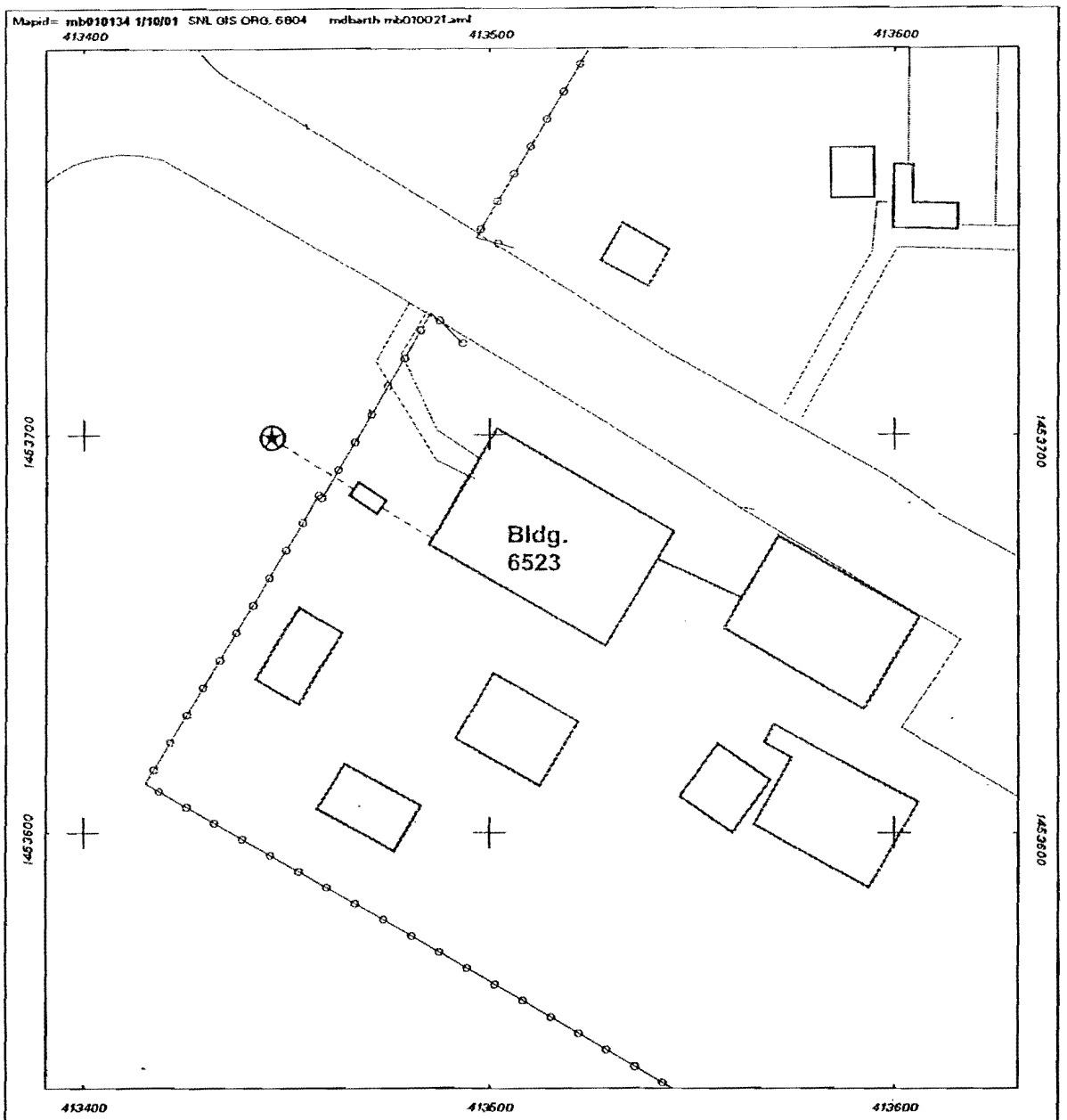
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1086 was last updated Jan 20, 2003.



Legend

- Septic Tank
- Seepage Pit
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Proposed Soil Boring Location

Site Map of the Bldg. 6523 Septic System, TA-III SWMU 1086

0 20 40
Scale in Feet

0 4.9 9.6
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1087: Building 6743 Seepage Pit (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a single seepage pit located approximately 35 feet south of Building 6743, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern at this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection at the site was conducted in September 1999 and the seepage pit was located and determined to still be intact.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at four locations around the seepage pit in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled directly beneath the seepage pit in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

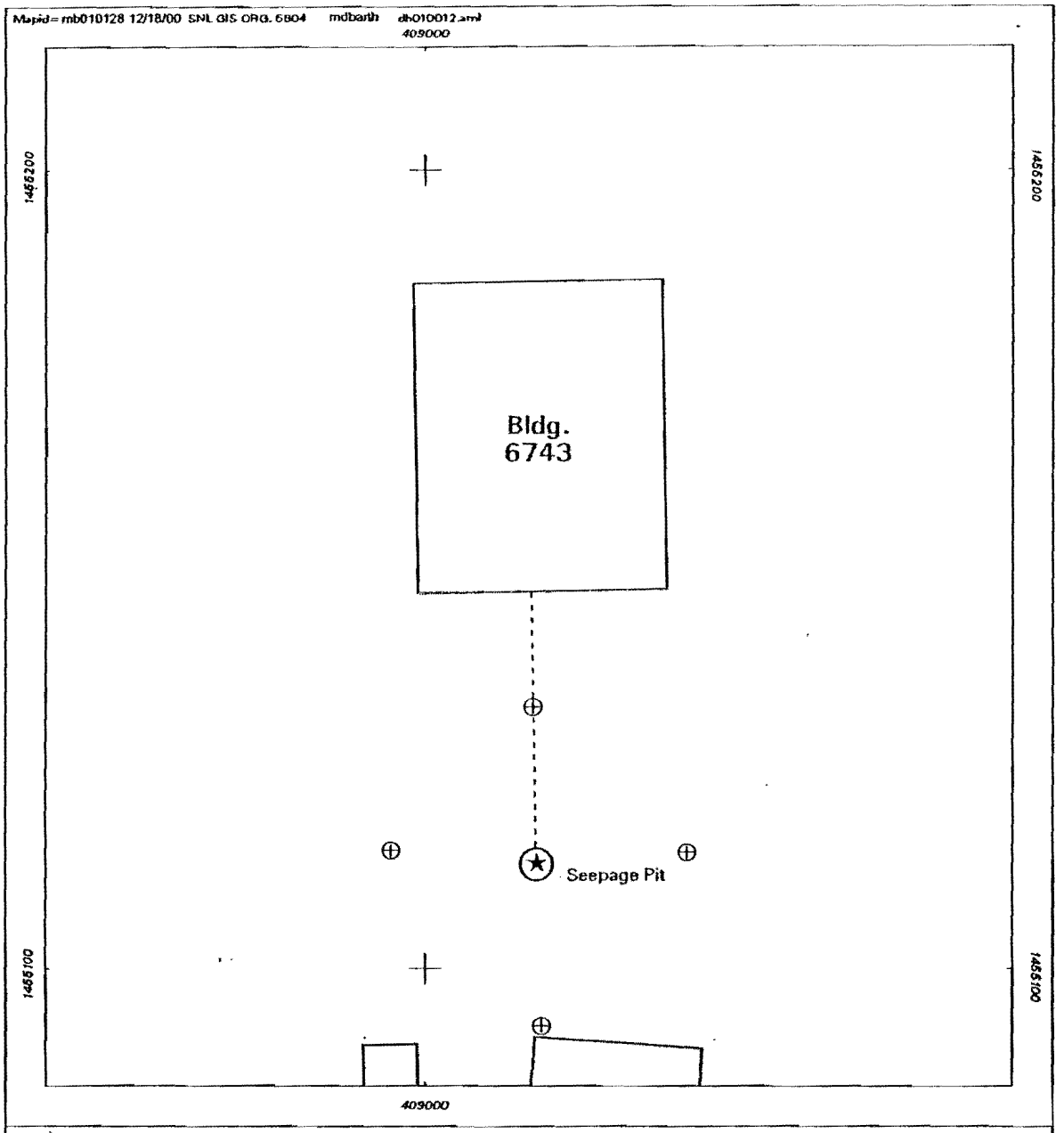
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1087 was last updated Jan 21, 2003.



Legend

- Drain Line
- Building / Structure
- Seepage Pit
- Proposed Passive Soil Vapor Sampling Location
- Proposed Soil Boring Location

Site Map of the Bldg. 6743 Drain System, TA-III SWMU 1087

0 10 20
Scale in Feet

0 2.4 4.8
Scale in Meters

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Area of Concern (AOC) No. 1089: Building 6734 Seepage Pit (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system is located on the east side of Building 6734 in TA-III, and consisted of a single seepage pit. It is assumed that this system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified, and potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection was conducted at the site in September 1999 and the seepage pit was located and determined to still be intact at that time.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, a single soil sample boring was drilled directly beneath the seepage pit in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

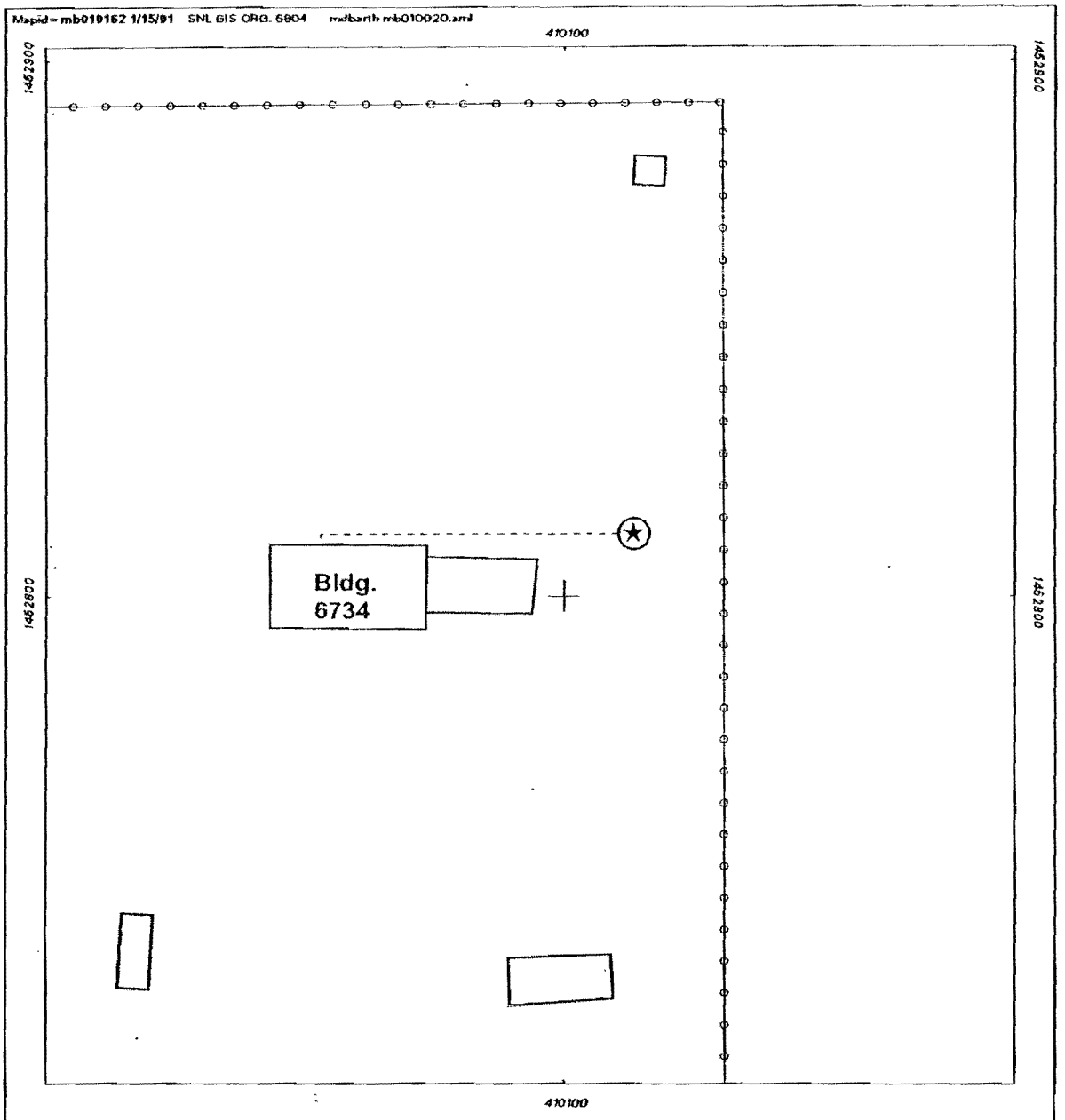
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1089 was last updated Jan 21, 2003.



Legend

- Seepage Pit
- Drain Line
- Building / Structure
- Fence
- Proposed Soil Boring Location

Site Map of the Bldg. 6734 Drain System, TA-III SWMU 1089

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1090: Building 6721 Septic System (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank and a drainfield located about 100 feet southwest of Building 6721, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991 for waste characterization purposes. No information has been found to indicate that the residual tank contents (if any remained) were removed from the tank.

A field inspection at the site was conducted in September 1999 and no surface expression of the septic system was found. It was therefore not known if the system was still intact or in existence at that time. A backhoe was therefore used at the site in March 2002 to physically locate the drainfield drainlines, which were found to be intact.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, three soil sample boring were drilled directly beneath drainfield drainlines in September 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

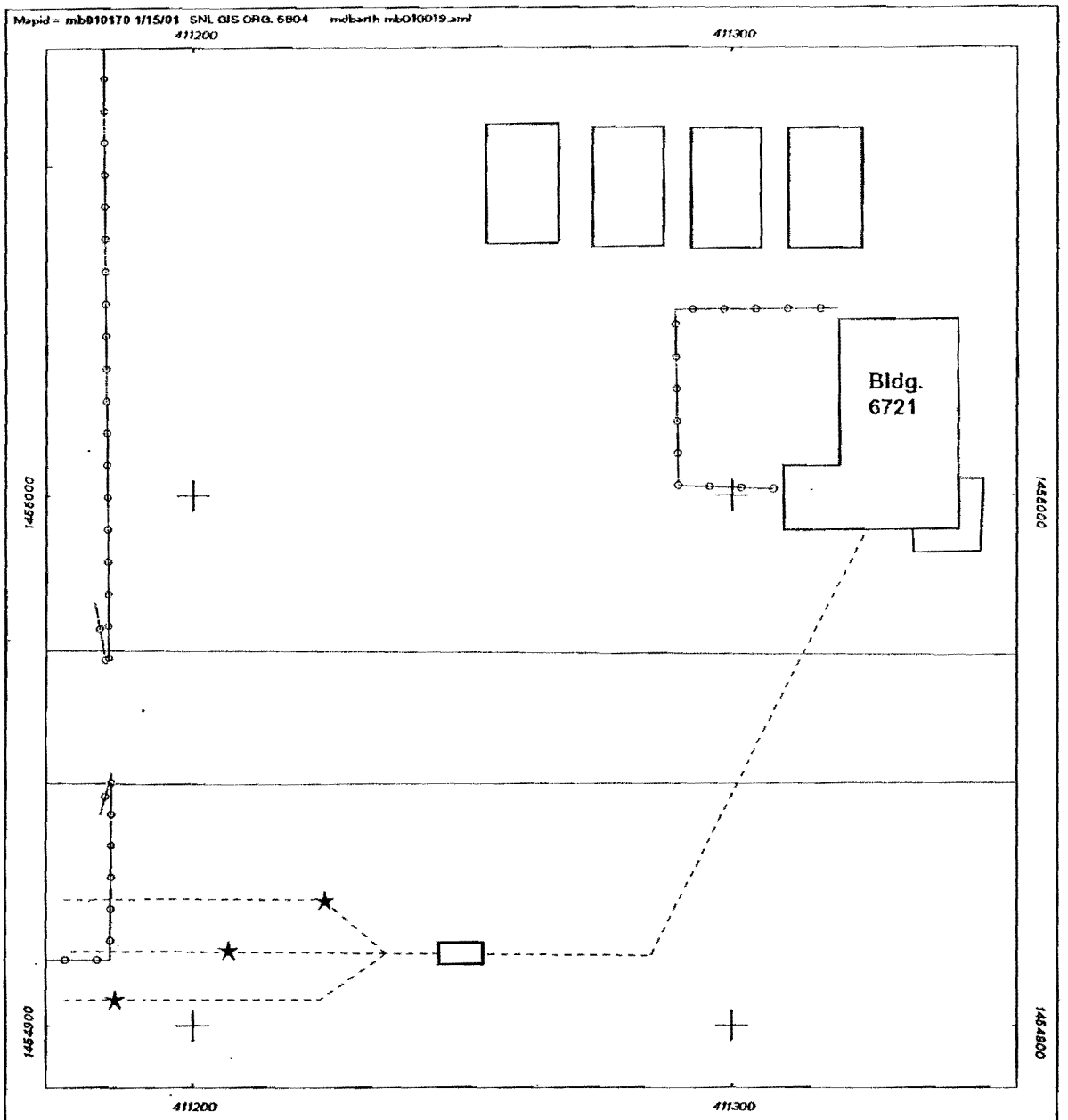
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1090 was last updated Jan 21, 2003.



Legend

- Septic Tank / Distribution Box
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Proposed Soil Boring Location

Site Map of the Bldg. 6721 Septic System, TA-III SWMU 1090

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1091: Building 6720 Septic System TA-III

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicated that this system consisted of a septic tank and a Y-shaped drainfield located approximately 90 feet north of the northwest corner of Building 6720, in TA-III. Three rounds of septic tank sampling were conducted at systems throughout the SNL complex in late 1990 and early 1991, 1992, and in 1995. The 1990-1991 data includes results from a Bldg. 6721 septic tank, but nothing from a Bldg. 6720 tank. The 1992 data does not include results from either a Bldg. 6720 or 6721 tank. The 1995 data includes results from a Bldg. 6720 tank only, and nothing from a Bldg. 6721 tank. In 1996 numerous SNL septic tanks were cleaned out and decontaminated. Pumping was reportedly conducted at a Bldg. 6720 tank, and no mention is made of a Bldg. 6721 tank.

A site inspection was conducted with New Mexico Environment Dept. (NMED) personnel on September 20, 1999, and no above-grade components, or evidence indicating that a Bldg. 6721 septic system existed was found. A backhoe was taken to the site on March 19, 2002, and several exploration trenches were excavated at the location of this system shown on engineering drawings, and again no evidence was found to indicate that this system had been constructed. It is therefore assumed that the system never existed, especially given the fact that there are no restroom facilities in Bldg. 6720. The only drain system found at the site was a seepage pit (Drain and Septic System Site number 1111) on the north side of the building which was connected to a sink inside Bldg. 6720. It is also assumed that the reported sampling and pumping of the Bldg. 6720 septic

tank actually took place at the Bldg. 6721 septic tank, which is located east of and next door to Building 6720. A backhoe was used in March 2002 to locate and confirm the existence of the Building 6721 septic system drainfield. The Bldg. 6721 septic tank was not located, and appeared to have been removed at some point after it was apparently pumped and decontaminated in 1996.

Constituents of Concern

This septic system was determined to never have been constructed, therefore there are no constituents of concern for this site.

Current Hazards

There are no known surface or subsurface hazards at this site.

Current Status of Work

Since this system was determined not to exist, no environmental characterization work will be conducted at the site.

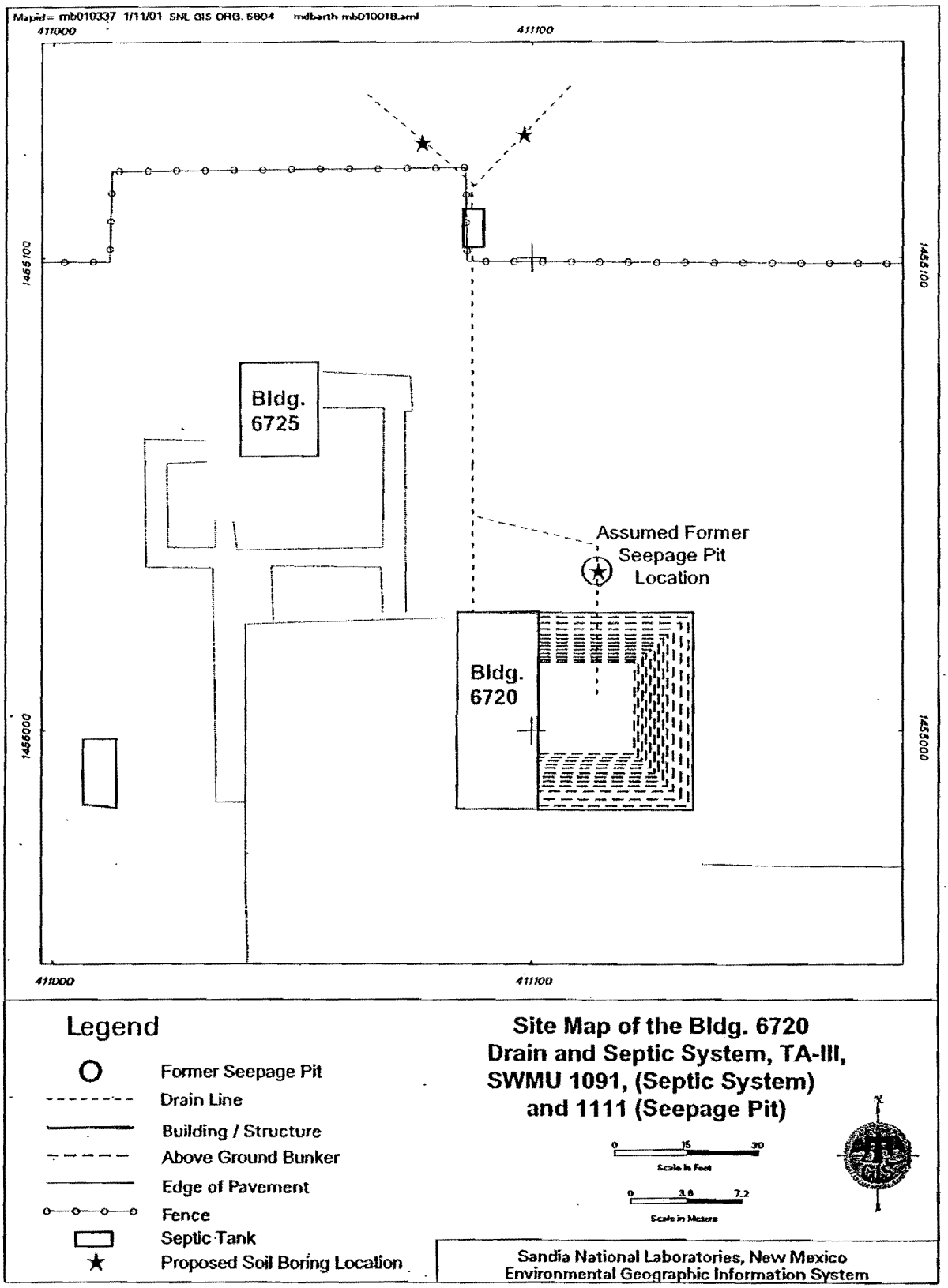
Future Work Planned

Since this system was determined not to exist, no environmental characterization work will be conducted at the site.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated from this site.

Information for ER Site 1091 was last updated Jan 27, 2003.


Mapid= mb010337 1/11/01 SNL GIS ORG. 6804 mdbarth mb010018.aml
411000
411100
1455100
1456000
Bldg. 6725
Bldg. 6720
Assumed Former Seepage Pit Location
Legend
Former Seepage Pit
Drain Line
Building / Structure
Above Ground Bunker
Edge of Pavement
Fence
Septic Tank
Proposed Soil Boring Location
Site Map of the Bldg. 6720 Drain and Septic System, TA-III, SWMU 1091, (Septic System) and 1111 (Seepage Pit)
0 15 30
Scale in Feet
0 3.6 7.2
Scale in Meters
Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1092: MO 228-230 Septic System (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this septic system consisted of a septic tank and a drainfield located about 80 feet west of the southwest corner of this mobile office (MO) complex that includes MOs 228 through 230, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991 for waste characterization purposes. No information has been found to indicate that the residual tank contents (if any remained) were removed from the tank.

A field inspection at the site was conducted in September 1999 and no surface expression of the septic system was found. It was therefore not known if the system was still intact or in existence at that time. A backhoe was therefore used at the site in March 2002 to physically locate the drainfield drainlines, which were found to be intact.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, three soil sample boring were drilled directly beneath drainfield drainlines in September 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

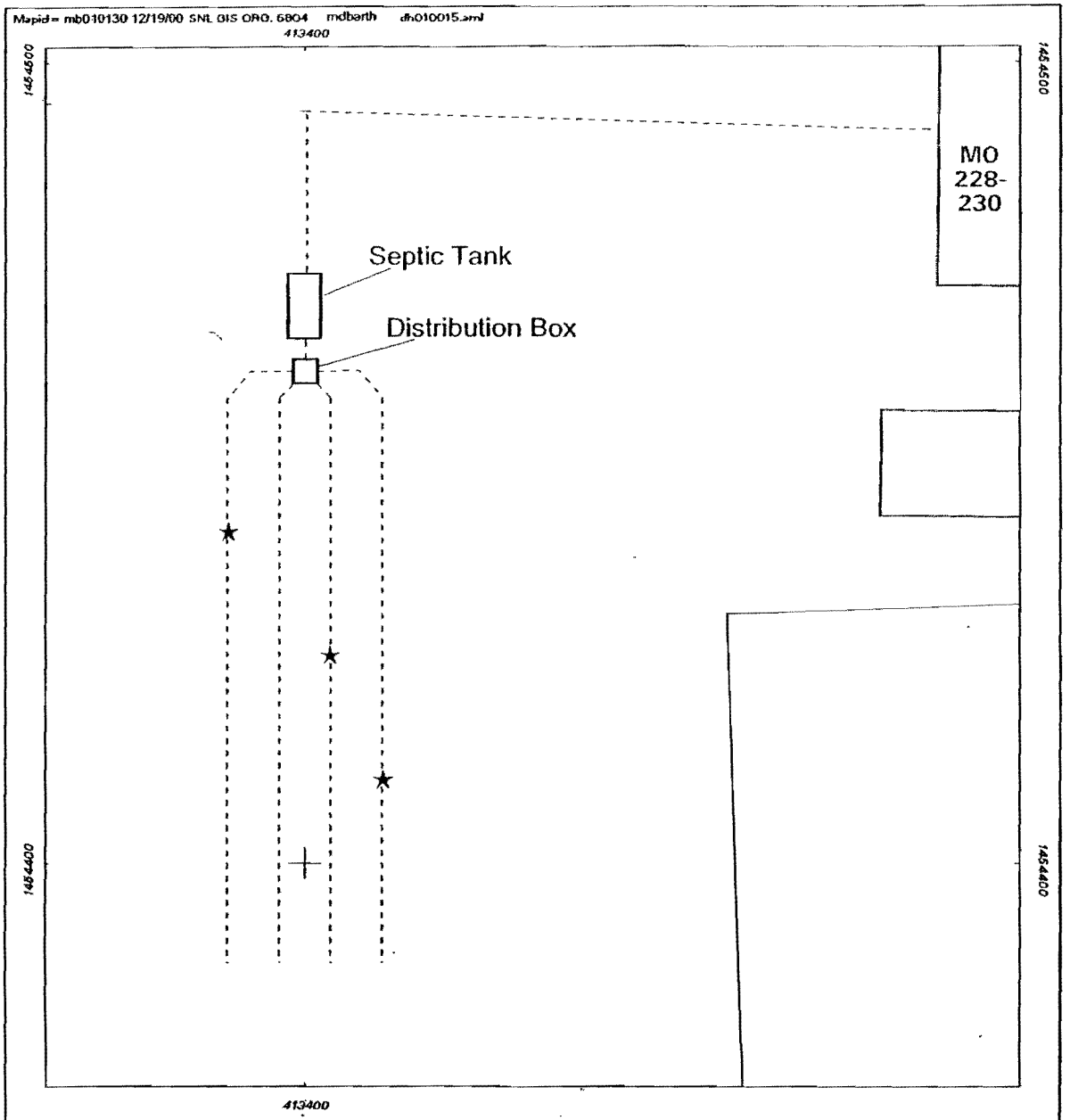
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1092 was last updated Jan 24, 2003.



Legend

- Septic Tank / Distribution Box
- Septic System Drain Line
- Building / Structure
- Edge of Pavement
- ★ Proposed Soil Boring Location

Site Map of the MO 228-230 Septic System, TA-III SWMU 1092

0 10 20
Scale in Feet

0 2.4 4.8
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1093: Building 6584 West Septic System (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield approximately 80 feet west of Building 6584, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in February 1996.

A backhoe was used to expose and locate the drainfield drain lines in May 1997.

Shallow soil samples were collected from four borings drilled in the drainfield area in July 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed to determine the presence or absence of VOCs at the site. This work is scheduled for Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at five locations in the drainfield area.

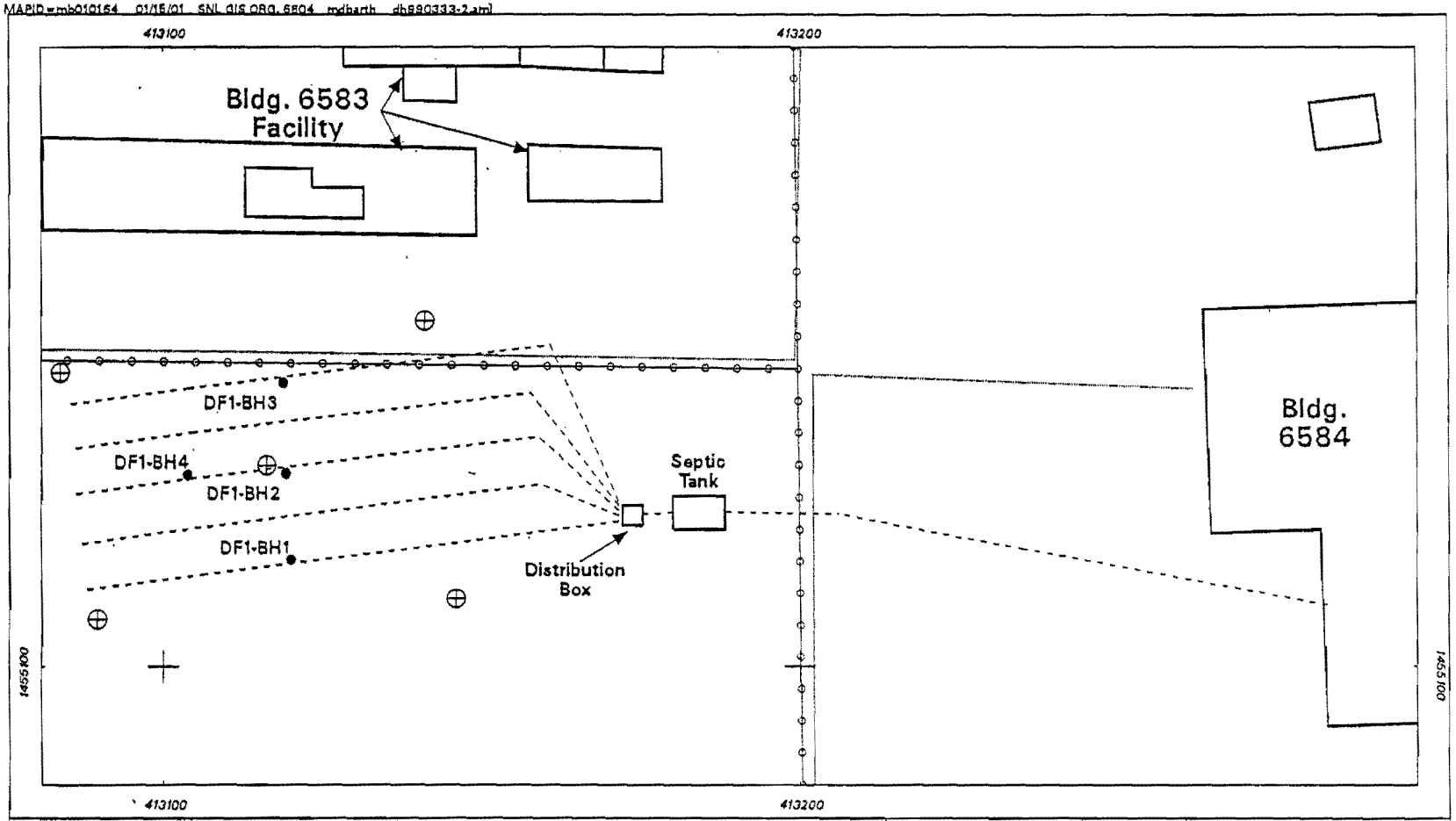
This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 1,900 gallons of effluent (including water introduced to facilitate pumping) was removed from the septic tank in February 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1093 was last updated Jan 24, 2003.

MAPID=mb010154 01/15/01 SNL GIS ORG. 6604 mdbarth dh990333-2.aml



Legend

- Distribution Box, Septic Tank
- Edge of Pavement
- Fence
- Existing Soil Boring Location
- Proposed Passive Soil Vapor Sampling Location
- Sanitary Sewerline, Drainfield Drainline
- Building / Structure

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Site Map of the
Bldg. 6584 West Septic
System TA-III SWMU 1093

0 12.5 25
Scale in Feet

0 3 6
Scale in Meters

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Area of Concern (AOC) No. 1094: Live Fire Range East Septic System, Lurance Canyon

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consists of a septic tank and drainfield located approximately 45 and 120 feet respectively east of the Live Fire Range east perimeter fence in Lurance Canyon. This system was intact and still in use at this remote facility when the site was inspected in July 1999. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled or analyzed as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

No information has been found to indicate that the septic tank contents have been sampled for waste characterization purposes. Since the system is still active, it is assumed that the tank is periodically pumped out.

A backhoe was used to expose and locate the terminal ends of the drainfield drain lines in July 1999. Considerable care was exercised to avoid damaging the drain lines of this active system with the backhoe.

Shallow soil samples were collected from three borings drilled in the drainfield area in September 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

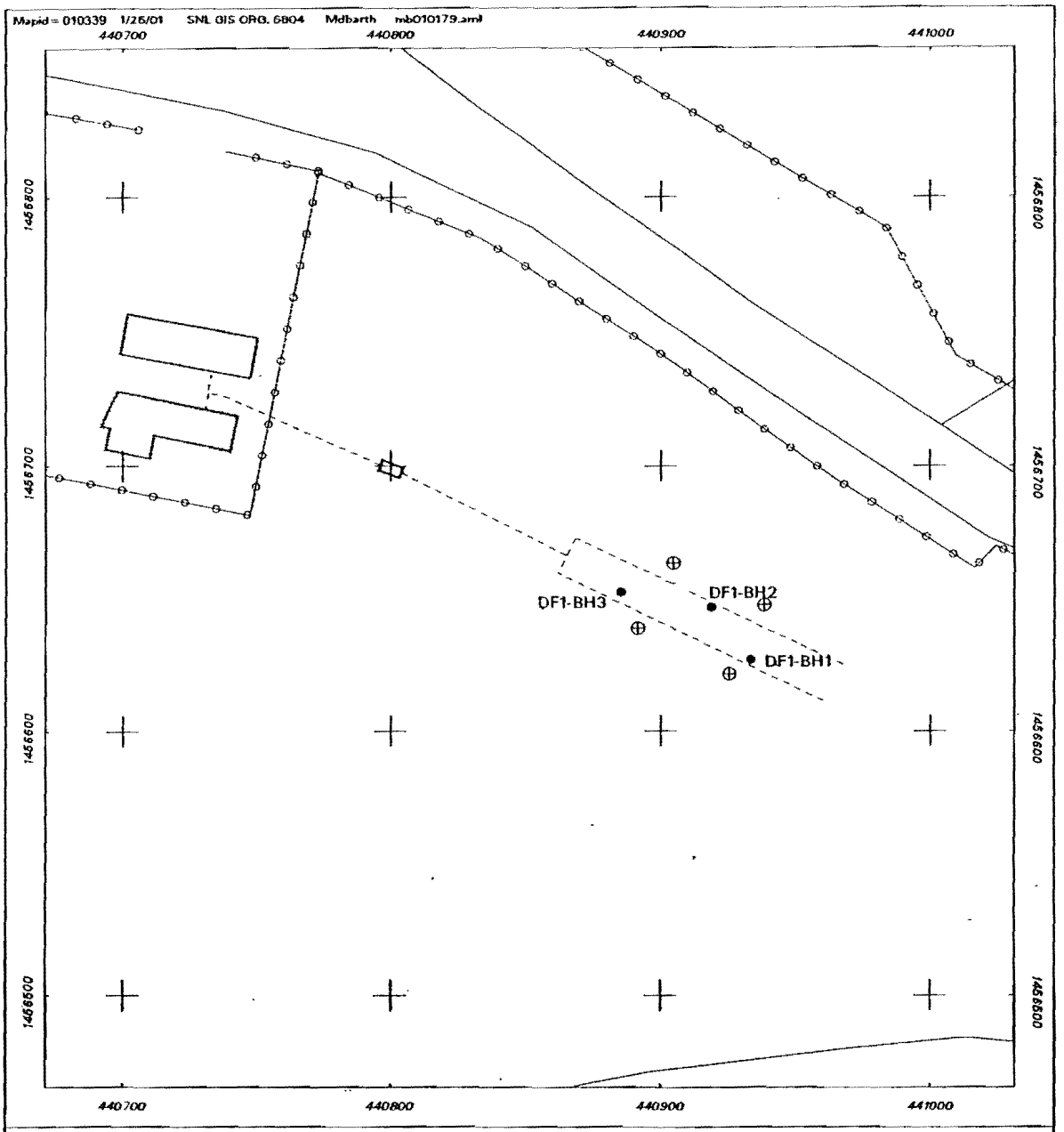
Analytical results for the soil samples collected in 1999 will be compiled and reviewed.

To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed to determine the presence or absence of VOCs at the site. This work is scheduled for Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at four locations in the drainfield area. This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1094 was last updated Dec 18, 2001.



Legend

- Drain Line
- Fence
- Road
- Septic Tank
- Building / Structure
- Proposed Passive Soil Vapor Sampling Location
- Existing Soil Boring Location

Site Map for the Live Fire Range East Septic System, Lurance Canyon, SWMU 1094

0 30 60
Scale in Feet

0 7.2 14.4
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1095: Building 9938 Seepage Pit, Coyote Test Field

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a seepage pit located approximately 80 feet south of Building 9938. Building 9938 is part of the Large Melt Facility which is located approximately 1.4 miles east of the southeast corner of TA-III. It is assumed that this unit was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into the southern Kirtland Air Force Base area. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

The site was inspected in July 1999 and the seepage pit was located and determined to be intact at that time.

Shallow soil samples were collected from a single soil boring drilled down through the center of and beneath the seepage pit in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

Analytical results for the soil samples collected in 1999 will be compiled and reviewed.

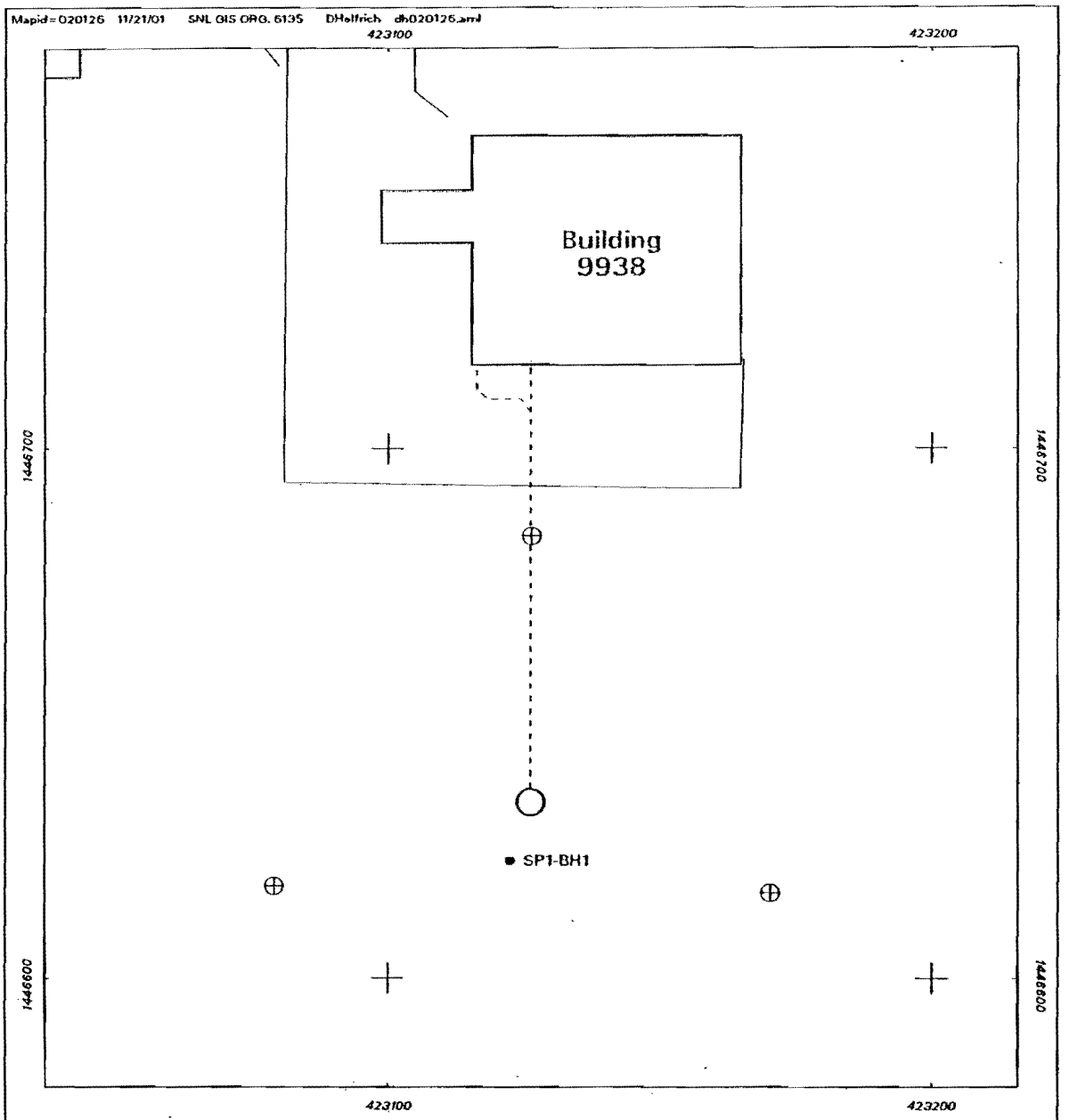
To further determine if environmental contamination is present beneath this system and in accordance with agreements reached with New Mexico Environment Department (NMED) personnel, passive soil vapor samplers will be installed to determine the presence or absence of VOCs at the site. This work is scheduled for Fiscal Year 2003. As shown on the site map, passive soil vapor samplers will be placed at three locations surrounding the seepage pit.

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1095 was last updated Dec 18, 2001.



Legend

- Existing Soil Boreing Location
- Seepage Pit
- Proposed Passive Soil Vapor Sampling Location
- Drain Line
- Building / Structure
- Road

Site Map of the Building 9938 Drain System, Large Melt Facility SWMU 1095

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1096: Building 6583 Septic System (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield located approximately 80 feet west of the northwest corner of Building 6583, in TA-III. It is assumed that this septic system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

Samples were collected from the septic tank in late 1990 or early 1991, 1992, and 1995 for waste characterization purposes. Residual tank contents were pumped out and the tank cleaned in February 1996.

A backhoe was used to expose and locate the drainfield drain lines in May 1997.

Shallow soil samples were collected from two borings drilled in the drainfield area in June 1998 and again in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

Analytical results for the soil samples collected in 1998 and 1999 will be compiled and reviewed.

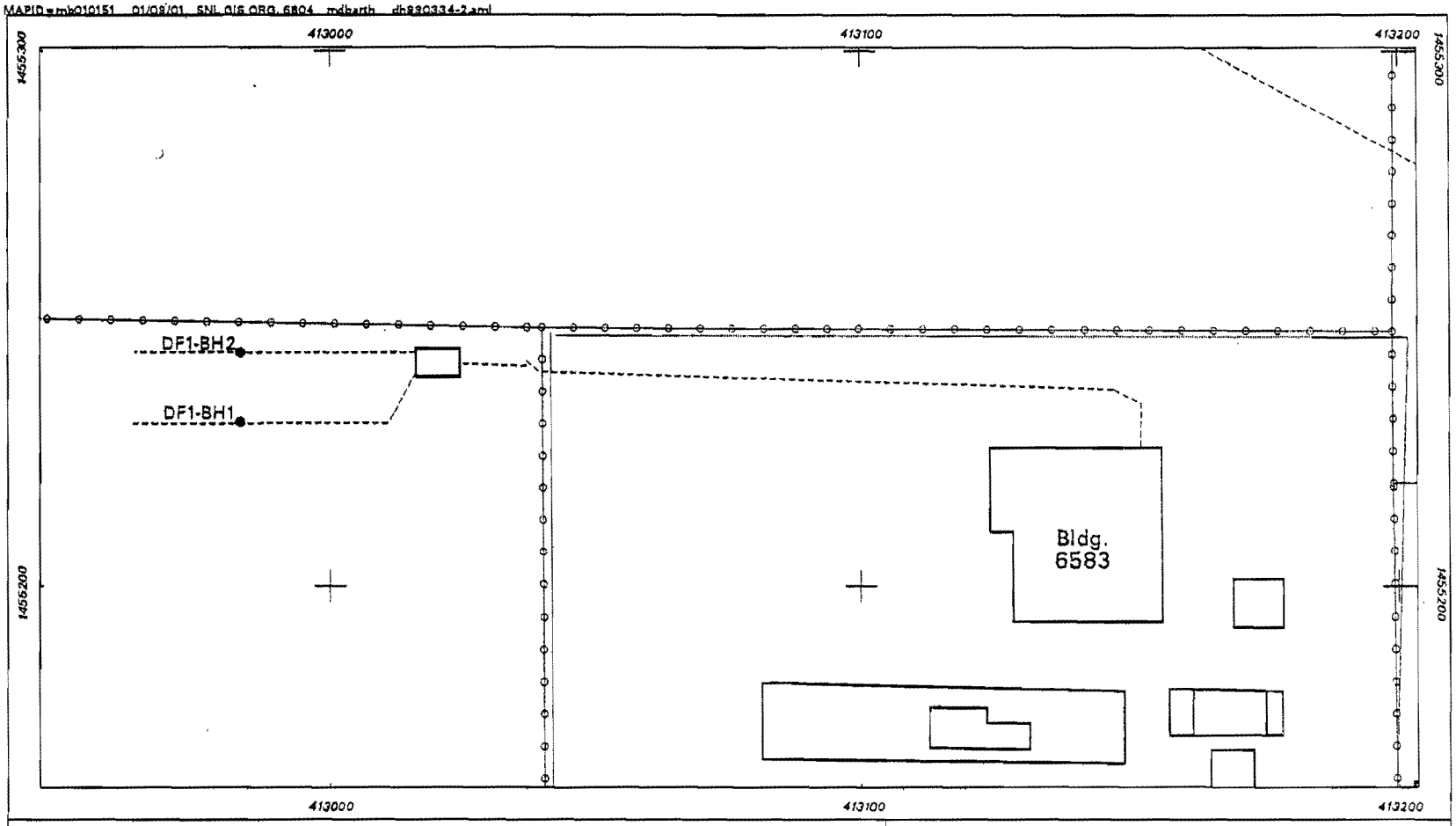
This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

A total of 55 gallons of effluent (most of which was introduced water added to facilitate pumping) was removed from the septic tank in February 1996. No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1096 was last updated Dec 18, 2001.

MAPID=mb010151 01/08/01 SNL GIS ORG. 6804 mdbarth dh890334-2.aml



Legend

- Existing Soil Boring Location
- Building / Structure
- Edge of Pavement
- Fence
- Drain Line
- Septic Tank

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

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Environmental Geographic Information System

Site Map of the Bldg. 6583
Septic System, TA-III
SWMU 1096

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Area of Concern (AOC) No. 1098: TA-V Plenum Rooms Drywell, TA-V

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this drywell or seepage pit is located approximately 30 feet southwest of the high metal stack in the northern part of TA-V. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection was conducted at the site in July 1999 and no surface expression of this drywell or seepage pit was found. A backhoe was not used to physically locate this unit because of the buried utilities in the area.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, sampling was conducted at this site. For purposes of sampling, the location of the unit was assumed to be as shown on various engineering drawings. As shown on the site map, a single soil sample boring was drilled on the northeast side of the seepage pit, rather than in the center, which would have damaged drainlines being used to drain precipition from the TA-V stack plenum rooms to the sanitary sewer. The edge of the assumed corrugated metal seepage pit was encountered during drilling, and no drainlines or buried utilities were damaged. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

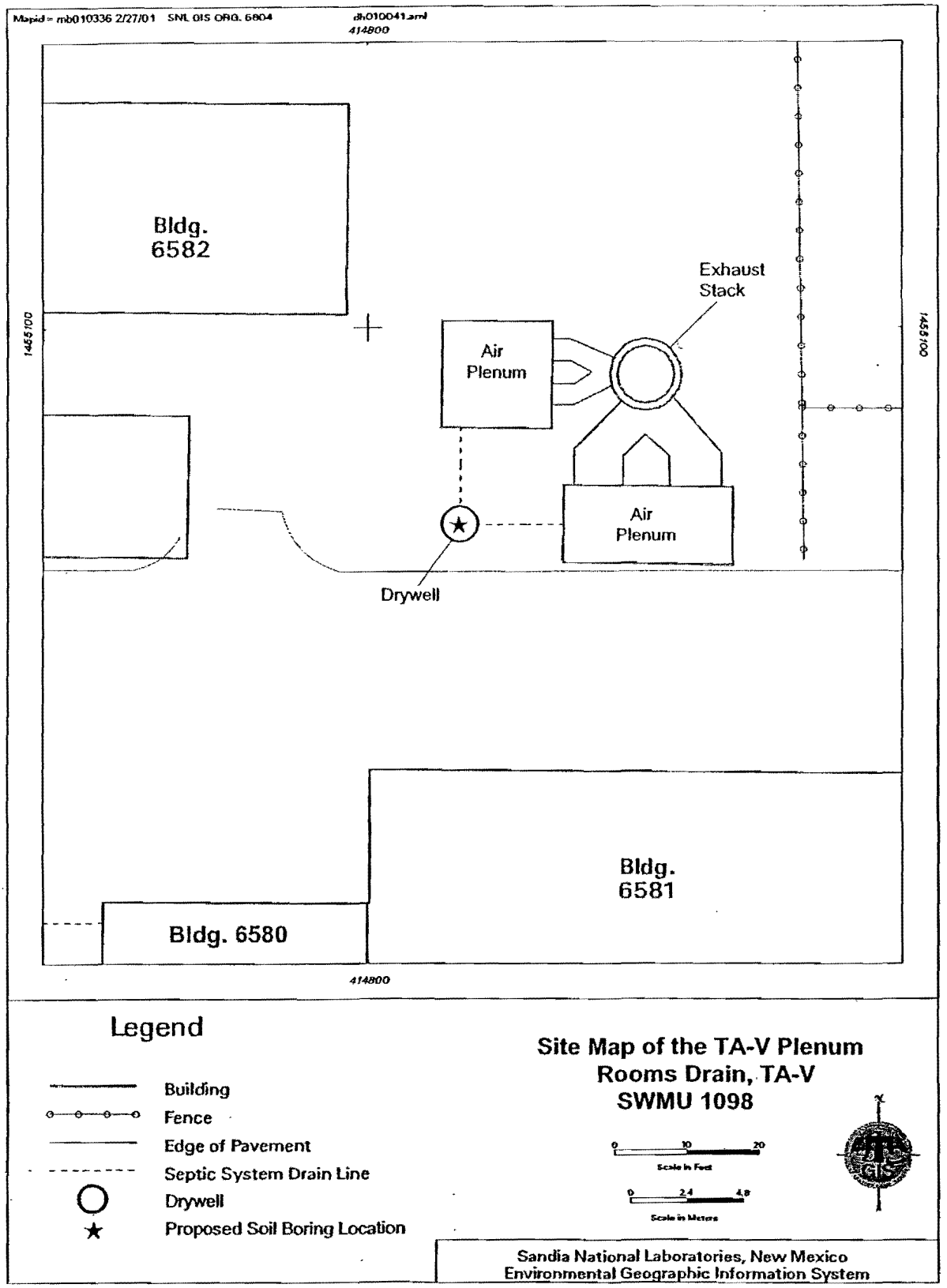
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1098 was last updated Jan 24, 2003.


Mapid = mb010336 2/27/01 SNL GIS ORG. 6804
dh010041.aml
414800
Bldg. 6582
Exhaust Stack
Air Plenum
Air Plenum
1465100
1465100
Drywell
Bldg. 6581
Bldg. 6580
414800
Legend
Building
Fence
Edge of Pavement
Septic System Drain Line
Drywell
Proposed Soil Boring Location
Site Map of the TA-V Plenum Rooms Drain, TA-V SWMU 1098
0 10 20
Scale in Feet
0 2.4 4.8
Scale in Meters
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Environmental Geographic Information System

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Area of Concern (AOC) No. 1101: Building 885 Septic System, TA-I

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact:
Office Phone:

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and one or two seepage pits located approximately 50 feet or more north of the northwest corner of Building 885. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern are unknown.

Current Hazards

No known surface hazards have been identified.

Current Status of Work

No information has been found to indicate that the septic tank still exists, or that residual tank contents (if any) have been sampled or removed.

A field inspection at the site was conducted in October 1999 and the current or former location of the seepage pit was found to be under an asphalt parking lot north of Bldg. 885, on the north side of TA-I. The location of the unit was based on a detailed engineering drawing that was made before the parking lot was constructed. An attempt was also made to locate this system using ground penetrating radar (GPR) in June 2002, but the seepage pit was not conclusively identified from this work. It was therefore unknown if the unit was still in existence when the GPR survey was performed.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, sampling was conducted at this site. A Geoprobe sampling rig was mobilized to the site on October 21, 2002, and a line of north-south and east-west holes spaced three feet apart, and originating at the unit location shown on the pre-parking lot engineering drawing were drilled in an attempt to locate this unit. Holes were drilled to a 15-foot depth, and were stepped out 9 feet from the origin point in all four directions, but no subsurface unit was encountered. It was there forefore decided to drill the single soil sample boring at the location shown on the engineering drawing. Drilling refusal was encountered at 23 feet below the surface, and it was assumed that the seepage pit had been encountered. The drill was then moved 5 feet south of the first location, and a second attempt was made to collect soil samples. This attempt was successful, no refusal occurred, and soil samples were collected at depths starting at 25 and 30 feet below the surface.

Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

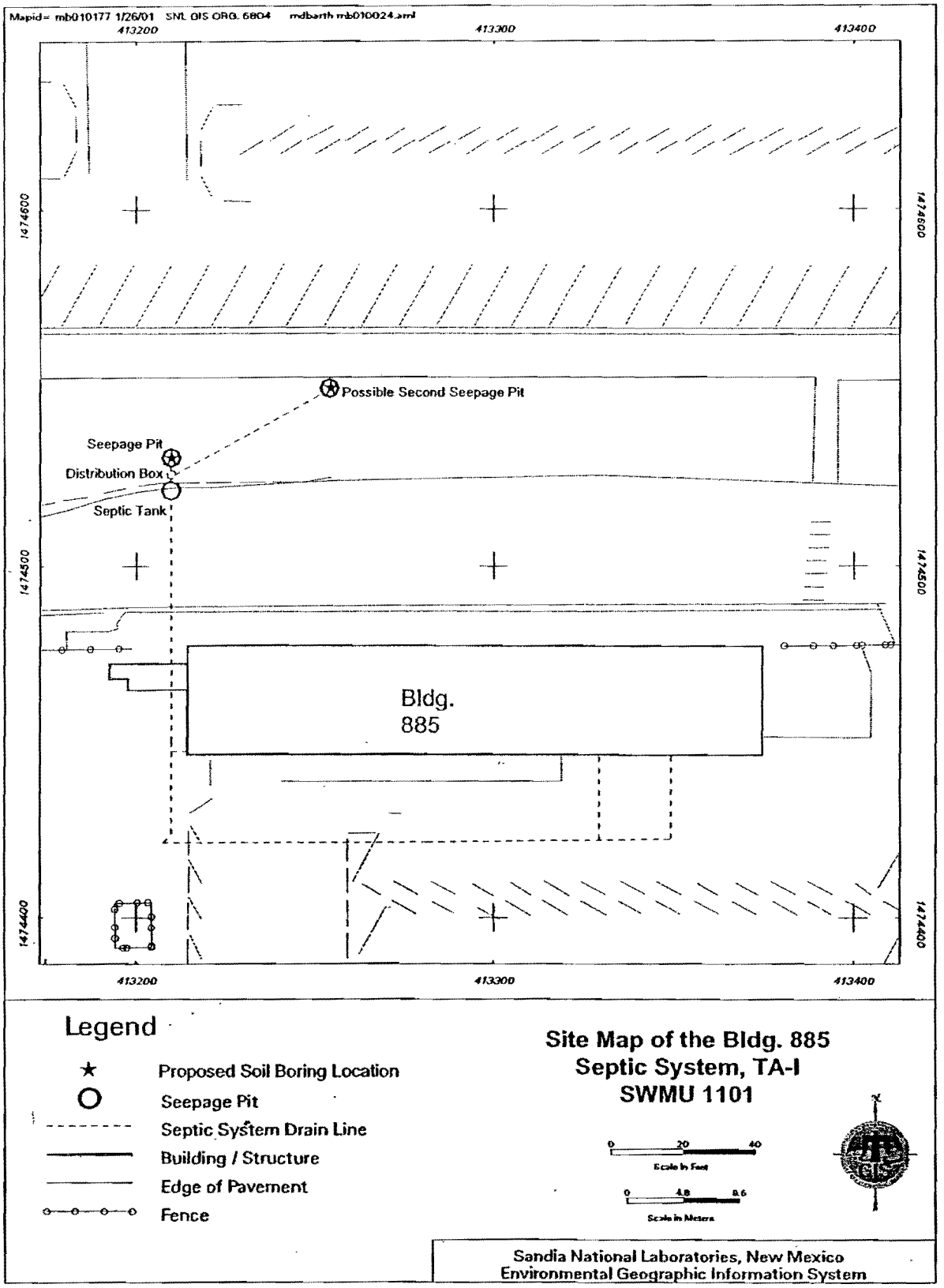
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1101 was last updated Jan 23, 2003.


Mapid= mb010177 1/26/01 SNL GIS ORG. 6804 mdbarth mb010024.aml
413200
413300
413400
1474600
1474500
1474400
Possible Second Seepage Pit
Seepage Pit
Distribution Box
Septic Tank
Bldg.
885
Legend
Proposed Soil Boring Location
Seepage Pit
Septic System Drain Line
Building / Structure
Edge of Pavement
Fence
Site Map of the Bldg. 885
Septic System, TA-I
SWMU 1101
0
20
40
Scale in Feet
0
4.8
9.6
Scale in Meters
N
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Environmental Geographic Information System

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Area of Concern (AOC) No. 1102: Former Building 889 Septic System (TA-I)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and seepage pit located approximately 15 and 35 feet respectively south of the southwest corner of the former Building 889. Building 889 was located approximately 300 feet south of the M and 14th street intersection, on the east side of 14th street. Building 889 was believed to have been demolished in the early 1990s and it is assumed that the septic system was abandoned at that time.

Constituents of Concern

Constituents of concern are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

The septic tank contents were sampled in 1992 and 1995. No information has been found to indicate that the residual tank contents (if any remain) have been removed from the tank.

A field inspection at the site was conducted in October 1999 and the septic tank and seepage pit were located and determined to still be intact. However, the interior of the seepage pit had been backfilled with soil, so the depth of the unit could not be determined. A backhoe was therefore used in March 2002 to dig down along the outside of the seepage pit to attempt to determine the depth to the base of the unit. A hole was excavated to 13.5 feet (the maximum digging depth of the machine), but the base of the unit was still not reached. The total depth of this seepage pit is therefore unknown, and was estimated to be 25 feet for purposes of soil sampling. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. A single soil sample boring was drilled down through and directly beneath this seepage pit in September 2002. Soil samples were collected at depths of 25 and 30 feet, and were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

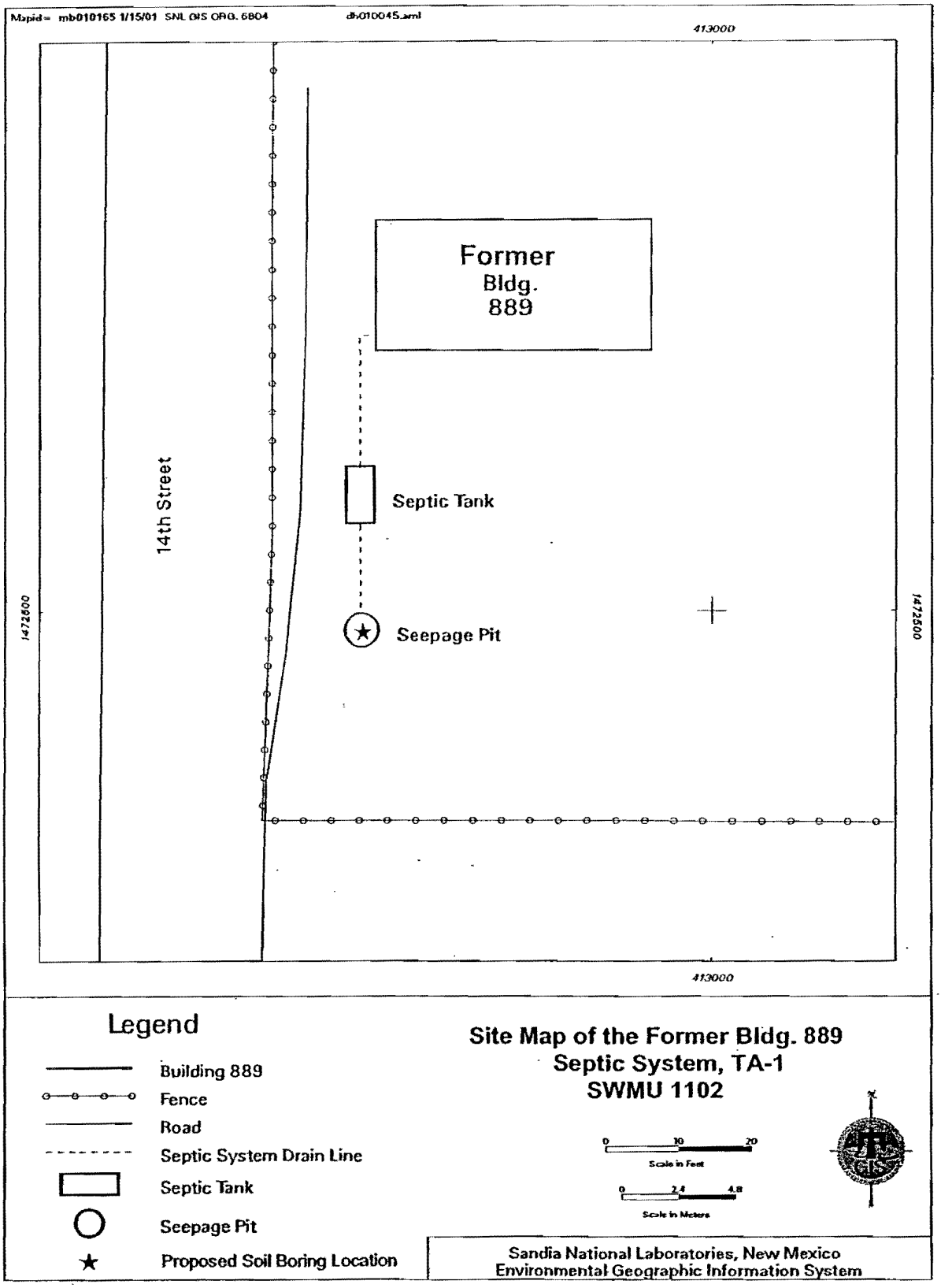
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1102 was last updated Jan 24, 2003.


Mapid= mb010165 1/15/01 SNL GIS ORG. 6804
db010045.aml
413000
Former
Bldg.
889
14th Street
Septic Tank
Seepage Pit
1472600
1472500
413000
Legend
Building 889
Fence
Road
Septic System Drain Line
Septic Tank
Seepage Pit
Proposed Soil Boring Location
Site Map of the Former Bldg. 889
Septic System, TA-1
SWMU 1102
0 10 20
Scale in Feet
0 2.4 4.8
Scale in Meters
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Environmental Geographic Information System

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Area of Concern (AOC) No. 1104: Building 6595 Seepage Pit (TA-V)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this seepage pit is located approximately 30 feet north of Building 6595, in between the two perimeter TA-V security fences. It is assumed that this unit was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III and TA-V. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Potential subsurface environmental hazards are also unknown.

Current Status of Work

A field inspection was conducted at the site in July 1999 and the seepage pit was located and determined to still be intact at that time.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, sampling was conducted at this site. As shown on the site map, a single soil sample boring was drilled down through the center of, and directly beneath the seepage pit in October 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

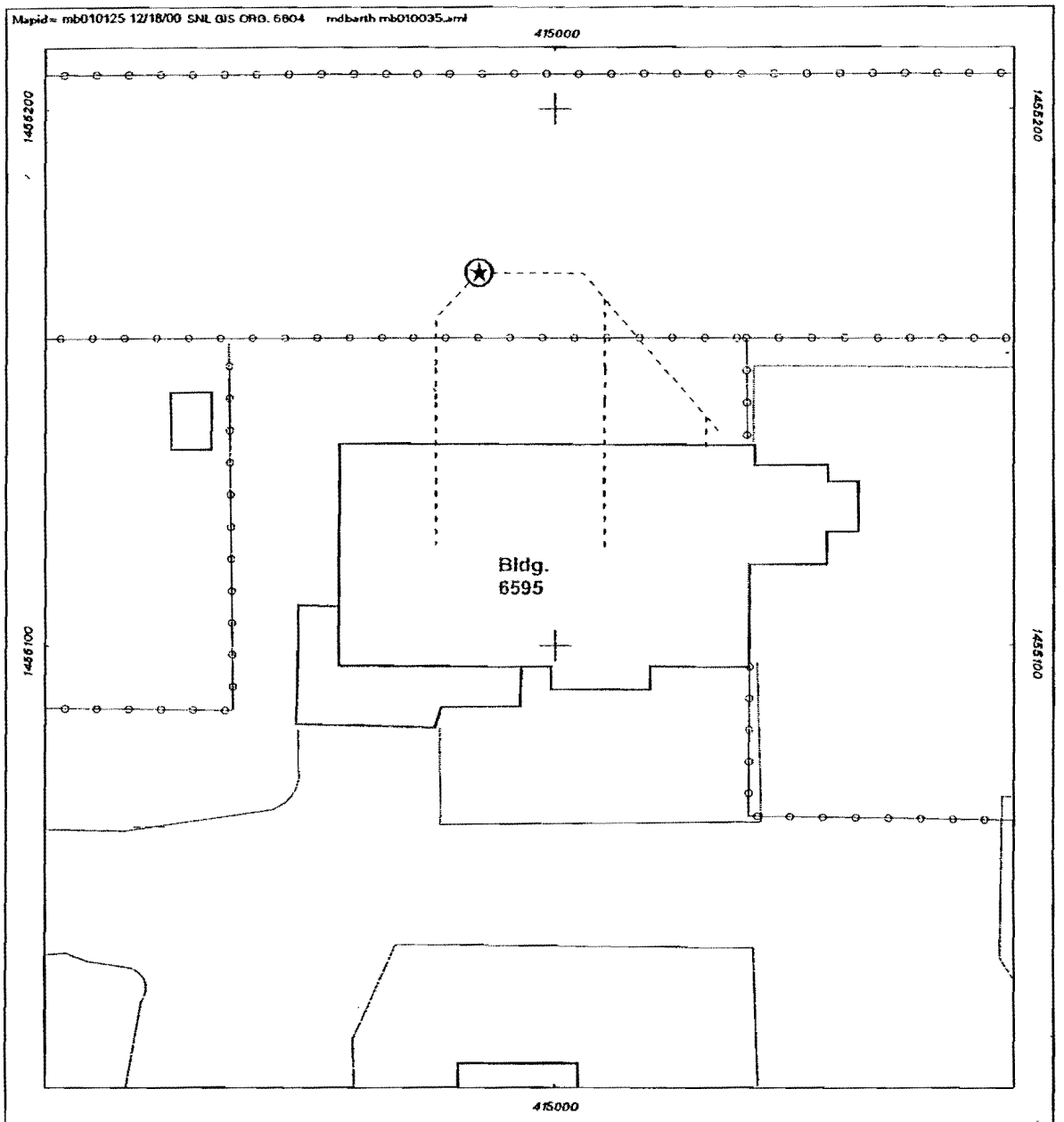
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1104 was last updated Jan 23, 2003.



Legend

- Seepage Pit
- Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Proposed Soil Boring Location

Site Map of the Bldg. 6595 Drain System, TA-V SWMU 1104

0 15 30
Scale in Feet

0 3.5 7.2
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1105: Building 6596 Drywell (TA-V)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this drywell or seepage pit is located approximately 45 feet south of the southeast corner of Building 6596, in TA-V. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection was conducted at the site in July 1999 and no surface expression of this drywell or seepage pit was found in the area indicated for the unit on engineering drawings. A backhoe was therefore used in April 2002 to successfully locate the unit, which turned out to be a 10-ft by 10-ft by 5-ft thick gravel drywell.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. A single soil sample boring was drilled down through and directly beneath this drywell in September 2002. Soil samples collected from the borehole were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

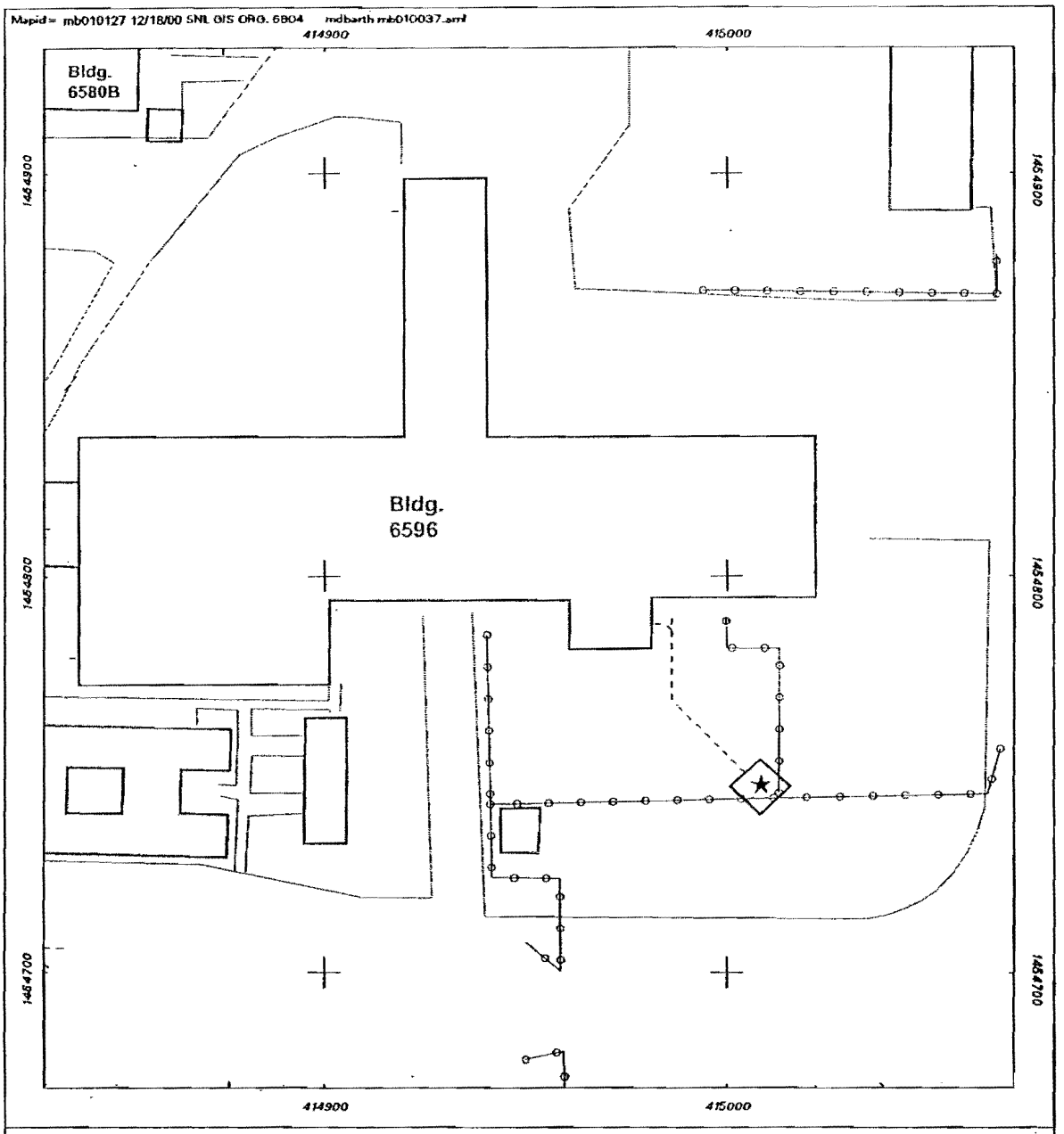
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1105 was last updated Jan 22, 2003.



Legend

- Seepage Pit
- Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- ★ Proposed Soil Boring Location

Site Map of the Bldg. 6596 Drain System, TA-V SWMU 1105

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

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Environmental Geographic Information System

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Area of Concern (AOC) No. 1108: Building 6531 Seepage Pits (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this drain system consisted of two seepage pits that were plumbed to Building 6531. The system is located outside of the facility perimeter fence and is approximately 220 feet west of Building 6531 and about 200 feet southwest of Building 6530, in TA-III. It is assumed that this drain system was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection was conducted at the site in October 1999 and the two seepage pits were located and determined to still be intact.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at six locations around the two seepage pits in April 2002 to detect the presence or absence of VOCs at the site. A single soil sample boring was also drilled directly beneath each of the two seepage pits at this site in August 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

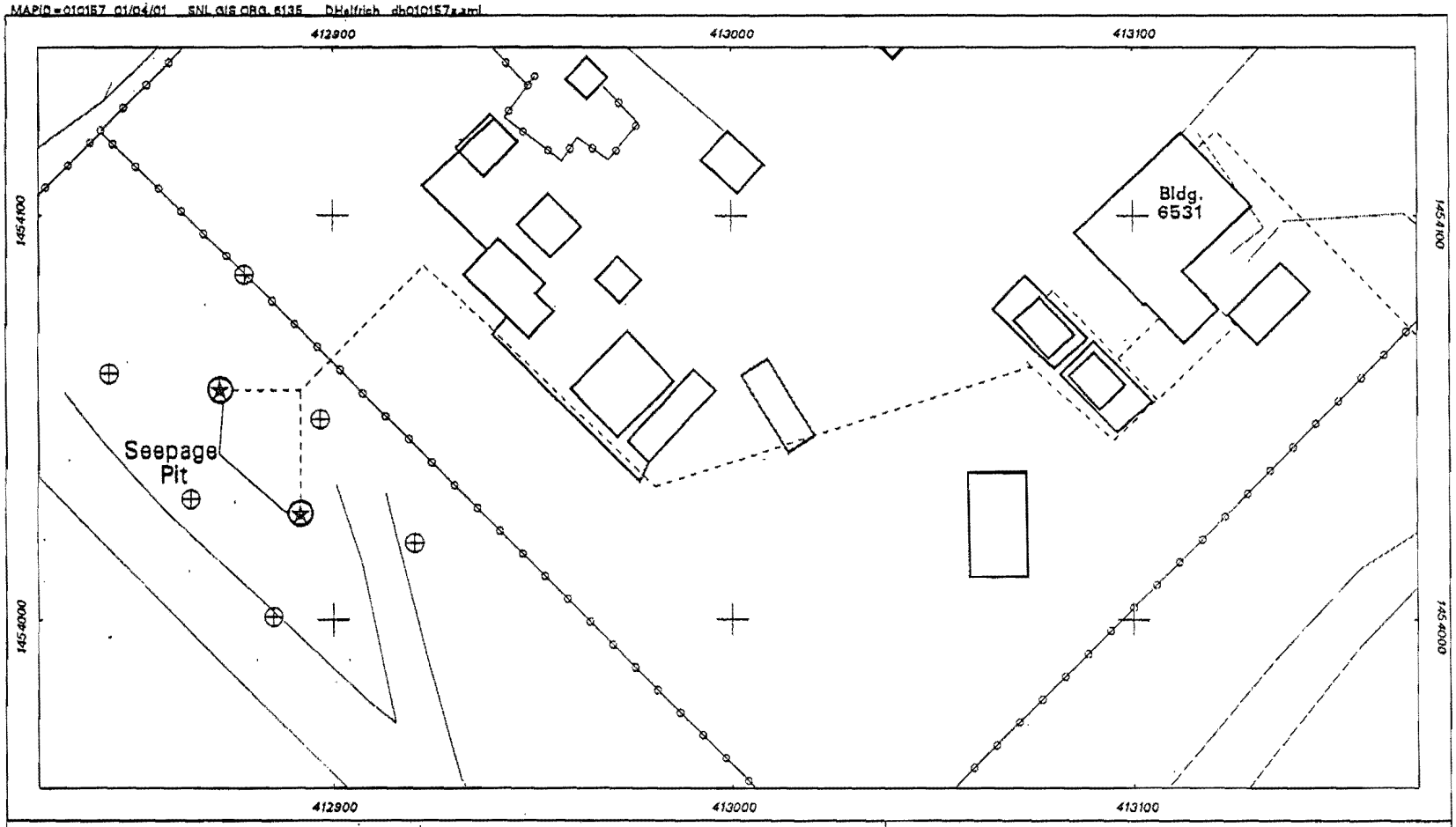
This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1108 was last updated Jan 20, 2003.

MAPID=010157 01/04/01 SNL GIS ORG. 6135 DHelfrich db010157a.aml



Legend

- ★ Proposed Soil Boring Location
- ⊕ Proposed Passive Soil Vapor Sampling Location
- ○ Seepage Pit
- Fence
- Drain Line
- Building / Structure
- Edge of Pavement

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Site Map of the Bldg. 6531 Drain System, TA-III SWMU 1108

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

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Area of Concern (AOC) No. 1110: Building 6536 Drain System (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this drain system was located approximately 200 feet northwest of Building 6536, in TA-III. No drawings were found that provide detailed information as to how this unit was constructed, and very little information has been found to indicate what this drain or system was used for. Discussions with facility personnel in 1997 indicated that it may have been used to dissipate heat from high-temperature experiments conducted inside Building 6536. This subsurface system was exposed with a backhoe in May 1997 and was found to consist of a 50-foot long by 4-foot diameter concrete pipe that had been installed in an aggregate-filled trench. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been

conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

As stated above, this system was exposed with a backhoe in May 1997 to determine what it consisted of and how it was constructed. The system was then re-buried pending discussions with New Mexico Environment Department (NMED) personnel to determine sampling requirements for this site.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, two soil sample borings were drilled near the opposite ends of, and on either side of this 50-ft long drain in September 2002. Soil samples collected from these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

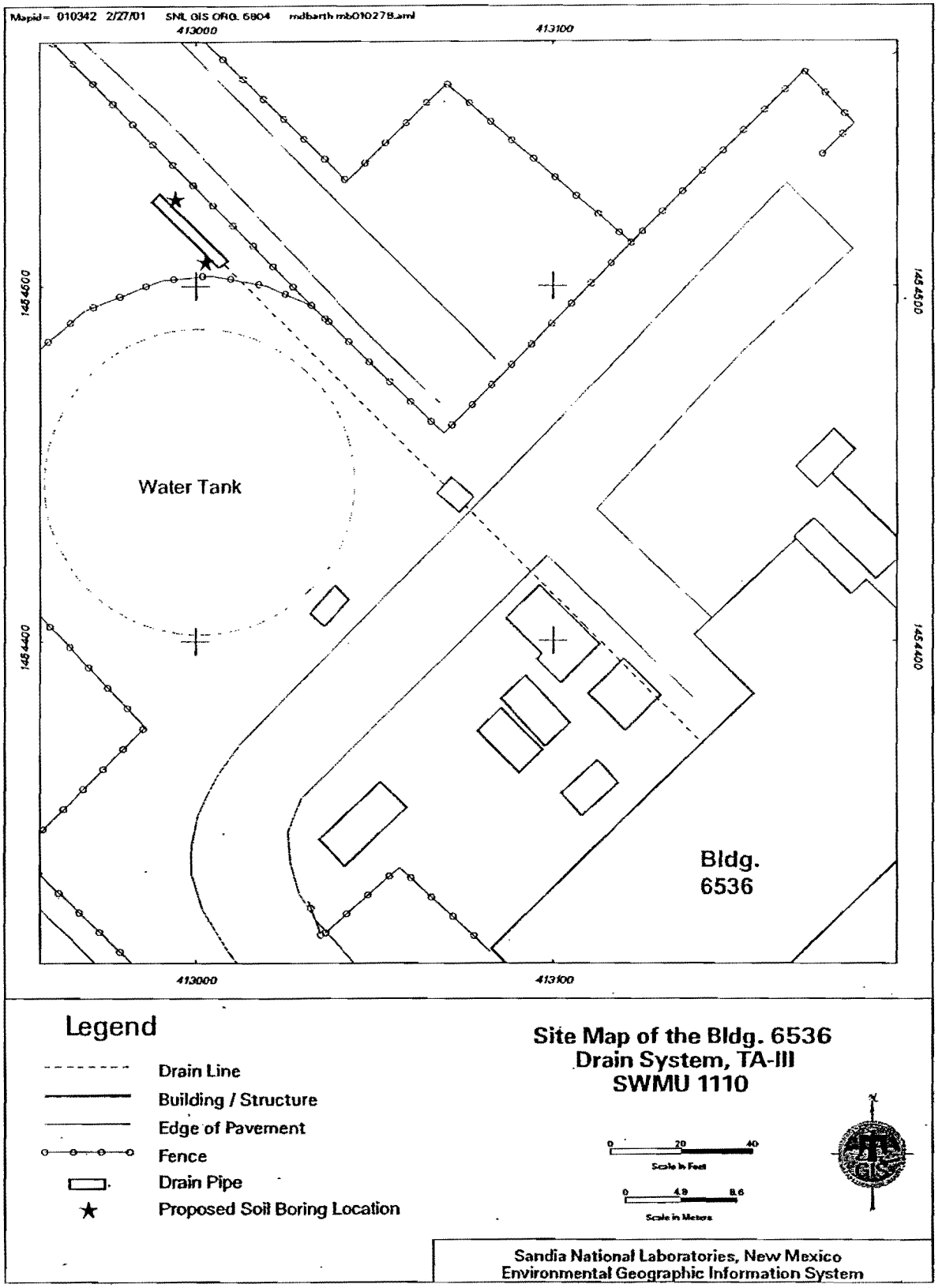
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1110 was last updated Jan 21, 2003.


Mapid= 010342 2/27/01 SNL GIS ORG. 6804 mdbarth mb01027B.aml
413000
413100
1454500
1454400
Water Tank
Bldg.
6536
Legend
Drain Line
Building / Structure
Edge of Pavement
Fence
Drain Pipe
Proposed Soil Boring Location
Site Map of the Bldg. 6536
Drain System, TA-III
SWMU 1110
0 20 40
Scale in Feet
0 4.9 8.6
Scale in Meters
Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1111: Building 6720 Drywell (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a seepage pit on the north side of Building 6720, in TA-III. It is assumed that this seepage pit was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection was conducted at the site in September 1999, but no surface expression of the seepage pit was found. It was therefore unknown if this unit was still intact or in existence at that time. A backhoe was therefore used at the site in March 2002 to attempt to physically locate the unit. It was found, and was determined to consist of a 5-ft diameter corrugated metal seepage pit.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, a single soil sample boring was drilled directly beneath the seepage pit in September 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

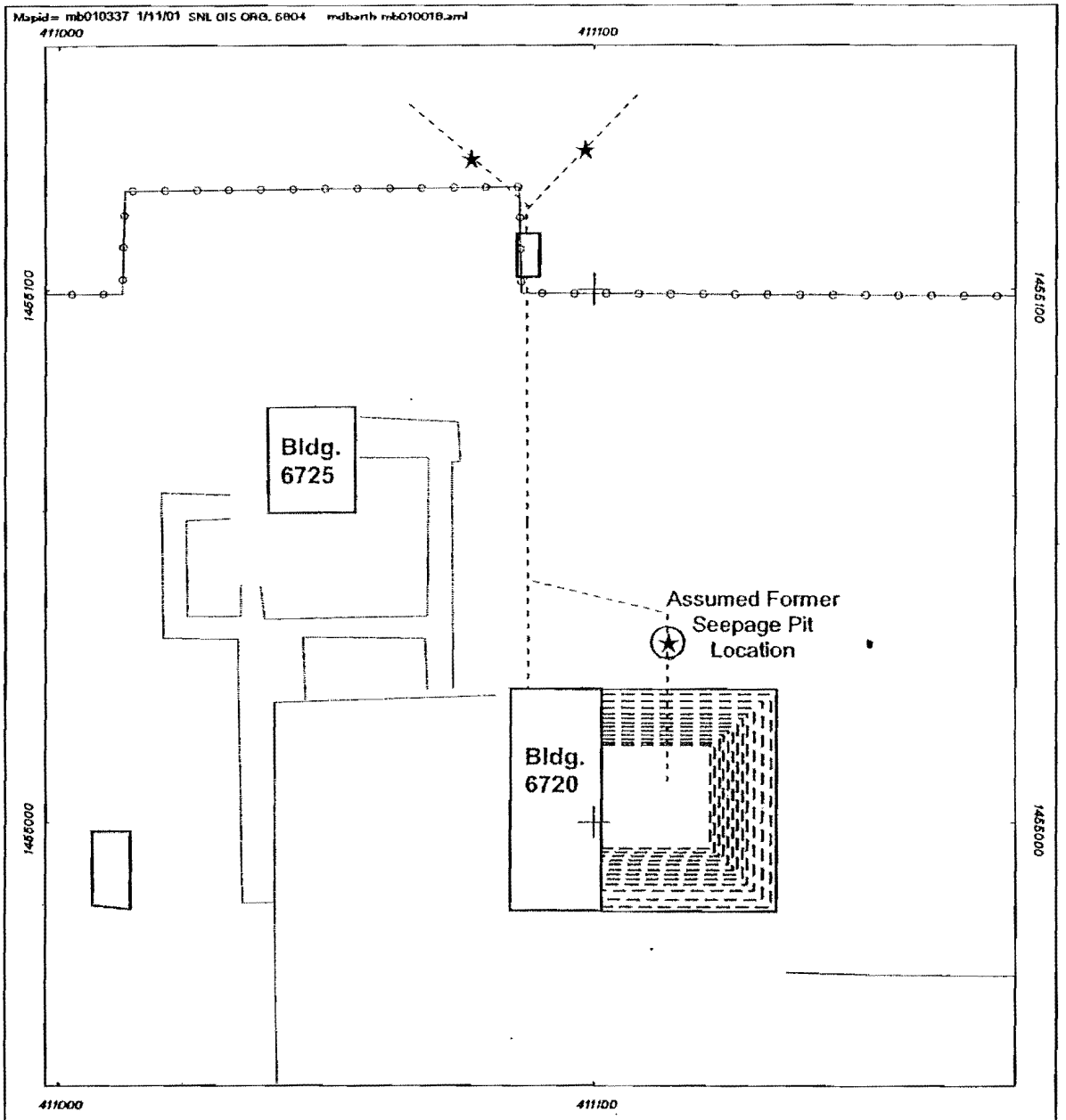
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1111 was last updated Jan 24, 2003.



Legend

- Former Seepage Pit
- Drain Line
- Building / Structure
- Above Ground Bunker
- Edge of Pavement
- Fence
- Septic Tank
- Proposed Soil Boring Location

Site Map of the Bldg. 6720 Drain and Septic System, TA-III, SWMU 1091, (Septic System) and 1111 (Seepage Pit)

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1112: Building 6590 Reactor Sump Drywell, TA-V

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact:
Office Phone:

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this drywell is located approximately 65 feet north of Building 6590 in the southern part of TA-V. Drawings indicate that this unit is a 4-foot square by 4-foot thick gravel-filled drywell that is plumbed to a sump or pit beneath the Sandia Pulse Reactor (SPR), contained within Building 6590.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

No above-grade evidence of this drywell was observed when the location of the unit as shown on various engineering drawings was inspected in October 2002. The drywell location indicated on drawings was covered by a thick concrete pad constructed for electrical equipment. A backhoe was not used to locate this unit.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, sampling was conducted at this site. As shown on the site map, a single soil sample boring was drilled approximately 5 feet northeast of the assumed location of the unitn in October 2002. The sample borehole was located as close to the assumed location of the drywell as possible, but was also positioned to avoid the thick concrete pad and buried electrical utilities in the drywell area. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

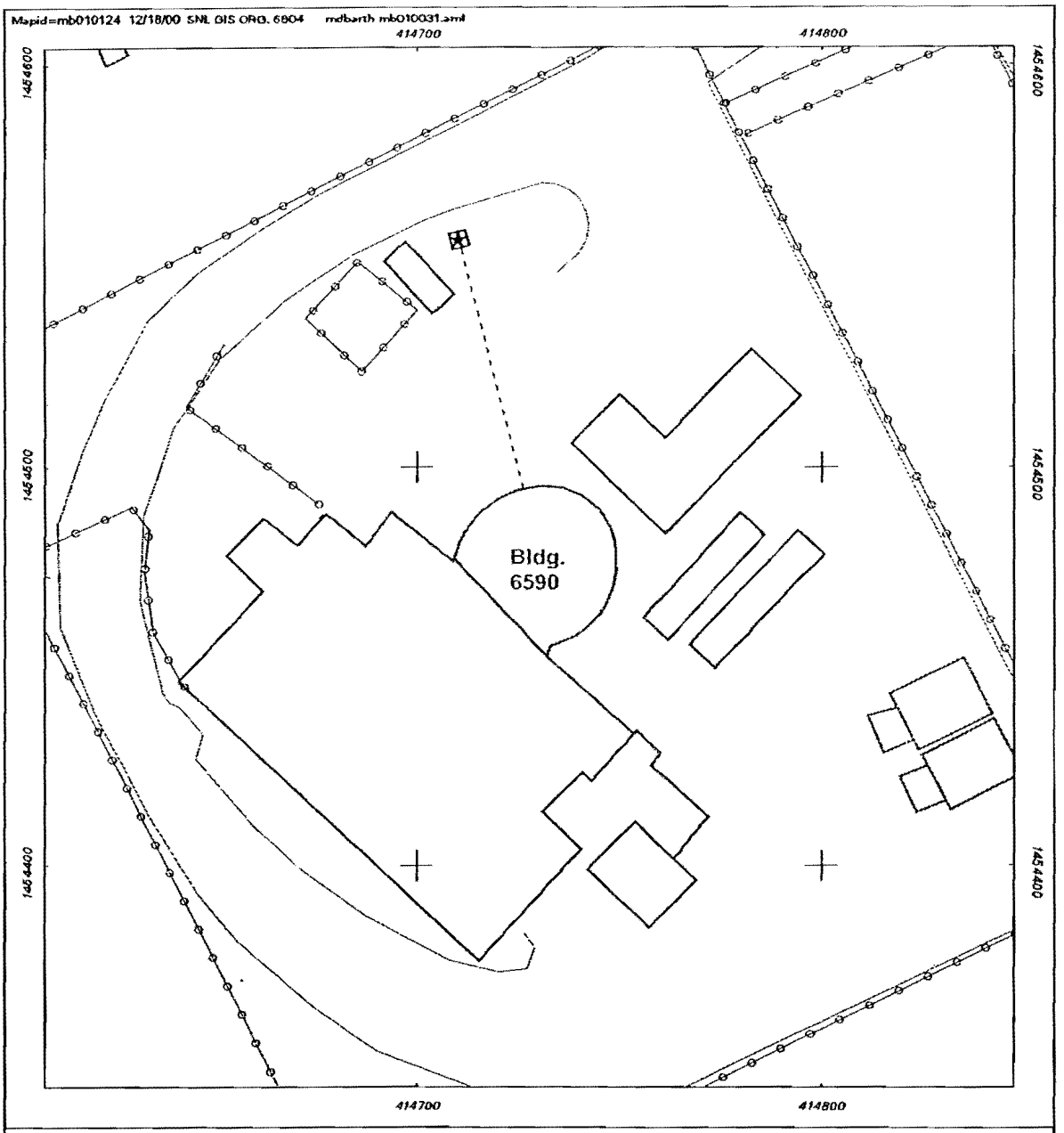
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1112 was last updated Jan 23, 2003.



Legend

- Drywell
- Drain Line
- Building / Structure
- Edge of Pavement
- Fence
- Proposed Soil Boring Location

Site Map of the Bldg. 6590 Drain System, TA-V SWMU 1112

0 20 40
Scale in Feet

0 4.8 9.6
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1113: Building 6597 Drywell (TA-V)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this drywell is located approximately 10 feet east of the northern part of Building 6597, in TA-V. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection was conducted at the site in July 1999 and no surface expression of this drywell was found in the area indicated for the unit on engineering drawings. A backhoe was therefore used in April 2002 to successfully locate the unit, which turned out to be a 4-ft by 4-ft by 2-ft thick gravel drywell located about 22 feet east of the east wall of the Bldg. 6597 mechanical room.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. A single soil sample boring was drilled down through and directly beneath this drywell in September 2002. Soil samples collected from the borehole were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

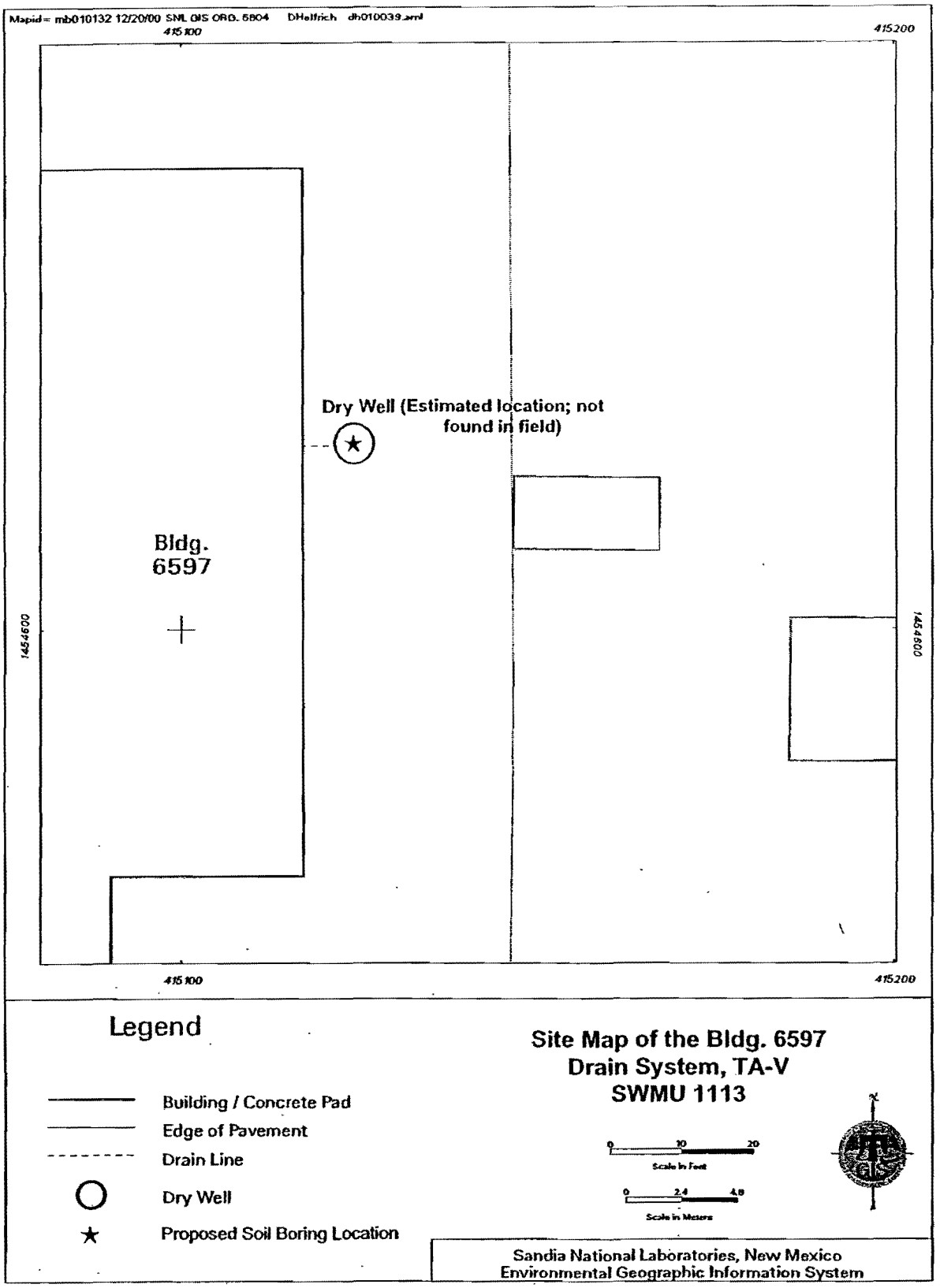
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1113 was last updated Jan 22, 2003.


Mapid= mb010132 12/20/00 SNL GIS ORD. 5804 DHelfrich dh010039.aml
415100
415200
Dry Well (Estimated location; not found in field)
Bldg. 6597
1454600
1454500
415100
415200
Legend
Building / Concrete Pad
Edge of Pavement
Drain Line
Dry Well
Proposed Soil Boring Location
Site Map of the Bldg. 6597 Drain System, TA-V SWMU 1113
0 10 20
Scale in Feet
0 2.4 4.8
Scale in Meters
N
Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1114: Building 9978 Drywell (Coyote Test Field)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this drywell is located approximately 30 feet south of the southeast corner of Building 9978. Building 9978 is a small building associated with the Building 9925 complex which is located approximately 1.5 miles north of the southern Kirtland Air Force Base boundary and approximately 2.3 miles east of TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection was conducted at the site in July 1999 and no surface expression of this drywell was found in the area indicated for the unit on engineering drawings. A backhoe was therefore used in March 2002 to successfully locate the unit, which turned out to be a small (three-ft. diameter) seepage pit.

To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. A single soil sample boring was drilled down through and directly beneath this drywell in September 2002. Soil samples collected from the borehole were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

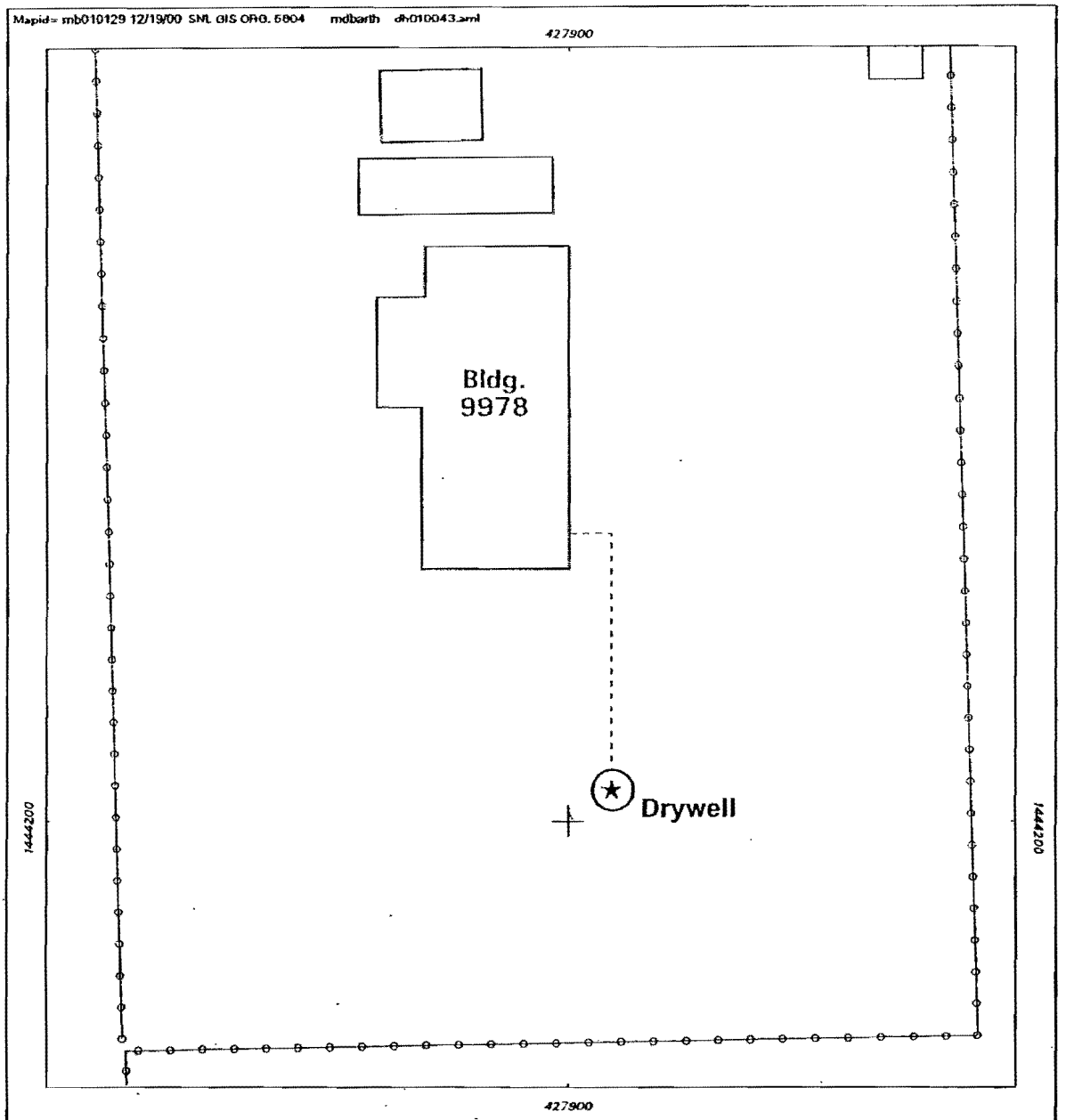
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1114 was last updated Jan 24, 2003.



Legend

- Building 9978
- Fence
- Drain Line
- Drywell
- Proposed Soil Boring Location

Site Map of the Bldg. 9978 Drain System, Coyote Test Field SWMU 1114

0 10 20
Scale in Feet

0 2.4 4.8
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1115: Former Offices Septic System (Solar Tower Complex)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a septic tank and drainfield located on the west side of the Solar Tower complex. This system was located approximately 980 feet northwest of the solar tower (Building 9980), south of Building 9984, and about 10 feet west of the north-south paved road to Building 9980. It is assumed that this septic system was abandoned in the early 1980s when the original Solar Tower complex offices were removed and replaced by more permanent buildings. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled as of November 2001; therefore potential subsurface environmental

hazards are unknown.

Current Status of Work

Samples may have been collected from the septic tank in 1992 for waste characterization purposes, although available information is unclear as to which tank was actually sampled. No information has been found to indicate that the residual tank contents (if any remain) have been removed from the tank.

A site inspection was conducted in August 1999 and the septic tank was located and determined to be intact. A backhoe was also used to expose and locate the drainfield drain lines in August 1999.

Shallow soil samples were collected from three borings drilled in the drainfield area in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

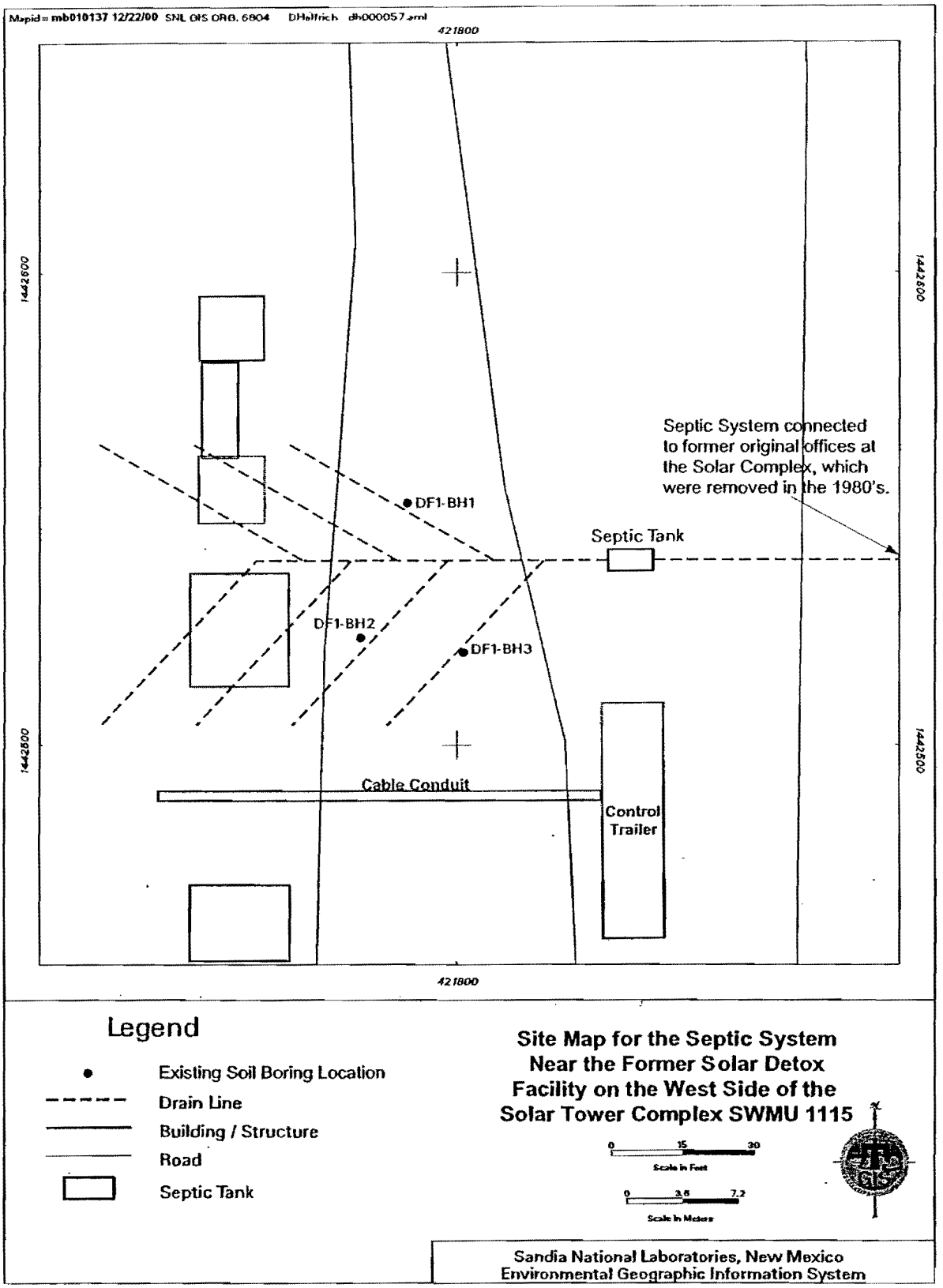
Analytical results for the soil samples collected in 1999 will be compiled and reviewed.

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1115 was last updated Jan 24, 2003.


Mapid= mb010137 12/22/00 SNL GIS ORG. 6804 DHelfrich dh000057.aml
421800
1442800
1442500
Septic System connected to former original offices at the Solar Complex, which were removed in the 1980's.
DF1-BH1
Septic Tank
DF1-BH2
DF1-BH3
Cable Conduit
Control Trailer
Legend
Existing Soil Boring Location
Drain Line
Building / Structure
Road
Septic Tank
Site Map for the Septic System Near the Former Solar Detox Facility on the West Side of the Solar Tower Complex SWMU 1115
0 15 30
Scale in Feet
0 3.6 7.2
Scale in Meters
Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1116: Building 9981A Seepage Pit (Solar Tower Complex)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a seepage pit located approximately 25 feet south of Building 9981A, which is a small building in the eastern portion of the Solar Tower complex. A site inspection in August 1999 determined that this unit was still being used for drainage of coolant water from Building 9981A. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled or analyzed as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

The site was inspected in August 1999 and the seepage pit was located and determined to be intact at that time.

Shallow soil samples were collected from a single soil boring drilled down through the center of and beneath the seepage pit in August 1999. These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

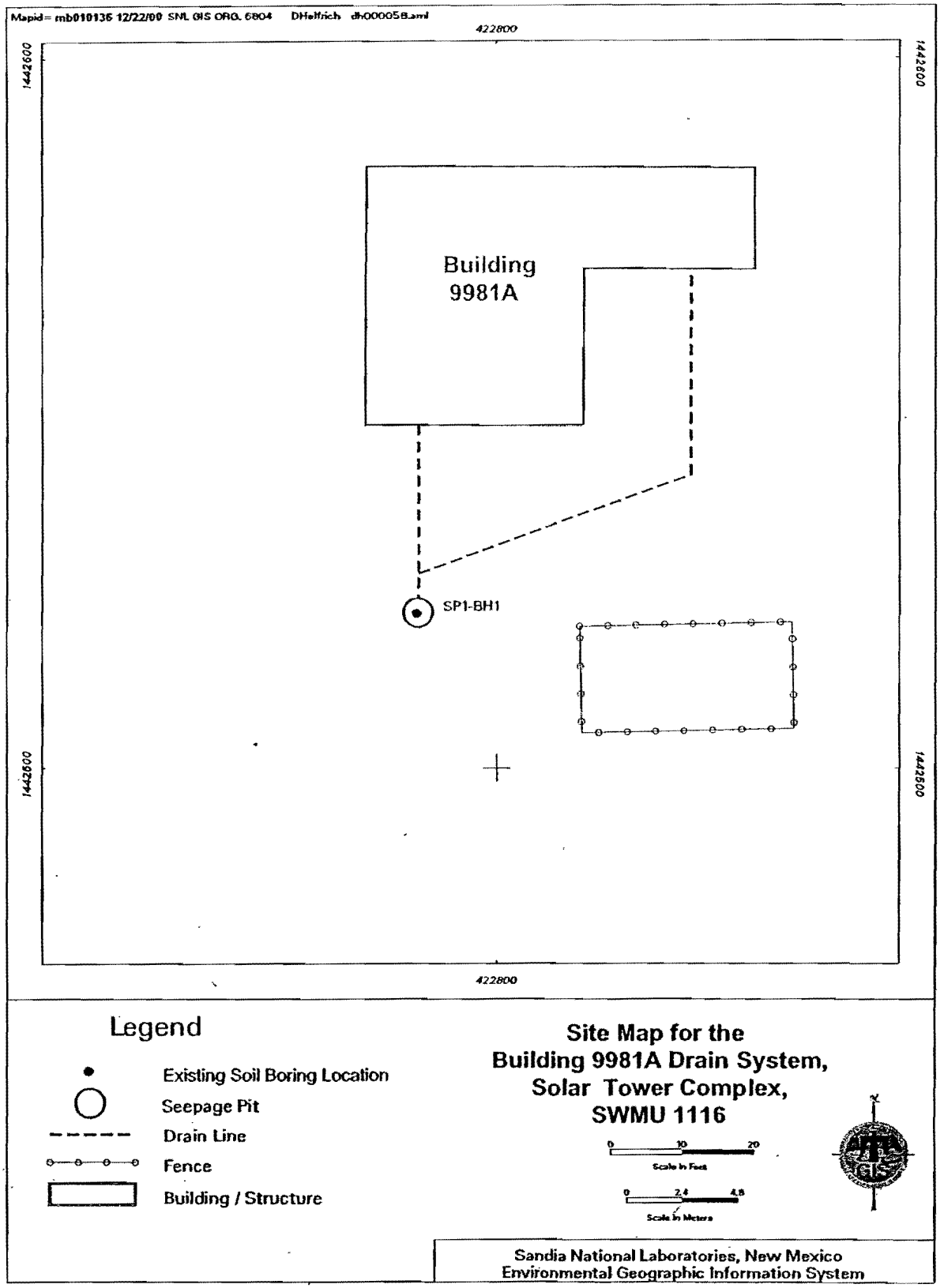
Analytical results for the soil samples collected in 1999 will be compiled and reviewed.

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1116 was last updated Jan 24, 2003.


Mapid= mb010136 12/22/00 SNL GIS ORG. 6804 DHelfrich dh000058.aml
422800
1442600
Building
9981A
SP1-BH1
Legend
Existing Soil Boring Location
Seepage Pit
Drain Line
Fence
Building / Structure
Site Map for the
Building 9981A Drain System,
Solar Tower Complex,
SWMU 1116
0 10 20
Scale in Feet
0 2.4 4.8
Scale in Meters
Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1117: Building 9982 Drywell (Solar Tower Complex)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this system consisted of a drywell located approximately 10 feet north of the northwest corner of Building 9982. Building 9982 is located in the northwestern part of the Solar Tower complex. It is assumed that this unit was abandoned in the early 1990s when the City of Albuquerque sanitary sewer system was extended into the southern KAFB area. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Analytical data for soil samples collected at the site had not been compiled or analyzed as of November 2001; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection was conducted at the site in August 1999 and no surface expression of this drywell was found in the area indicated for the unit on engineering drawings. However, Solar Tower facility personnel indicated that to their knowledge, this subsurface unit was in fact located at the position shown on engineering drawings. It was therefore concluded that a backhoe excavation would not be required to locate the unit.

Shallow soil samples were collected from a single soil boring drilled down through the center of and beneath the unit in August 1999. This boring was drilled at the location for the drywell indicated on engineering drawings. As drilling progressed, an abundant amount of 2-inch rounded aggregate was returned from the hole. This is the type of material a drywell is typically constructed of, and was considered a conclusive indication that the boring was in fact located directly over the drywell. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

Future Work Planned

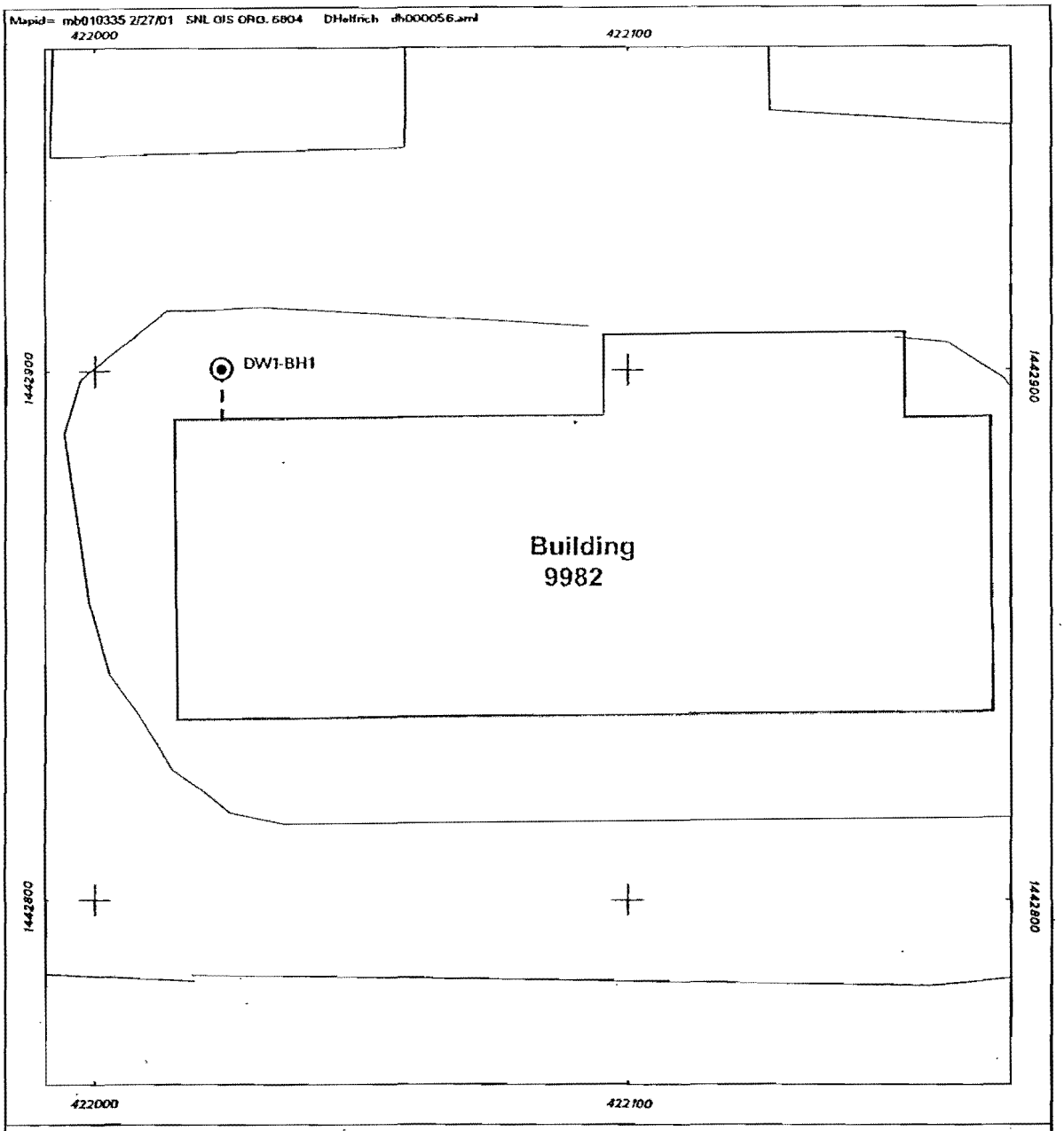
Analytical results for the soil samples collected in 1999 will be compiled and reviewed.

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1117 was last updated Jan 24, 2003.



Legend

- Existing Soil Boring Location
- Dry Well
- Drain Line
- Road
- Building 9982

Site Map for the Building 9982 Drain System, Solar Tower Complex SWMU 1117

0 15 30
Scale in Feet

0 3.6 7.2
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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Area of Concern (AOC) No. 1120: Building 6643 Drywell (TA-III)

ADS: 1295
Operable Unit: Septic Tanks and Drainfields

- Site Map
- Site History
- Constituents of Concern
- Current Hazards
- Current Status of Work
- Future Work Planned
- Waste Volume Estimated/Generated

Primary Contact: Mike Sanders or Sue Collins
Office Phone: 284-2478 or 284-2546

Site History

Historical SNL/NM Facilities Engineering drawings indicate that this seepage pit was located about 70 feet south of southeast corner of Building 6643, in TA-III. It is assumed that the use of this seepage pit was discontinued in the early 1990s when the City of Albuquerque sanitary sewer system was extended into TA-III. No other historical research has been conducted for this site.

Constituents of Concern

Constituents of concern for this site are unknown.

Current Hazards

No known surface hazards have been identified. Environmental characterization has not been conducted at the site; therefore potential subsurface environmental hazards are unknown.

Current Status of Work

A field inspection at the site was conducted in September 1999, but no surface indication of the seepage pit was found. However, no surface indication of the east seepage pit outside of the fence was found. A backhoe was therefore used at the site in March 2002 to successfully locate the unit, which turned out to be a drywell rather than a seepage pit. To determine if environmental contamination is present beneath this system and in accordance with agreements reached with NMED personnel, additional sampling was conducted at this site. As shown on the site map, passive soil vapor samplers were installed at four locations around the drywell in April 2002 to detect the presence or absence of VOCs at the site. One soil sample boring was also drilled directly beneath the center of the drywell in August 2002. Soil samples collected from this boring were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), total cyanide, high explosive (HE) compounds, metals, and radionuclides.

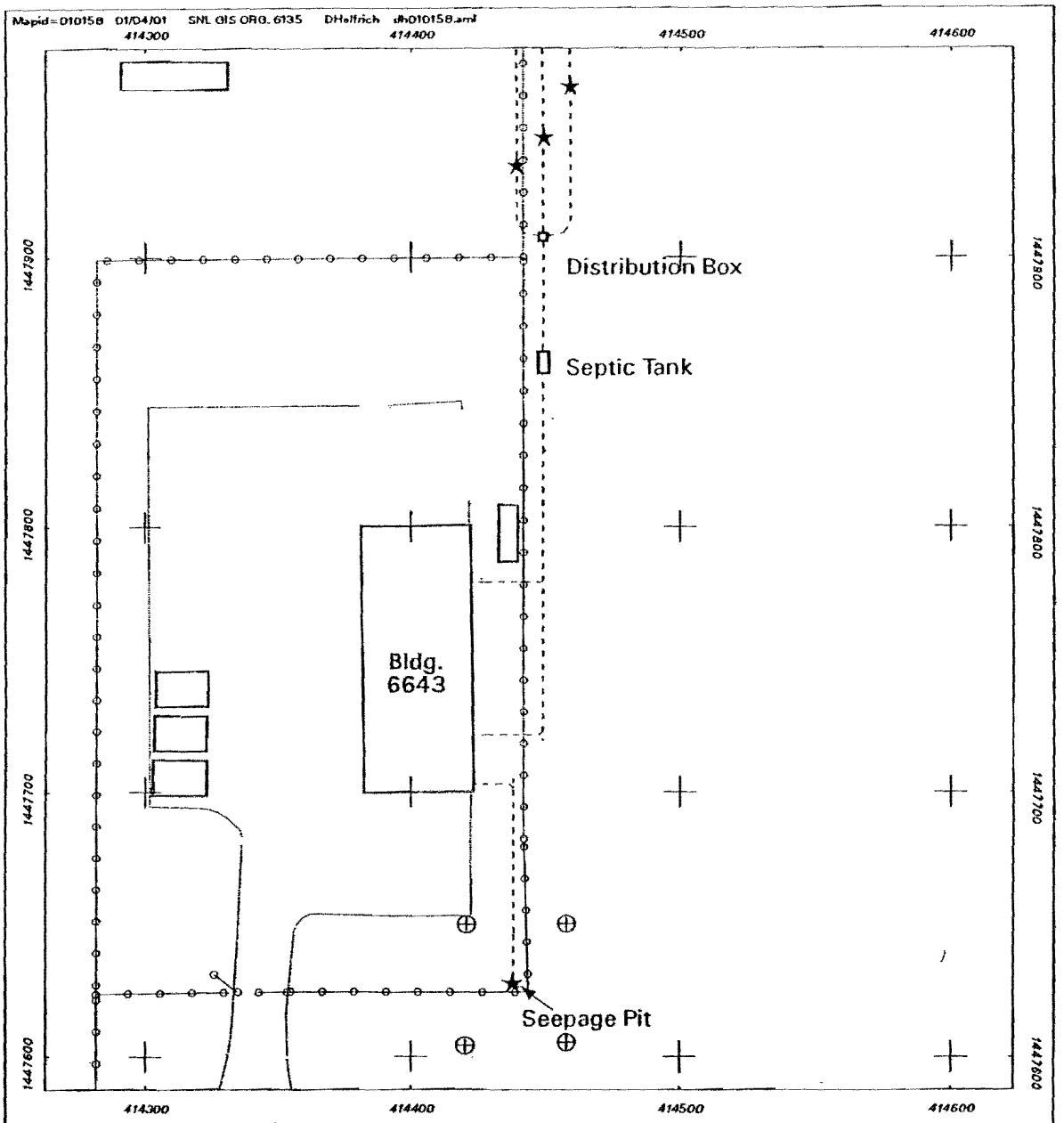
Future Work Planned

This site may be selected for deeper environmental characterization sampling if analytical results from the shallow sampling indicate potentially significant contamination at depth.

Waste Volume Estimated/Generated

No environmental characterization or remediation waste has been generated at the site to date.

Information for ER Site 1120 was last updated Jan 24, 2003.



Legend

- ★ Proposed Soil Boring Location
- ⊕ Proposed Passive Soil Vapor Sampling Location
- Fence
- Building / Structure
- Edge of Pavement
- Septic System Drain Line
- Septic Tank / Distribution Box
  Seepage Pit

Site Map of the Bldg. 6643 Drain & Septic System, TA-III SWMU 1079 (Septic System), and SWMU 1120 (Seepage Pit)

0 30 60
Scale in Feet

0 7.2 14.4
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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TO VIEW THE MAP/MAPS ASSOCIATED WITH THIS DOCUMENT PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT

3.0 SUPPLEMENTAL INFORMATION FOR CANYONS GROUNDWATER, TECHNICAL AREA III/V GROUNDWATER, AND TIJERAS ARROYO GROUNDWATER

This section provides supplemental information for Canyons Groundwater, Technical Area III/V Groundwater, and Tijeras Arroyo Groundwater (TAG). The supplemental information addresses, for each area: releases, monitoring well descriptions, and groundwater sampling results. The information related to TAG is for information purposes only; TAG is not a SWMU and the source of releases associated with TAG is unknown.

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Canyons Groundwater

Site History

In 1996, the Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Project reported elevated concentrations of nitrate in the Burn Site production well. SNL/NM installed a monitoring well (CYN-MW1D) in 1997 in order to determine the extent of potential contamination. The sampling of this well revealed elevated levels of nitrate exceeding the U.S. Environmental Protection Agency (EPA) maximum concentration level (MCL) of 10 milligrams per liter (mg/L). Water samples from CYN-MW1D also had detectable levels of petroleum hydrocarbons. Additional groundwater monitoring wells (CYN-MW3 and CYN-MW4) were installed in 1999 to define the nature and extent of contamination at the site. Two piezometers (12AUP01 and CYN-MW2S) were installed in 1996 and 1997, respectively, to monitor groundwater flow. Both piezometers have been dry since installation, but are routinely checked. The network of three groundwater monitoring wells and two piezometers comprise the Canyons Groundwater Investigation. The Burn Site production well was drilled in 1986 to provide nonpotable water for fire suppression during burn tests.

The area of concern for the Canyons Groundwater Investigation is Lurance Canyon located within the boundaries of the U.S. Forest Service Withdrawn Area, which is permitted to the Department of Energy (DOE). Lurance Canyon is one of three large canyons in the Manzanita Mountains (Madera Canyon from the north, Sol se Mete Canyon from the south, and Lurance Canyon from the east). The canyons channel the headwaters of the Arroyo del Coyote. The Canyons Groundwater Investigation study area is within SNL/NM Operable Unit (OU) 1333.

The Lurance Canyon Burn Site is identified as Solid Waste Management Unit (SWMU) 94 and is currently used for testing fire survivability of transportation containers, weapons components, simulated weapons, and satellite components. SWMU 94 lies within SWMU 65, the Lurance Canyon Explosive Test Site, which was used for high explosive (HE) tests, liquid and solid propellant burn tests, and open pit burn tests. Test operations began at SWMU 65 in the late 1960s, but the site is now inactive. Historical aerial photographs indicate that the transition of testing activities from high explosives testing and jet propulsion 4 (JP-4) fuel fires in excavated pits (SWMU 65) to tests using portable steel burn pans (SWMU 94) occurred between 1971 and 1982. Waste water from numerous test units was released into an unlined pit.

The contaminants of concern (COC) for the Canyons Groundwater project include petroleum hydrocarbons (volatile organic compounds [VOCs] and diesel range organics [DRO]) and nitrate. The release of hydrocarbon contaminants to the environment is attributed to the testing activities at SWMU 94 and SWMU 65. The source of nitrate contamination in groundwater has not been identified.

The hydrogeology of the area is detailed in a 2001 SNL/NM report "Groundwater Investigation Canyons Test Area, Operable Unit 1333 Burn Site, Lurance Canyon". The

saturated zone beneath the Burn Site is contained within an assemblage of fractured Precambrian igneous and metamorphic rocks that have undergone extensive deformation. The subsurface data indicate that the groundwater system is confined by an aquitard of partially fractured Precambrian rocks. Because of the confined hydrologic conditions, contaminants may reach groundwater via open fractures in the aquitard. Groundwater in the area generally flows to the west.

Historically, the maximum petroleum hydrocarbon concentration (measured as DRO) in the Canyons Groundwater Investigation area has been 406 micrograms per liter (μg/L) in CYN-MW1D. The maximum nitrate concentration has been 27 mg/L also in CYN-MW1D, exceeding the MCL of 10 mg/L. CYN-MW3 has also had nitrate levels (22 mg/L) that exceeded the MCL. Other compounds measured in groundwater included ethyl benzene, toluene, and xylene. These compounds have been detected in trace amounts, all below the MCLs (where applicable).

In 2000 and 2001, two Voluntary Corrective Actions for SWMU 94 (subunits F and H) removed approximately 1,200 and 880 cubic yards of fuel-contaminated soil, respectively. Following the excavation, confirmatory soil samples showed that fuel contamination was of limited extent and did not reach the underlying bedrock. At the time of the 2000 excavation, a visual inspection revealed that a possible fault in the bedrock at the base of the excavation.

The following conclusions can be made:

- The source of petroleum hydrocarbon contaminants in groundwater is likely the waste water discharged into the unlined pit
- The distribution of petroleum hydrocarbon and nitrate contaminants suggest downward movement through the fault(s) to the saturated zone
- The activities creating the sources of petroleum hydrocarbon contamination have ceased. Areas of contaminated soil have been removed, thus preventing further downward migration of contaminants.

The nearest downgradient production well (KAFB-4) is approximately 10 miles down Arroyo del Coyote.

Constituents of Concern

Volatile organic compounds, diesel range organics, and nitrate.

Current Hazards

No hazards are present in surface or subsurface soils.

Current Status of Work

The network of three groundwater-monitoring wells has been sampled quarterly for COCs as well as other water quality parameters from the dates of well installation to

September 2002. SNL/NM is currently conducting semi-annual sampling for the Canyons Groundwater Investigation. Groundwater results are reported in the Annual Groundwater Monitoring Report produced by the SNL/NM Groundwater Protection Program.

Future Work Planned

A Corrective Measure Study is being prepared for the Canyons Groundwater Investigation. No additional fieldwork or investigations are planned.

Waste Volume Estimated/Generated

No hazardous or radioactive waste associated with Canyon Groundwater Investigation has been generated.

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WELL DATABASE SUMMARY SHEET

Project Name:	TA5 SEEPAGE PITS	**Geo Location:**	TA5 SEEPAGE PITS
ER ADS #:	1306	**Well Completion Date:**	28-FEB-95
Well Name:	TAV-MW1	**Completion Zone:**	SILTY SAND
Owner Name:	SNL/NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	31-JAN-95	**Well Comment:**	WELL DEVELOPED 4/10/95 - 4/14/95. INSIDE FENCE TA-V
Drilling Contractor:	STEWART BROTHERS		
Drilling Method:	AIR CASING HAMMER W/CENTER BI		
Borehole Depth:	520		
Casing Depth:	509.5		

Survey Data

Survey Date: 13-APR-95

Surveyed By: GREINER INC.

State Plane Coordinates

(X) Easting: 414699.928

(Y) Northing: 1454667.5

Surveyed Elevations (FAMSL)

Protective Casing:	5436.204
Top of Inner Well Casing:	5435.136
Concrete Pad:	5432.535
Ground Surface:	5432.5

Calculated Depths and Elevations

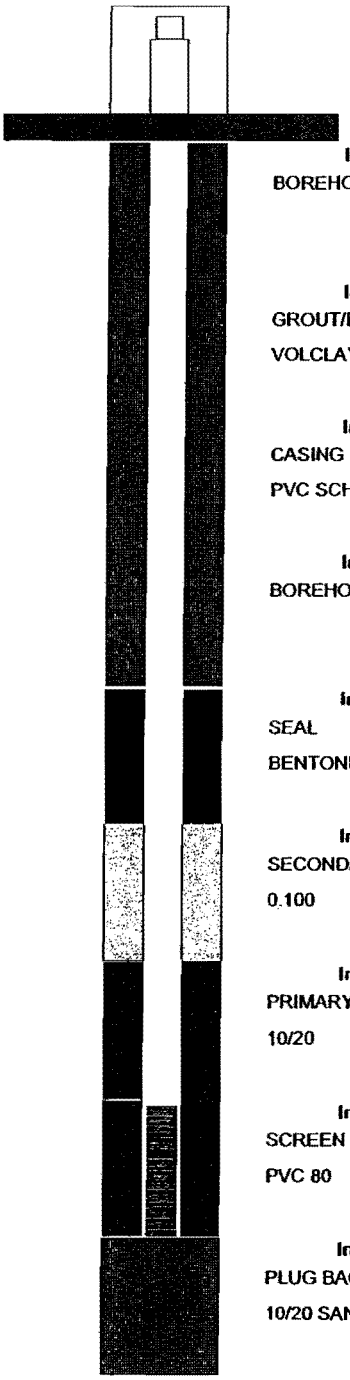
Initial Water Elevation: (FAMSL) 4935.34

Initial Depth To Water: (FBGS) 499.8

Last measured water level was 4931.92 **FASL**
measured on 11-SEP-96

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 3.7

Interval	Start	Stop	
BOREHOLE	0'	200'	O.D. 11.75"
GROUT/BACKFILL VOLCLAY GROUT	0'	463'	
CASING PVC SCH 80	0'	509.5'	I.D. 5" O.D. 5.2"
BOREHOLE	200'	520'	O.D. 10.5"
SEAL BENTONITE POWDER	463'	474'	
SECONDARY PACK 0.100	474'	483.5'	
PRIMARY PACK 10/20	483.5'	512.5'	
SCREEN PVC 80	489.5'	509.5'	Slot Size .02"
PLUG BACK 10/20 SAND	509.5'	520'	

WELL DATABASE SUMMARY SHEET

Project Name:	TA5 SEEPAGE PITS	Geo Location:	WEST OF TA5 (OUTSIDE FENCE)
ER ADS #:	1306	Well Completion Date:	30-MAR-95
Well Name:	TAV-MW2	Completion Zone:	SILTY SAND
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	13-MAR-95	Well Comment:	WELL DEVELOPED 4/11/95 - 4/14/95 WITH BAILER
Drilling Contractor:	STEWART BROTHERS		
Drilling Method:	AIR CASING HAMMER W/CENTER BI		
Borehole Depth:	522		
Casing Depth:	513.5		

Survey Data

Survey Date: 13-APR-95

Surveyed By: GREINER INC.

State Plane Coordinates

(X) Easting: 414145.08

(Y) Northing: 1454634.7

Surveyed Elevations (FAMSL)

Protective Casing:	5425.769
Top of Inner Well Casing:	5424.857
Concrete Pad:	5422.144
Ground Surface:	5421.751

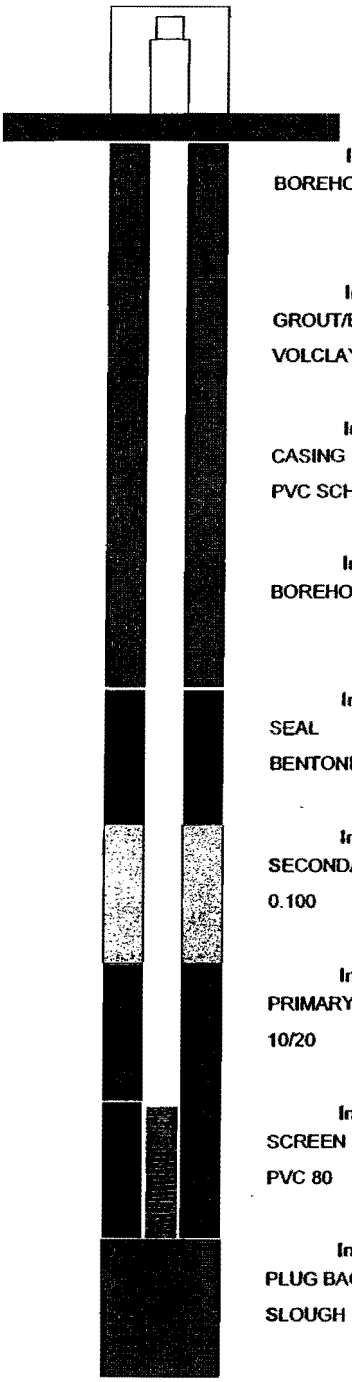
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4930.201
Initial Depth To Water: (FBGS)	494.66

Last measured water level was 4932.33 FASL measured on 10-SEP-96

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 3.11

Interval	Start	Stop		
BOREHOLE	0'	150'	O.D.	11.75"
GROUT/BACKFILL	0'	474'		
VOLCLAY GROUT				
CASING	0'	513.5'		
PVC SCH 80	I.D. 5"		O.D.	5.2"
BOREHOLE	150'	522'	O.D.	10.5"
SEAL	474'	483'		
BENTONITE POWDER				
SECONDARY PACK	483'	491'		
0.100				
PRIMARY PACK	491'	518.3'		
10/20				
SCREEN	497'	513.5'		
PVC 80			Slot Size	.02"
PLUG BACK	513.5'	522'		
SLOUGH				

WELL DATABASE SUMMARY SHEET

Project Name:	TAV GROUNDWATER	**Geo Location:**	~850' E. OF SE CORNER OF TAV
ER ADS #:	1306	**Well Completion Date:**	11-APR-97
Well Name:	TAV-MW3	**Completion Zone:**	SILTY TO GRAVELLY SAND
Owner Name:	SNL/NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	03-APR-97	**Well Comment:**	BENTONITE GROUT FLOWED APPARENTLY THROUGH THE WELL SCREEN AND FILLED ~100' OF THE BOTTOM OF THE WELL. GROUT WAS REMOVED WITH BAILER AND REPEATED SURGING AND BAILING
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	568		
Casing Depth:	557.7		

Survey Data

Survey Date: 23-MAY-97

Surveyed By: GREINER, INC.

State Plane Coordinates

(X) Easting: 416156.07

(Y) Northing: 1454168.25

Surveyed Elevations (FAMSL)

Protective Casing:	5462.31
Top of Inner Well Casing:	5461.73
Concrete Pad:	5459.35
Ground Surface:	5459.1

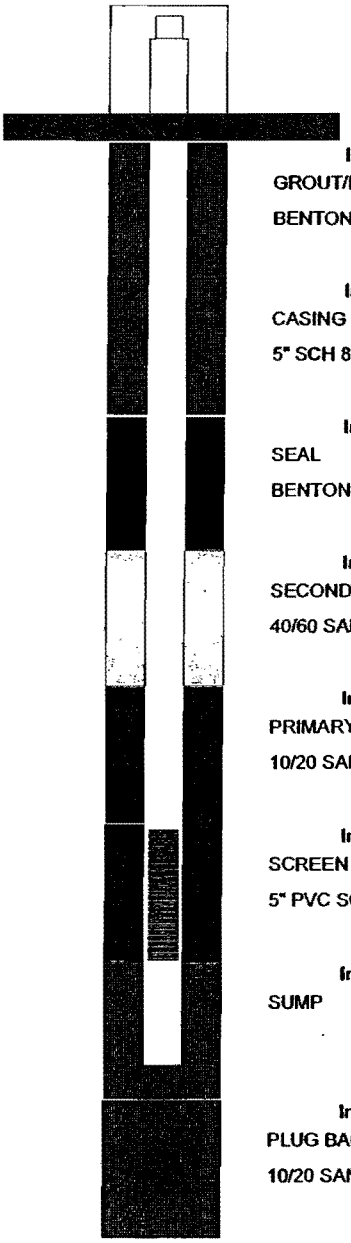
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4930.87
Initial Depth To Water: (FBGS)	528.23

Last measured water level was 4930.69 **FASL**
measured on 26-JUL-97

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.63

Interval	Start	Stop
GROUT/BACKFILL	0'	512.5'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	557.7'
5" SCH 80 PVC		

Interval	Start	Stop
SEAL	512.5'	517.5'
BENTONITE PELLETS		

Interval	Start	Stop
SECONDARY PACK	517.5'	526'
40/60 SAND		

Interval	Start	Stop
PRIMARY PACK	526'	568'
10/20 SAND		

Interval	Start	Stop
SCREEN	532'	552'
5" PVC SCH 80		

Slot Size .02"

Interval	Start	Stop
SUMP	552'	557.7'

Interval	Start	Stop
PLUG BACK	557.7'	568'
10/20 SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	TAV GROUNDWATER	**Geo Location:**	~350' NORTH OF TA-V ENTRANCE
ER ADS #:	1306	**Well Completion Date:**	18-APR-97
Well Name:	TAV-MW4	**Completion Zone:**	SILTY TO GRAVELLY SAND
Owner Name:	SNL/NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	14-APR-97	**Well Comment:**	NORMAL CONSTRUCTION AND COMPLETION;NO PROBLEMS ENCOUNTERED
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	528		
Casing Depth:	520.7		

Survey Data

Survey Date: 23-MAY-97

Surveyed By: GREINER, INC.

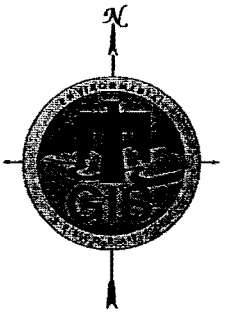
State Plane Coordinates

(X) Easting: 414461.42

(Y) Northing: 1455521.84

Surveyed Elevations (FAMSL)

Protective Casing:	5426.07
Top of Inner Well Casing:	5425.39
Concrete Pad:	5423.35
Ground Surface:	5423

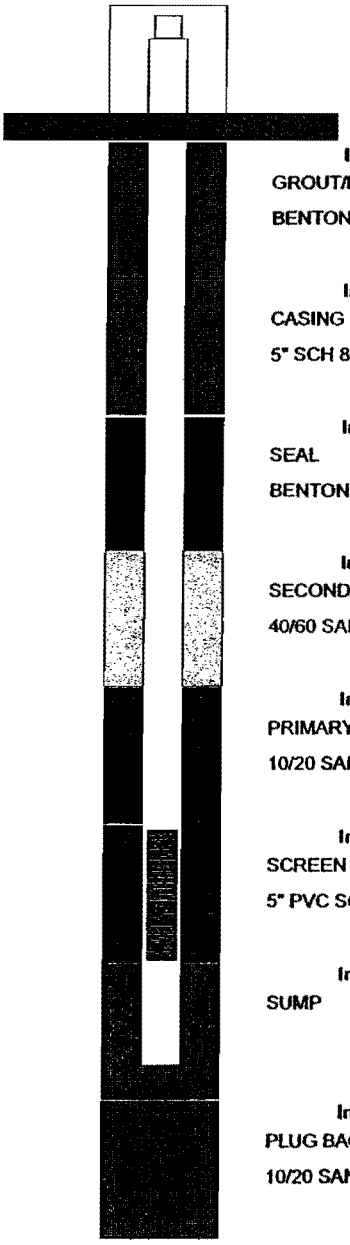


Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4931.95	
Initial Depth To Water: (FBGS)	491.05	
Last measured water level was	4931.77	**FASL**
measured on	16-JUL-97	

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.39

Interval	Start	Stop
GROUT/BACKFILL	0'	474'
BENTONITE GROUT		
CASING	0'	520.7'
5" SCH 80 PVC		
SEAL	474'	479'
BENTONITE CHIPS		
SECONDARY PACK	479'	485'
40/60 SAND		
PRIMARY PACK	485'	515'
10/20 SAND		
SCREEN	495'	515'
5" PVC SCH 80		
Slot Size	.02"	
SUMP	515'	520.7'
PLUG BACK	520.7'	528'
10/20 SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	TA-V GROUND WATER	**Geo Location:**	JUST NORTH OF TA-III FENCE
ER ADS #:	1306	**Well Completion Date:**	26-APR-97
Well Name:	TAV-MW5	**Completion Zone:**	SILTY AND GRAVELLY SAND
Owner Name:	SNL/NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	21-APR-97	**Well Comment:**	NORMAL CONSTRUCTION AND COMPLETION;NO PROBLEMS ENCOUNTERED. HEAVING FINE SAND AT TOTAL DEPTH.
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	517		
Casing Depth:	512.7		

Survey Data

Survey Date: 23-MAY-97

Surveyed By: GREINER INC.

State Plane Coordinates

(X) Easting: 413141.76

(Y) Northing: 1455269.73

Surveyed Elevations (FAMSL)

Protective Casing:	5406.84
Top of Inner Well Casing:	5406.2
Concrete Pad:	5404.17
Ground Surface:	5403.9

Calculated Depths and Elevations

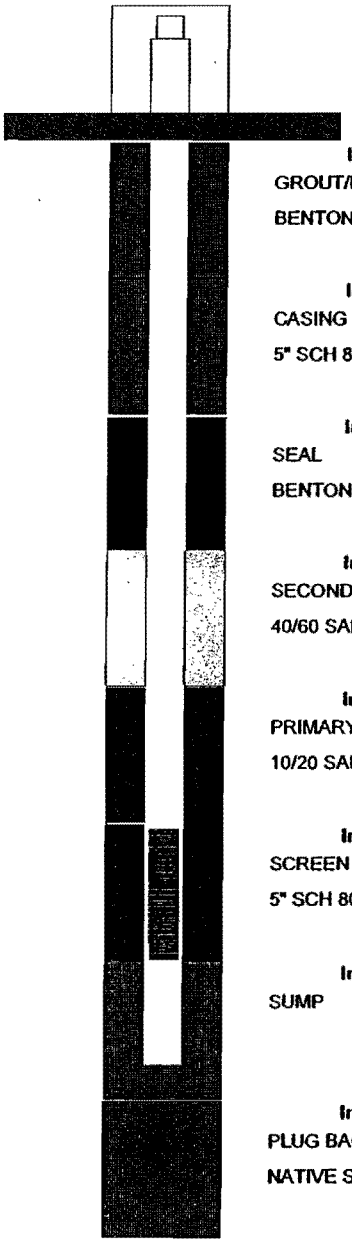
Initial Water Elevation: (FAMSL) 4928.19

Initial Depth To Water: (FBGS) 475.71

Last measured water level was 4927.96 **FASL**
measured on 26-JUL-97

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.3

Interval	Start	Stop
GROUT/BACKFILL	0'	463'
BENTONITE GROUT		
Interval	**Start**	**Stop**
CASING	0'	512.7'
5" SCH 80 PVC		
Interval	**Start**	**Stop**
SEAL	463'	468'
BENTONITE CHIPS		
Interval	**Start**	**Stop**
SECONDARY PACK	468'	474'
40/60 SAND		
Interval	**Start**	**Stop**
PRIMARY PACK	474'	512.7'
10/20 SAND		
Interval	**Start**	**Stop**
SCREEN	487'	507'
5" SCH 80 PVC		
	Slot Size	.02"
Interval	**Start**	**Stop**
SUMP	507'	512.7'
Interval	**Start**	**Stop**
PLUG BACK	512.7'	517'
NATIVE SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	TA-V MONITOR WELLS	**Geo Location:**	ER SITE 5, INSIDE TA-V
ER ADS #:	1306	**Well Completion Date:**	24-APR-01
Well Name:	TAV-MW6	**Completion Zone:**	UPPER SANTA FE GROUP
Owner Name:	SNL	**Formation of Completion:**	SILTY SAND, SAND
Date Drilling Started:	17-APR-01	**Well Comment:**	SCREEN INSTALLED IN RELATIVELY TIGHT SILTS & SANDS.
Drilling Contractor:	WDC EXPLORATION		
Drilling Method:	AIR ROTARY CASING HAMMER-ARC		
Borehole Depth:	534		
Casing Depth:	532		

Survey Data

Survey Date: 19-JUN-01

Surveyed By: VLADIMIR VIRIK - ASCI

State Plane Coordinates

(X) Easting: 414637.21

(Y) Northing: 1454940.06

Surveyed Elevations (FAMSL)

Protective Casing:	5429.11
Top of Inner Well Casing:	5428.74
Concrete Pad:	5429.07
Ground Surface:	5429

Calculated Depths and Elevations

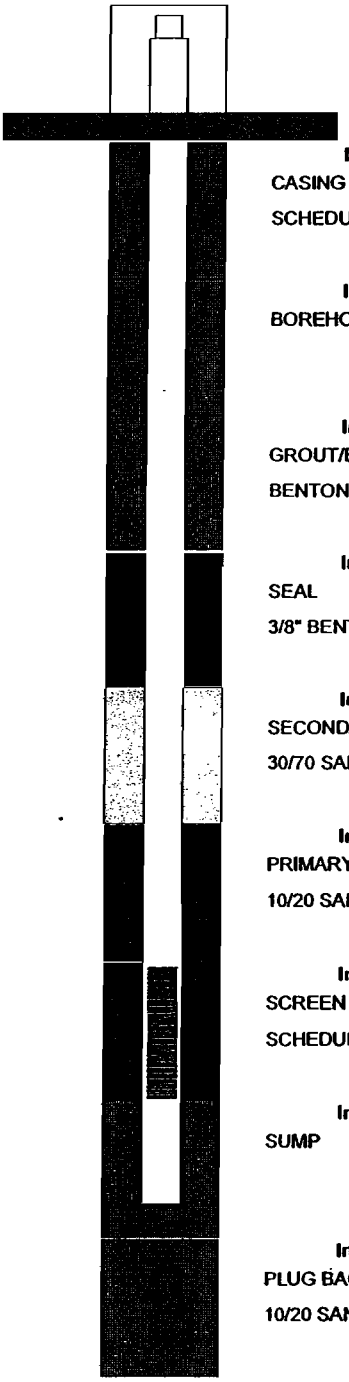
Initial Water Elevation: (FAMSL)	4929.02
Initial Depth To Water: (FBGS)	499.72

Last measured water level was FASL

measured on

Date Updated: 02-MAY-02

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: -.26

Interval	Start	Stop
CASING	0'	532'
SCHEDULE 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	534'
	O.D. 9.625"	

Interval	Start	Stop
GROUT/BACKFILL	2'	492'
BENTONITE GROUT		

Interval	Start	Stop
SEAL	492'	498'
3/8" BENTONITE CHIPS		

Interval	Start	Stop
SECONDARY PACK	498'	502'
30/70 SAND		

Interval	Start	Stop
PRIMARY PACK	502'	534'
10/20 SAND		

Interval	Start	Stop
SCREEN	507'	527'
SCHEDULE 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	527'	532'

Interval	Start	Stop
PLUG BACK	532'	534'
10/20 SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	TA-V MONITOR WELLS	**Geo Location:**	ER SITE 5, INSIDE TA-V
ER ADS #:	1306	**Well Completion Date:**	06-APR-01
Well Name:	TAV-MW7	**Completion Zone:**	UPPER SANTA FE GROUP
Owner Name:	SNL	**Formation of Completion:**	SILTY SAND, SAND
Date Drilling Started:	24-MAR-01	**Well Comment:**	SCREEN INSTALLED IN RELATIVELY TIGHT SILTS & SANDS.
Drilling Contractor:	WDC EXPLORATION		
Drilling Method:	MUD ROTARY		
Borehole Depth:	644		
Casing Depth:	622		

Survey Data

Survey Date: 19-JUN-01

Surveyed By: VLADIMIR VIRIK - ASCI

State Plane Coordinates

(X) Easting: 414619.96

(Y) Northing: 1454940.06

Surveyed Elevations (FAMSL)

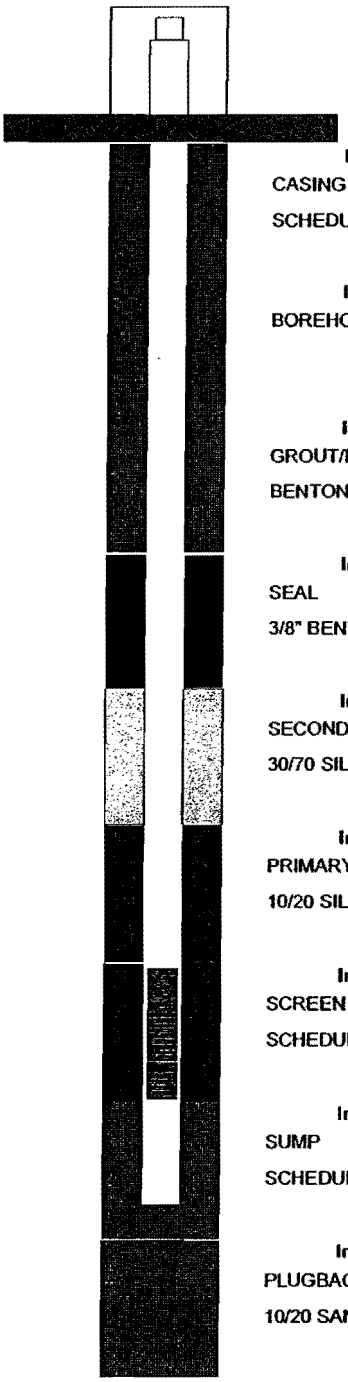
Protective Casing:	5428.39
Top of Inner Well Casing:	5428
Concrete Pad:	5428.39
Ground Surface:	5428.28

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4926.5	
Initial Depth To Water: (FBGS)	501.5	
Last measured water level was measured on		**FASL**

Date Updated: 02-MAY-02

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: -.28

Interval	Start	Stop		
CASING	0'	622'		
SCHEDULE 80 PVC	I.D. 5"		O.D. 5.5"	

Interval	Start	Stop		
BOREHOLE	0'	644'		
			O.D. 11"	

Interval	Start	Stop
GROUT/BACKFILL	2'	569'
BENTONITE GROUT		

Interval	Start	Stop
SEAL	569'	586.5'
3/8" BENTONITE CHIPS		

Interval	Start	Stop
SECONDARY PACK	586.5'	589'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	589'	644'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	597'	617'
SCHEDULE 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	617'	622'
SCHEDULE 80 PVC		

Interval	Start	Stop
PLUGBACK	622'	644'
10/20 SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	TA-V MONITOR WELLS	**Geo Location:**	PARKING LOT N. OF BLDG 6585
ER ADS #:	1306	**Well Completion Date:**	11-APR-01
Well Name:	TAV-MW8	**Completion Zone:**	UPPER SANTA FE GROUP
Owner Name:	SNL	**Formation of Completion:**	SILTY SAND, SAND
Date Drilling Started:	08-APR-01	**Well Comment:**	SCREEN INSTALLED IN RELATIVELY TIGHT SILTY SAND & SAND.
Drilling Contractor:	WDC EXPLORATION		
Drilling Method:	AIR ROTARY/CASING HAMMER-ARC		
Borehole Depth:	525		
Casing Depth:	516		

Survey Data

Survey Date: 19-JUN-01

Surveyed By: VLADIMIR VIRIK-ASCI

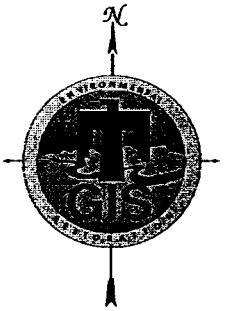
State Plane Coordinates

(X) Easting: 413962.48

(Y) Northing: 1455137.75

Surveyed Elevations (FAMSL)

Protective Casing:	5414.96
Top of Inner Well Casing:	5414.55
Concrete Pad:	5414.95
Ground Surface:	5414.88

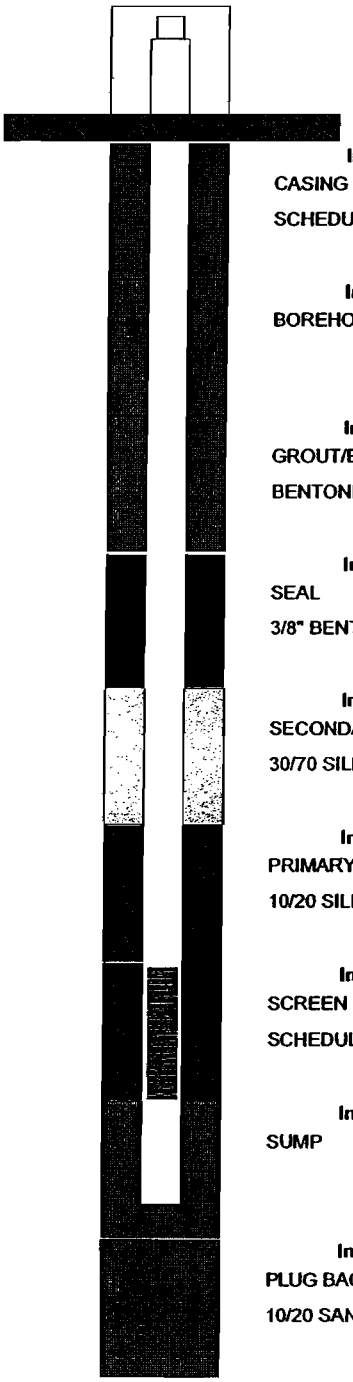


Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4925.65	
Initial Depth To Water: (FBGS)	488.9	
Last measured water level was measured on		FASL

Date Updated: 02-MAY-02

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: -.33

Interval	Start	Stop		
CASING	0'	516'		
SCHEDULE 80 PVC	I.D. 5"	O.D. 5.5"		
Interval	**Start**	**Stop**		
BOREHOLE	0'	525'		
		O.D. 9.625"		
Interval	**Start**	**Stop**		
GROUT/BACKFILL	2'	471'		
BENTONITE - VOLCLAY				
Interval	**Start**	**Stop**		
SEAL	471'	[illegible]		
3/8" BENTONITE CHIPS				
Interval	**Start**	**Stop**		
SECONDARY PACK	477'	482'		
30/70 SILICA SAND				
Interval	**Start**	**Stop**		
PRIMARY PACK	482'	516'		
10/20 SILICA SAND				
Interval	**Start**	**Stop**		
SCREEN	491'	511'		
SCHEDULE 80 PVC				
		Slot Size	.02"	
Interval	**Start**	**Stop**		
SUMP	511'	516'		
Interval	**Start**	**Stop**		
PLUG BACK	516'	525'		
10/20 SAND				

WELL DATABASE SUMMARY SHEET

Project Name:	TA-V MONITOR WELLS	**Geo Location:**	PARKING LOT N. OF BLDG. 6585
ER ADS #:	1306	**Well Completion Date:**	17-MAR-01
Well Name:	TAV-MW9	**Completion Zone:**	UPPER SANTA FE GROUP
Owner Name:	SNL	**Formation of Completion:**	SILTY SANDS
Date Drilling Started:	09-MAR-01	**Well Comment:**	SCREEN INSTALLED IN RELATIVELY TIGHT SILTS & SANDS.
Drilling Contractor:	WDC EXPLORATION		
Drilling Method:	MUD ROTARY		
Borehole Depth:	1017		
Casing Depth:	607		

Survey Data

Survey Date: 19-JUN-01

Surveyed By: VLADIMIR VIRIK - ASCI

State Plane Coordinates

(X) Easting: 413922.29

(Y) Northing: 1455154.15

Surveyed Elevations (FAMSL)

Protective Casing:	5414.34
Top of Inner Well Casing:	5413.83
Concrete Pad:	5414.35
Ground Surface:	5414.25

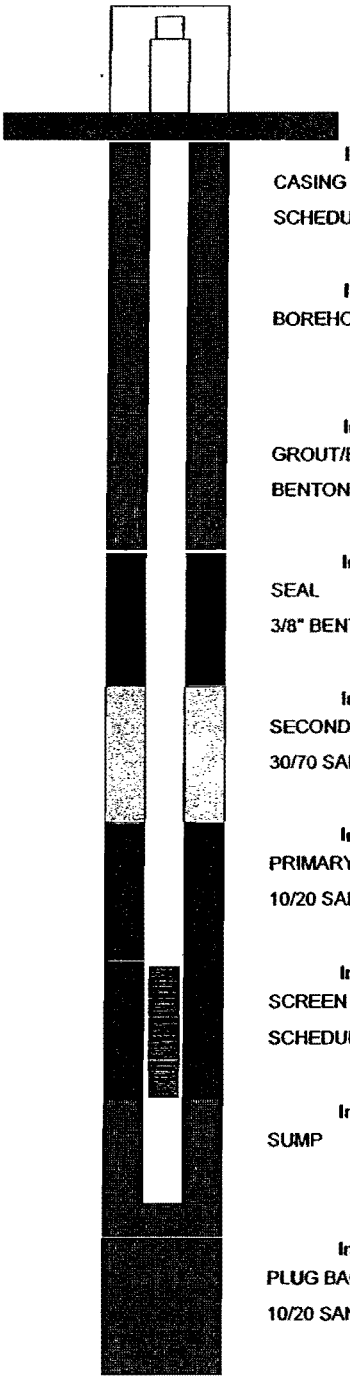
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4992.33
Initial Depth To Water: (FBGS)	421.5

Last measured water level was measured on FASL

Date Updated: 02-MAY-02

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: -.42

Interval	Start	Stop
CASING	0'	607'
SCHEDULE 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	617'
		O.D. 11"

Interval	Start	Stop
GROUT/BACKFILL	2'	545'
BENTONITE GROUT		

Interval	Start	Stop
SEAL	545'	554'
3/8" BENTONITE CHIPS		

Interval	Start	Stop
SECONDARY PACK	554'	558'
30/70 SAND		

Interval	Start	Stop
PRIMARY PACK	558'	617'
10/20 SAND		

Interval	Start	Stop
SCREEN	582'	602'
SCHEDULE 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	602'	607'

Interval	Start	Stop
PLUG BACK	607'	617'
10/20 SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	LIQ WASTE DISP SYS	**Geo Location:**	TA-V PARKING LOT
ER ADS #:	1307	**Well Completion Date:**	03-MAY-93
Well Name:	LWDS-MW1	**Completion Zone:**	SAND
Owner Name:	SNL/NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:		**Well Comment:**	WATER LEVEL MEASURED ON JULY 14, 1993-FLUSH MOUNT SURFACE COMPLETION. NEED SOCKET WRENCH TO ACCESS
Drilling Contractor:			
Drilling Method:	SONIC/AIR ROTARY/CABLE TOOL		
Borehole Depth:	525		
Casing Depth:	520.33		

Survey Data

Survey Date:

Surveyed By:

State Plane Coordinates

(X) Easting: 414375.034

(Y) Northing: 1455057.433

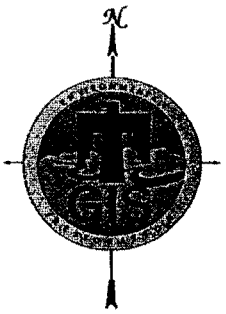
Surveyed Elevations (FAMSL)

Protective Casing:

Top of Inner Well Casing: 5422.186

Concrete Pad:

Ground Surface: 5422.694



Calculated Depths and Elevations

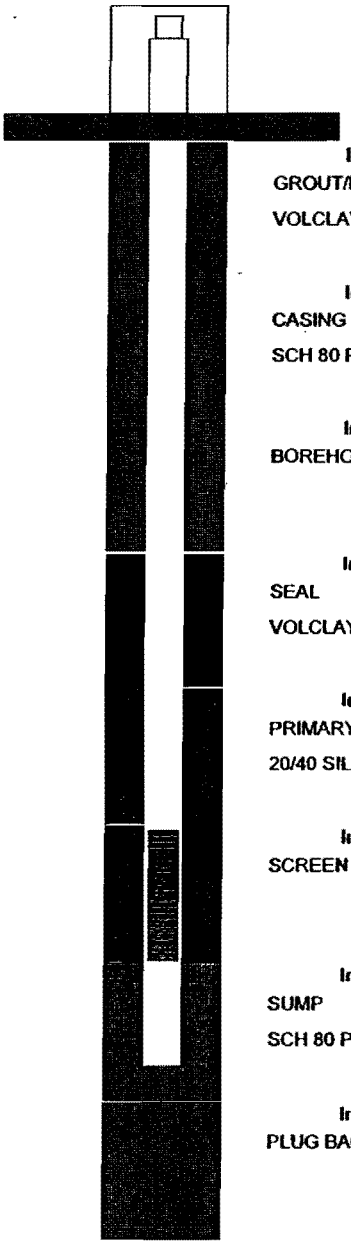
Initial Water Elevation: (FAMSL) 4914.386

Initial Depth To Water: (FBGS) 497.8

Last measured water level was 4933.1 **FASL**
measured on 10-SEP-96

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: -.25

Interval	Start	Stop
GROUT/BACKFILL	0'	485'
VOLCLAY		

Interval	Start	Stop
CASING	0'	520.33'
SCH 80 PVC	I.D. 3.862"	O.D. 4.5"

Interval	Start	Stop
BOREHOLE	0'	525'
		O.D. 11"

Interval	Start	Stop
SEAL	485'	495'
VOLCLAY PELLETS		

Interval	Start	Stop
PRIMARY PACK	495'	525'
20/40 SILICA SAND		

Interval	Start	Stop
SCREEN	500'	515'
	Slot Size	.01"

Interval	Start	Stop
SUMP	515'	520.33'
SCH 80 PVC		

Interval	Start	Stop
PLUG BACK	520.33'	525'

WELL DATABASE SUMMARY SHEET

Project Name:	LIQ WASTE DISP SYS	**Geo Location:**	LWDS Surface Impoundments
ER ADS #:	1307	**Well Completion Date:**	30-OCT-92
Well Name:	LWDS-MW2	**Completion Zone:**	SAND
Owner Name:	SNL	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	12-AUG-92	**Well Comment:**	WATER LEVEL MEASUREMENT FROM DRILLER'S LOG BOOK (22-OCT-92)
Drilling Contractor:			
Drilling Method:	SONIC/AIR ROTARY/DRIVE CASING		
Borehole Depth:	531		
Casing Depth:	531		

Survey Data

Survey Date:

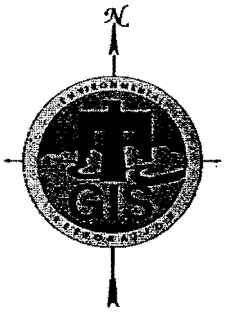
Surveyed By:

State Plane Coordinates

(X) Easting:	413746.96
(Y) Northing:	1455700.191

Surveyed Elevations (FAMSL)

Protective Casing:	5410.95
Top of Inner Well Casing:	5409.811
Concrete Pad:	5408.87
Ground Surface:	5408.8



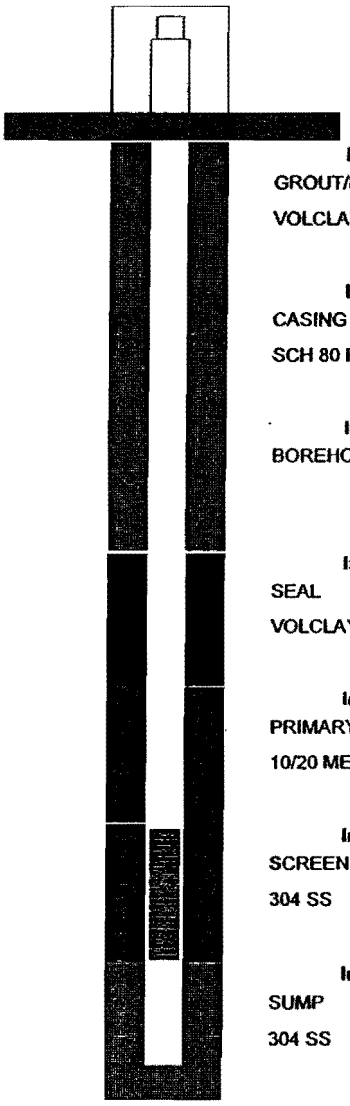
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4929.811
Initial Depth To Water: (FBGS)	480

Last measured water level was 4931 **FASL**
measured on 09-SEP-96

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: .94

Interval	Start	Stop	
GROUT/BACKFILL	0'	474'	
VOLCLAY			

Interval	Start	Stop		
CASING	0'	531'		
SCH 80 PVC	I.D. 3.862"		O.D.	4.5"

Interval	Start	Stop		
BOREHOLE	0'	531'		
			O.D.	11"

Interval	Start	Stop
SEAL	474'	480'
VOLCLAY PELLETS		

Interval	Start	Stop
PRIMARY PACK	480'	531'
10/20 MESH SILICA		

Interval	Start	Stop
SCREEN	506'	526'
304 SS		

Interval	Start	Stop
SUMP	526'	531'
304 SS		

WELL DATABASE SUMMARY SHEET

Project Name:	SWHC	**Geo Location:**	NE OF TA-V
ER ADS #:	1330	**Well Completion Date:**	23-MAY-95
Well Name:	AVN-1	**Completion Zone:**	SILTY AND GRAVELLY SAND
Owner Name:	SNL/NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	09-MAY-95	**Well Comment:**	DEEP COMPLETION IN ZONE OF HIGH POTENTIAL K TO BE USED AS PUMPING WELL IN CONJUNCTION WITH AVN-2, COMPLETED AT H2O TABLE
Drilling Contractor:	USGS		
Drilling Method:	MUD ROTARY		
Borehole Depth:	650		
Casing Depth:	600		

Survey Data

Survey Date:

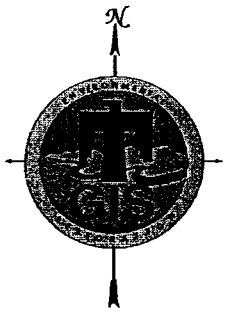
Surveyed By:

State Plane Coordinate

(X) Easting:	415399.496
(Y) Northing:	1455504.605

Surveyed Elevations (FAMSL)

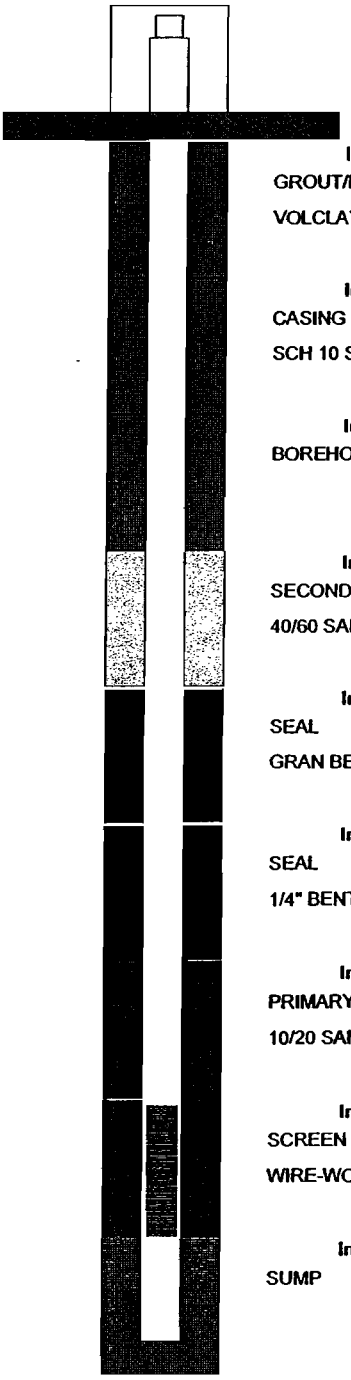
Protective Casing:	5441.49
Top of Inner Well Casing:	5440.55
Concrete Pad:	5437.83
Ground Surface:	5437.806



Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4931.95	
Initial Depth To Water: (FBGS)	508.6	
Last measured water level was	4930.65	FASL
measured on	09-SEP-96	

Date Updated:	**Date Printed:**
14-MAR-00	05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.72

Interval	Start	Stop
GROUT/BACKFILL	0'	488'
VOLCLAY		

Interval	Start	Stop
CASING	0'	600'
SCH 10 SS, TYPE 304	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	650'
		O.D. 10"

Interval	Start	Stop
SECONDARY PACK	488'	500'
40/60 SAND/.100 SAND		

Interval	Start	Stop
SEAL	500'	523'
GRAN BEN&10/20 SAND		

Interval	Start	Stop
SEAL	523'	550'
1/4" BENT. PELLETS		

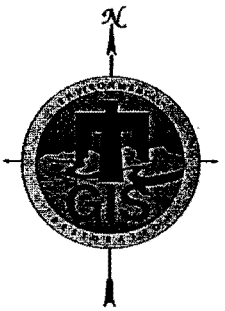
Interval	Start	Stop
PRIMARY PACK	550'	600'
10/20 SAND		

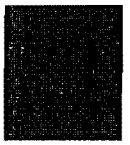
Interval	Start	Stop
SCREEN	570'	590'
WIRE-WOUND SS		
	Slot Size	.02"

Interval	Start	Stop
SUMP	590'	600'

WELL DATABASE SUMMARY SHEET

Project Name:	SWHC	**Geo Location:**	NE OF TA-V
ER ADS #:	1330	**Well Completion Date:**	23-MAY-95
Well Name:	AVN-1	**Completion Zone:**	SILTY AND GRAVELLY SAND
Owner Name:	SNL/NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	09-MAY-95	**Well Comment:**	DEEP COMPLETION IN ZONE OF HIGH POTENTIAL K TO BE USED AS PUMPING WELL IN CONJUNCTION WITH AVN-2, COMPLETED AT H2O TABLE
Drilling Contractor:	USGS		
Drilling Method:	MUD ROTARY		
Borehole Depth:	650		
Casing Depth:	600		





Interval	Start	Stop
PLUG BACK	600'	650'
MED NAT BENT CHIPS		

WELL DATABASE SUMMARY SHEET

Project Name:	SWHC	**Geo Location:**	NE OF TA-V
ER ADS #:	1330	**Well Completion Date:**	05-JUN-95
Well Name:	AVN-2	**Completion Zone:**	SILTY SAND,F-VFG
Owner Name:	SNL/NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	31-MAY-95	**Well Comment:**	WATER TABLE WELL UPGRADIENT/CROSS GRADIENT OF TA-V
Drilling Contractor:	USGS		
Drilling Method:	MUD ROTARY		
Borehole Depth:	530		
Casing Depth:	520		

Survey Data

Survey Date:

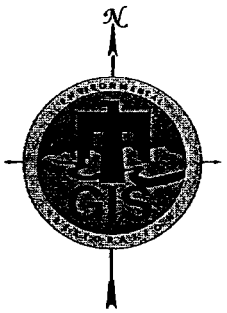
Surveyed By:

State Plane Coordinates

(X) Easting:	415420.02
(Y) Northing:	1455510.528

Surveyed Elevations (FAMSL)

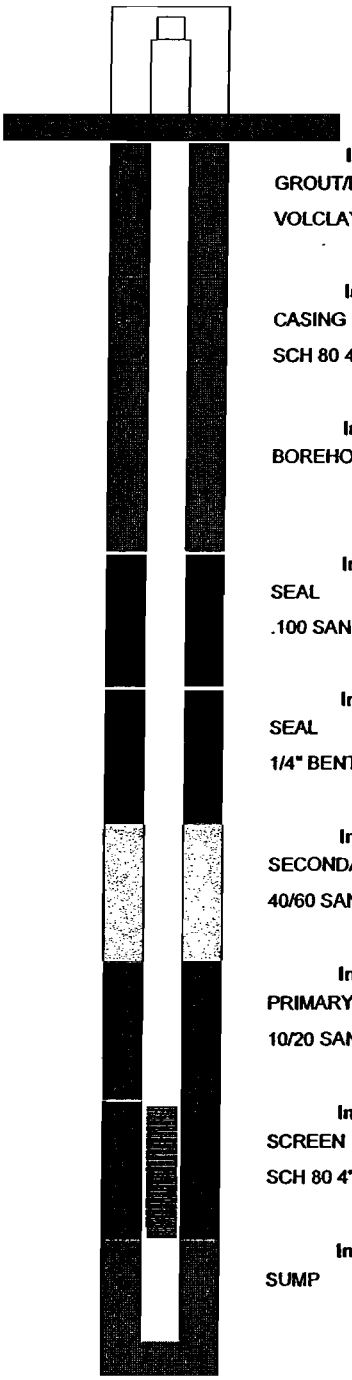
Protective Casing:	5440.68
Top of Inner Well Casing:	5439.93
Concrete Pad:	5438.29
Ground Surface:	5438.186



Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4933.43	
Initial Depth To Water: (FBGS)	506.5	
Last measured water level was	4932.2	FASL
measured on	09-SEP-96	

Date Updated:	**Date Printed:**
14-MAR-00	05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 1.64

Interval	Start	Stop
GROUT/BACKFILL	0'	431'
VOLCLAY		

Interval	Start	Stop
CASING	0'	520'
SCH 80 4" PVC	I.D. 3.8"	O.D. 4.5"

Interval	Start	Stop
BOREHOLE	0'	530'
		O.D. 8"

Interval	Start	Stop
SEAL	431'	440'
.100 SAND		

Interval	Start	Stop
SEAL	440'	467'
1/4" BENT PELLETS		

Interval	Start	Stop
SECONDARY PACK	467'	478'
40/60 SAND		

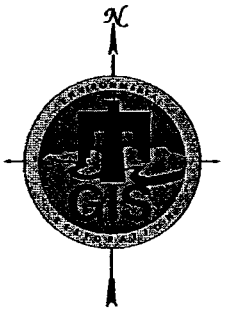
Interval	Start	Stop
PRIMARY PACK	478'	520'
10/20 SAND		

Interval	Start	Stop
SCREEN	495'	515'
SCH 80 4" PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	515'	520'

WELL DATABASE SUMMARY SHEET

Project Name:	SWHC	**Geo Location:**	NE OF TA-V
ER ADS #:	1330	**Well Completion Date:**	05-JUN-95
Well Name:	AVN-2	**Completion Zone:**	SILTY SAND,F-VFG
Owner Name:	SNL/NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	31-MAY-95	**Well Comment:**	WATER TABLE WELL UPGRADIENT/CROSS GRADIENT OF TA-V
Drilling Contractor:	USGS		
Drilling Method:	MUD ROTARY		
Borehole Depth:	530		
Casing Depth:	520		



Interval	Start	Stop
PLUG BACK	520'	530'
10/20 SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	KAFB WATER SUPPLY	**Geo Location:**	TA-III
ER ADS #:	NA	**Well Completion Date:**	27-MAY-59
Well Name:	KAFB-10	**Completion Zone:**	LIMESTONE
Owner Name:	KAFB	**Formation of Completion:**	PALEOZOIC
Date Drilling Started:	01-NOV-58	**Well Comment:**	TOP OF PALEOZOIC LIMESTONE BEDROCK AT 1025 FEET
Drilling Contractor:	HAROLD P DOTY		
Drilling Method:	ROTARY		
Borehole Depth:	1050		PLUGGED AND ABANDONED APRIL 1996
Casing Depth:			

Survey Data

Survey Date:

Surveyed By:

State Plane Coordinates

(X) Easting: 413785.945

(Y) Northing: 1455117.393

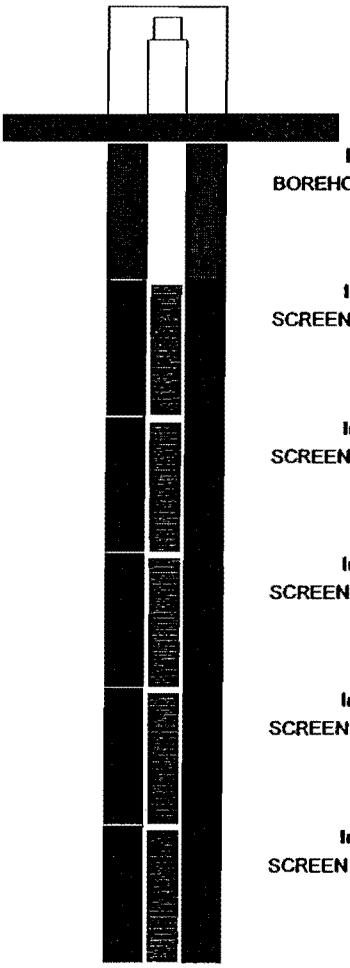
Surveyed Elevations (FAMSL)

Protective Casing:

Top of Inner Well Casing: 5415.98

Concrete Pad:

Ground Surface: 5415.98



Completion Data Measured Depths (FBGS)

Casing Stickup:

Interval	Start	Stop
BOREHOLE	0'	1050'
	O.D.	20"
SCREEN	495'	505'
SCREEN	542'	577'
SCREEN	672'	682'
SCREEN	700'	710'
SCREEN	804'	814'

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL) 4921.98

Initial Depth To Water: (FBGS) 494

Last measured water level was 4917.83 **FASL**
measured on 19-DEC-95

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03

Technical Area III/V Groundwater

Site History

The Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Project has reported concentrations of trichloroethylene (TCE) exceeding the U.S. Environmental Protection Agency (EPA) maximum concentration level (MCL) in groundwater from one Technical Area (TA) V monitoring well (LWDS-MW1) since 1993 (SNL/NM September 1995). The other primary groundwater contaminant at TA-V is nitrate, which has exceeded New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) maximum background level and occasionally has exceeded EPA MCL in several wells. TCE and nitrate have been identified as the contaminants of concern (COCs) for the TA-V study area. TCE is a chlorinated solvent typically used for degreasing operations. Nitrate is principally a degradation product of septic waste. The state and Federal drinking water standard (the MCL) for TCE is 5 micrograms per liter (μg/L), which is equivalent to 5 parts per billion. The state and Federal MCL for nitrate is 10 milligrams per liter (mg/L), which is equivalent to 10 parts per million (ppm). Groundwater contamination at TA-V is the result of waste water and septic waste disposal.

TA-V has 12 designated solid waste management units (SWMU): three are within the Operable Unit (OU) 1307 boundaries and are associated with the Liquid Waste Disposal System (LWDS); the remaining nine are within the OU 1306 boundaries. OU 1306 includes sites within both TA-V and TA-III. The NMED HRMB has reviewed the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report for OU 1307 (SNL/NM September 1995) and SNL/NM responses to comments from the NMED were submitted (SNL/NM January 1998). The OU 1306 RFI Report (SNL/NM June 1996) was reviewed by the NMED and SNL/NM has responded to two Notice of Deficiencies (NOD) on this report (SNL/NM October 1997, SNL/NM July 1998).

TA-III and TA-V are located in the south central portion of Kirtland Air Force Base (KAFB). TA-V is located in the northeastern corner of TA-III and occupies approximately 35 acres. TA-V is a secured research and testing area; facilities located in TA-V are designed to test radiation effects on components. TA-V houses large electron beam accelerators, three research reactors in two reactor facilities, an intense gamma irradiation facility (GIF), and a hot cell facility (HCF).

The numerous investigations that have occurred at the TA-III and TA-V SWMUs have resulted in the following activities:

- Drilling and sampling 26 boreholes
- Installing 13 groundwater monitoring wells
- Collecting 139 surface passive soil vapor samples
- Installing and sampling numerous shallow geoprobe points
- Performing quarterly groundwater sampling events
- Performing slug tests and analyses for six TA-V monitoring wells.

The potential release sites of TCE and/or nitrate in the TA-V study area include the LWDS drain field, the LWDS impoundments, and the TA-V seepage pits. The LWDS drain field received approximately 6.4 million gallons of reactor coolant water from 1963 to 1967 when the drainfield collapsed. All disposal activities at these sites have ceased, and none are currently in operation. TCE was found in sludge samples from the LWDS tanks associated with the drain field, in low concentrations in soil samples around the LWDS drain field, and also in low concentrations at the TA-V seepage pits. No record of solvent use and/or disposal was kept for any TA-V facilities. However, interviews with TA-V personnel reveal that solvents were used at various locations.

The hydrogeologic setting of TA-V is complex. Groundwater occurs within two interfingering Santa Fe Group units, the alluvial fan facies and the Ancestral Rio Grande (ARG) fluvial facies. These two lithofacies have distinct hydrologic characteristics that influence the direction and rate of groundwater flow. Low- to moderate-permeability alluvial-fan facies interfinger with high-permeability ARG facies. Structural features such as faults also influence groundwater migration.

Groundwater occurs at TA-V at depths between 478 and 512 feet (ft) below ground surface in the regional aquifer. The groundwater potentiometric surfaces reveal a groundwater mound existing beneath TA-V. Groundwater flow directions are to the west, south, and north away from the mound. The horizontal gradient is approximately 0.003 ft/ft. Hydraulic conductivities range from 10^{-2} ft/ minute in the ARG facies to 10^{-5}ft/minute in alluvial fan facies. Estimated horizontal flow velocities for both units range from 4 to 10 ft/year.

Historically, the maximum TCE concentration in the TA-V area has been 24 μg/L at LWDS-MW1, and the maximum nitrate (measured as nitrate plus nitrite as nitrogen) concentration has been 36 mg/L at LWDS-MW2.

Other volatile organic compounds measured in groundwater at TA-V include degradation products of TCE: cis-1,2-dichloroethene and 1,1-dichloroethene. Concentrations of arsenic, barium, beryllium, chromium, lead, nickel, selenium, and thallium have exceeded the EPA MCLs in groundwater at TA-V. However, these metal contaminants are not considered to the primary COCs in groundwater at TA-V. Thorium-234 and uranium-238 have exceeded the HRMB approved background values in several monitoring wells. However, these isotopes are naturally occurring in the sediments of the Albuquerque basin, and are not attributed to TA-V operations.

The following conclusions can be made:

- The groundwater mound beneath the TA-V is most likely a result of the waste water disposal from the LWDS drain field. However, it appears more likely that geologic anisotropy and heterogeneity in the area along with the regional water level declines have created relatively high groundwater levels in the area. It is possible that both wastewater discharge and geologic variations are contributing to high groundwater levels beneath TA-V.

- Aqueous transport of contaminants by infiltration of the wastewater is the most probable transport mechanism for both volatile organic and inorganic constituents through the vadose zone and into the aquifer.
- The TCE plume in TA-V groundwater appears to originate from the LWDS tank and drainfield area.
- The primary source of TCE in groundwater at TA-V was from the approximately 6.4 million gallons of waste water from LWDS drain field in the 1960s.

Constituents of Concern

TCE and nitrate.

Current Hazards

No hazards are present in surface or subsurface soils.

Current Status of Work

The network of 13 groundwater-monitoring wells is sampled quarterly for COCs as well as other water quality parameters. The most recent sampling event (November 2002) revealed 16.4 μg/L TCE and 10.8 mg/L nitrate in LWDS-MW1. These were the maximum values for the monitoring network. Groundwater monitoring will continue on a quarterly basis. Groundwater results are reported in the Annual Groundwater Monitoring Report produced by SNL/NM's Groundwater Protection Program.

Future Work Planned

No additional field work or investigations are planned.

Waste Volume Estimated/Generated

No hazardous or radioactive waste has been generated.

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WELL DATABASE SUMMARY SHEET

Project Name:	SITE 12A PIEZOMETER	**Geo Location:**	SOUTH END OF 12A
ER ADS #:	1333	**Well Completion Date:**	19-NOV-96
Well Name:	12AUP01	**Completion Zone:**	BEDROCK-ALLUVIUM CONTACT
Owner Name:	SNL	**Formation of Completion:**	ALLUVIUM
Date Drilling Started:	19-NOV-96	**Well Comment:**	No sampling, auger cuttings logged, dry when installed
Drilling Contractor:	STEWART BROTHERS		
Drilling Method:	HOLLOW STEM AUGER		
Borehole Depth:	58.09		
Casing Depth:	58.09		

Survey Data

Survey Date:

Surveyed By:

State Plane Coordinates

(X) Easting:

(Y) Northing:

Surveyed Elevations (FAMSL)

Protective Casing:

Top of Inner Well Casing:

Concrete Pad:

Ground Surface:

Calculated Depths and Elevations

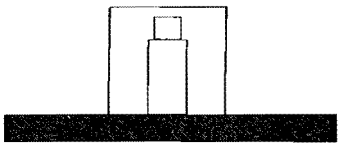
Initial Water Elevation:
(FAMSL)

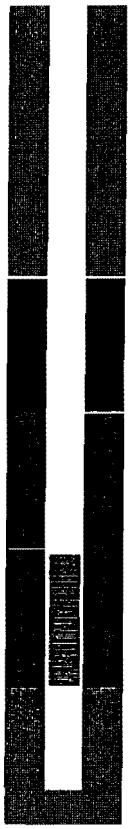
Initial Depth To Water:
(FBGS)

Last measured water level was FASL
measured on

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03





Completion Data Measured Depths (FBGS)

Casing Stickup: 1.92

Interval	Start	Stop
CUTTINGS/SAND	0'	

Interval	Start	Stop
CASING	0'	5
SCHEDULE 40 PVC		O.D.

Interval	Start	Stop
BOREHOLE	0'	5
		O.D.

Interval	Start	Stop
SEAL	48'	
BENTONITE PELLETS		

Interval	Start	Stop
PRIMARY PACK	50'	5
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	52.54'	5
SCH 40 PVC		
	Slot Size	

Interval	Start	Stop
BOTTOM CAP/SUMP	57.54'	5
SCHEDULE 40 PVC		

WELL DATABASE SUMMARY SHEET

Project Name:	NARROWS DRILLING	**Geo Location:**	LURANCE CANYON ARROYO .25 MILE
ER ADS #:		**Well Completion Date:**	22-DEC-97
Well Name:	CYN-MW1D	**Completion Zone:**	
Owner Name:	SNL	**Formation of Completion:**	GRANITE GNEISS (BEDROCK)
Date Drilling Started:	21-NOV-97	**Well Comment:**	HAD TROUBLE WITH CEMENT BUCKET IT ALLOWED SOM SND AND CEMENT TO BREECH PRIOR TO BRIDGING PROPERLY.
Drilling Contractor:	STEWART BROTHERS		
Drilling Method:	ARCH/AIR ROTARY		
Borehole Depth:	392		
Casing Depth:	392		

Survey Data

Survey Date: 16-FEB-98

Surveyed By: JAMES WHEELER

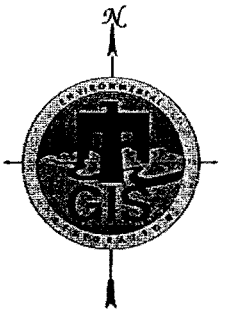
State Plane Coordinates

(X) Easting: 449989.56

(Y) Northing: 1456103.84

Surveyed Elevations (FAMSL)

Protective Casing:	6237.37
Top of Inner Well Casing:	6236.92
Concrete Pad:	6234.46
Ground Surface:	6233.99

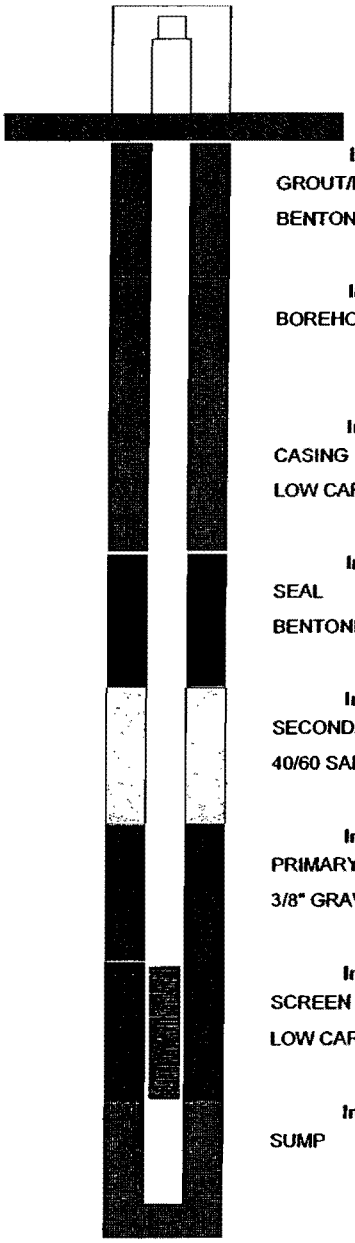


Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5913.92	
Initial Depth To Water: (FBGS)	323	
Last measured water level was measured on		FASL

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.46

Interval	Start	Sto
GROUT/BACKFILL	0'	
BENTONITE CEMENT		

Interval	Start	Sto
BOREHOLE	0'	

O.D.

Interval	Start	Sto
CASING	0'	
LOW CARBON STEEL	I.D. 5.125"	O.D.

Interval	Start	Sto
SEAL	296	
BENTONITE PELLETS		

Interval	Start	Sto
SECONDARY PACK	310'	
40/60 SAND		

Interval	Start	Sto
PRIMARY PACK	322'	
3/8" GRAVEL		

Interval	Start	Sto
SCREEN	372'	
LOW CARBON STEEL		

Slot Size

Interval	Start	Sto
SUMP	382'	

WELL DATABASE SUMMARY SHEET

Project Name:	CANYONS RFI	Geo Location:	5 MILES EAST OF BURN SITE
ER ADS #:	1333	Well Completion Date:	22-DEC-97
Well Name:	CYN-MW2S	Completion Zone:	BEDROCK/ALLUVIUM INTERFACE
Owner Name:	SNL	Formation of Completion:	MANZANITA GNEISS
Date Drilling Started:	20-DEC-97	Well Comment:	WATER IN CYN-MW1D 375' CYN-MW2S COMPLETED TO MONITOR POTENTIAL UNDERFLOW AT BEDROCK/ALLUV INTERFACE
Drilling Contractor:	STEWART BROTHERS		
Drilling Method:	AIR ROTARY CASING HAMMER		
Borehole Depth:	35.2		
Casing Depth:	34.2		

Survey Data

Survey Date: 16-FEB-98

Surveyed By: JAMES WHEELER

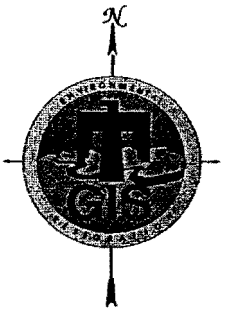
State Plane Coordinates

(X) Easting: 449976

(Y) Northing: 1456084.55

Surveyed Elevations (FAMSL)

Protective Casing:	6237.15
Top of Inner Well Casing:	6236.74
Concrete Pad:	6234.36
Ground Surface:	6233.95



Calculated Depths and Elevations

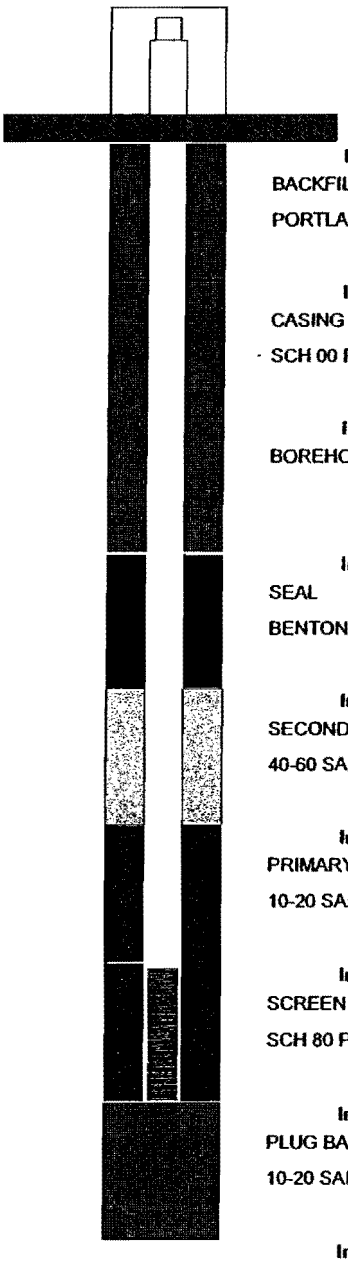
Initial Water Elevation: (FAMSL)

Initial Depth To Water: (FBGS)

Last measured water level was measured on FASL

Date Updated: 14-MAR-00

Date Printed: 05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.38

Interval	Start	Stop
BACKFILL	0'	
PORTLAND CEMENT		

Interval	Start	Stop
CASING	0'	
SCH 00 PVC	I.D. 4"	O.D.
	Slot Size	

Interval	Start	Stop
BOREHOLE	0'	
		O.D.

Interval	Start	Stop
SEAL	10.6'	
BENTONITE PELLETS		

Interval	Start	Stop
SECONDARY PACK	15.6'	
40-60 SAND		

Interval	Start	Stop
PRIMARY PACK	17.6'	
10-20 SAND		

Interval	Start	Stop
SCREEN	23.6'	
SCH 80 PVC		
	Slot Size	

Interval	Start	Stop
PLUG BACK	34.2'	
10-20 SAND		

Interval	Start	Stop

WELL DATABASE SUMMARY SHEET

Project Name:	CANYONS GROUNDWATER	Geo Location:	LURANCE CANYON BURN SITE
ER ADS #:	1333	Well Completion Date:	18-JUN-99
Well Name:	CYN-MW3	Completion Zone:	SCHIST/PHYLLITE
Owner Name:	SNL/NM	Formation of Completion:	COYOTE METASEDIMENTARY
Date Drilling Started:	14-JUN-99	Well Comment:	WELL COMPLETED IN COYOTE METASEDIMENTARY
Drilling Contractor:	WATER DEVELOPMENT INC.		
Drilling Method:	ARCH/AIR ROTARY		
Borehole Depth:	148		
Casing Depth:	135		

Survey Data

Survey Date:	14-SEP-99
Surveyed By:	ASCI-VLADIMIR JIRIK

State Plane Coordinates

(X) Easting:	451921.68
(Y) Northing:	1456713.31

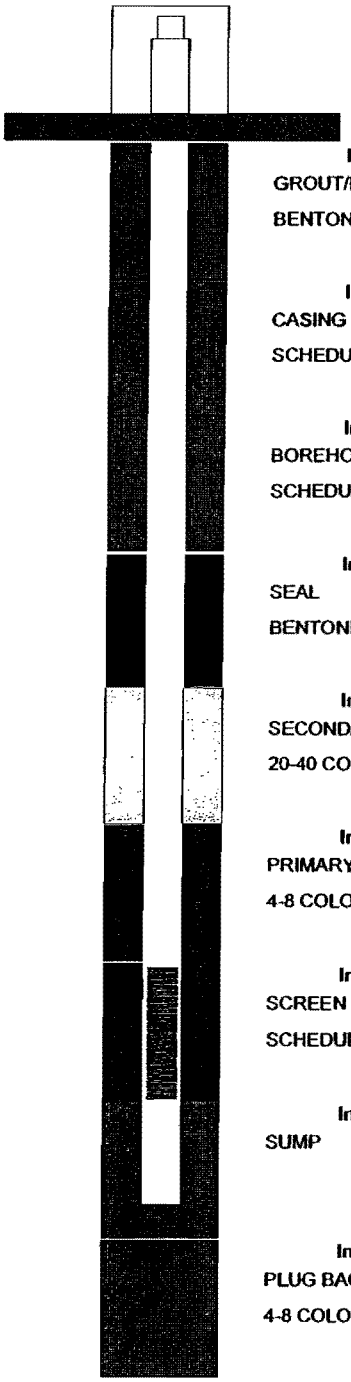
Surveyed Elevations (FAMSL)

Protective Casing:	6311.5
Top of Inner Well Casing:	6310.91
Concrete Pad:	6310.11
Ground Surface:	6310

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	6189.91	
Initial Depth To Water: (FBGS)	121	
Last measured water level was measured on		FASL

Date Updated:	Date Printed:
14-MAR-00	05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: .8

Interval	Start	Sto
GROUT/BACKFILL	0'	
BENTONITE SLURRY		

Interval	Start	Sto
CASING	0'	
SCHEDULE 80 PVC	I.D. 5"	O.D.

Interval	Start	Sto
BOREHOLE	0'	
SCHEDULE 80 PVC	I.D. 5"	O.D.

Interval	Start	Sto
SEAL	100'	
BENTONITE PELLETS		

Interval	Start	Sto
SECONDARY PACK	110'	
20-40 COLORADO SAND		

Interval	Start	Sto
PRIMARY PACK	115'	
4-8 COLORADO SAND		

Interval	Start	Sto
SCREEN	120'	
SCHEDULE 80 PVC		
	Slot Size	

Interval	Start	Sto
SUMP	130'	

Interval	Start	Sto
PLUG BACK	135'	
4-8 COLORADO SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	CANYONS GROUNDWATER	Geo Location:	LURANCE CANYON BURN SITE
ER ADS #:	1333	Well Completion Date:	18-JUN-99
Well Name:	CYN-MW4	Completion Zone:	BEDROCK SCHIST/PHYLLITE
Owner Name:	SNL/NM	Formation of Completion:	COYOTE METASEDIMENTARY
Date Drilling Started:	12-JUN-99	Well Comment:	UPGRADIENT WELL FOR WE SITE 65, 94 AND 12.
Drilling Contractor:	ASCI-VLADIMIR JIRIK		
Drilling Method:	ARCH/AIR ROTARY		
Borehole Depth:	318		
Casing Depth:	290		

Survey Data

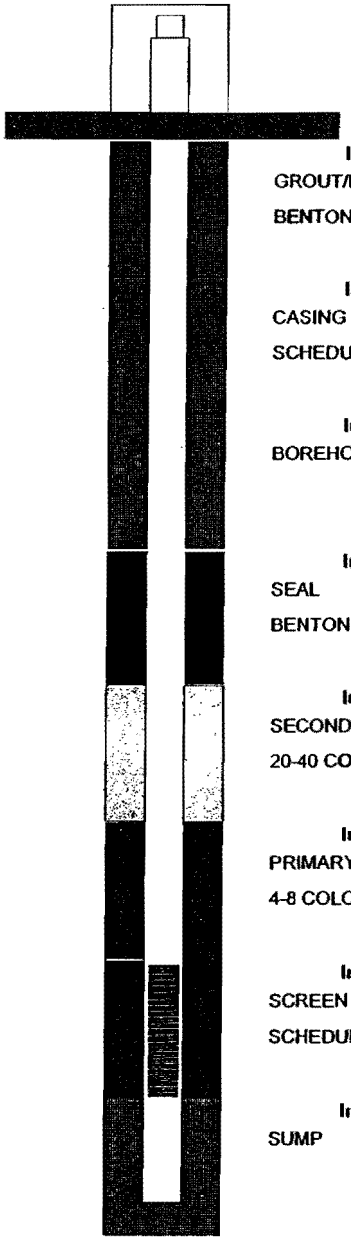
Survey Date:	14-SEP-99
Surveyed By:	ASCI-VLADIMIR JIRIK

State Plane Coordinates

(X) Easting:	453551.66
(Y) Northing:	1458702.93

Surveyed Elevations (FAMSL)

Protective Casing:	6453.81
Top of Inner Well Casing:	6452.81
Concrete Pad:	6452.25
Ground Surface:	6452



Completion Data Measured Depths (FBGS)

Casing Stickup: .81

Interval	Start	Sto
GROUT/BACKFILL	0'	
BENTONITE GROUT		

Interval	Start	Sto
CASING	0'	
SCHEDULE 80 PVC	I.D. 5"	O.D.

Interval	Start	Sto
BOREHOLE	0'	
		O.D.

Interval	Start	Sto
SEAL	235'	
BENTONITE PELLETS		

Interval	Start	Sto
SECONDARY PACK	244'	
20-40 COLORADO SAND		

Interval	Start	Sto
PRIMARY PACK	249'	
4-8 COLORADO SAND		

Interval	Start	Sto
SCREEN	260'	
SCHEDULE 80 PVC		
	Slot Size	

Interval	Start	Sto
SUMP	260'	

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	6144.81
Initial Depth To Water: (FBGS)	308

Last measured water level was FASL

measured on

Date Updated:	Date Printed:
14-MAR-00	05-MAR-03

WELL DATABASE SUMMARY SHEET

Project Name:	OU 1295 MON. WELLS	Geo Location:	LURANCE CANYON
ER ADS #:	1295	Well Completion Date:	15-AUG-01
Well Name:	CYN-MW5	Completion Zone:	REGIONAL GROUNDWATER
Owner Name:	SNL/NM	Formation of Completion:	PRE-CAMBRIAN QUARTZITE
Date Drilling Started:	14-AUG-01	Well Comment:	0'-50' DRILLED W/ ARCH, 50'-170' DRILLED W/ AIR ROTAR DOWN HOLE HAMMER (UNCASED)
Drilling Contractor:	WDC INC.		
Drilling Method:	ARCH, AIR ROTARY		
Borehole Depth:	170		
Casing Depth:	160		

Survey Data

Survey Date:	04-OCT-01
Surveyed By:	ALBQ. SURVEYING CO. (ASC)

State Plane Coordinates

(X) Easting:	439360.07
(Y) Northing:	1455719.6

Surveyed Elevations (FAMSL)

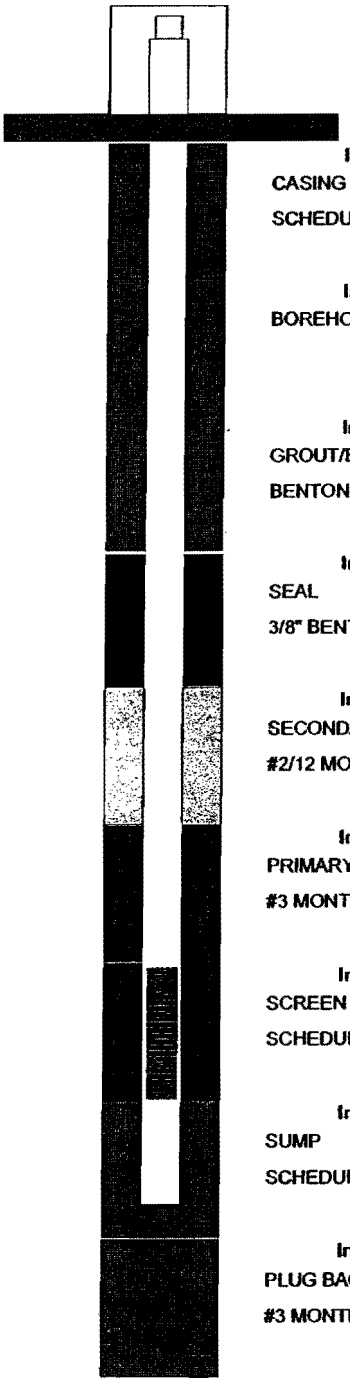
Protective Casing:	5981.83
Top of Inner Well Casing:	5981.56
Concrete Pad:	5978.88
Ground Surface:	5978.56

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5875.78
Initial Depth To Water: (FBGS)	102.78

Last measured water level was 5875.51 FASL measured on 04-JUN-02

Date Updated:	Date Printed:
23-MAY-02	05-MAR-03



Completion Data Measured Depths (FBGS)

Casing Stickup: 3

Interval	Start	Sto
CASING	0'	
SCHEDULE 80 PVC	I.D. 5"	O.D.

Interval	Start	Sto
BOREHOLE	0'	
		O.D.

Interval	Start	Sto
GROUT/BACKFILL	1'	
BENTONITE GROUT		

Interval	Start	Sto
SEAL	118'	
3/8" BENT. CHIPS		

Interval	Start	Sto
SECONDARY PACK	124'	
#2/12 MONTERREY SAND		

Interval	Start	Sto
PRIMARY PACK	130'	
#3 MONTERREY SAND		

Interval	Start	Stop
SCREEN	135'	
SCHEDULE 80 PVC		
	Slot Size	

Interval	Start	Stop
SUMP	155'	
SCHEDULE 80 PVC		

Interval	Start	Stop
PLUG BACK	160'	
#3 MONTERREY SAND		

Tijeras Arroyo Groundwater

Site History

In 1992, the Sandia National Laboratories/New Mexico (SNL/NM) ER Project began conducting groundwater studies at Technical Area-II (TA-II). The TA-II studies along with other Solid Waste Management Unit related investigations eventually were incorporated into the Tijeras Arroyo Groundwater (TAG) Investigation. In addition to work conducted by the ER Project, the TAG Investigation has recently incorporated groundwater investigations conducted by the Kirtland Air Force Base (KAFB) Installation Restoration Program and the City of Albuquerque (COA) Environmental Health Department.

Trichloroethylene (TCE) and nitrate have been identified as the contaminants of concern (COCs) for the TAG study area with groundwater being the only exposure pathway applicable to the TAG Investigation. TCE is a chlorinated solvent typically used for degreasing operations. Nitrate is principally a degradation product of septic waste. The state and Federal drinking water standard (the maximum contaminant level [MCL]) for TCE is 5 micrograms per liter (μg/L), which is equivalent to 5 parts per billion. The state and Federal MCL for nitrate is 10 milligrams per liter (mg/L), which is equivalent to 10 parts per million (ppm).

The TAG study area is currently defined as an approximately eight-square mile, rectangular area that is centered on the intersection of Wyoming and Hardin Boulevards in the north-central portion of KAFB. The study area is bounded on the east by Manzano Base, on the west by the KAFB boundary along Yale Boulevard, on the north by Lomas Boulevard, and on the south by a line that extends from the Tijeras Arroyo Golf Course to Montessa Park.

The potential release sites of TCE and/or nitrate in the TAG study area include sewage lagoons, waste-water outfalls, septic systems, landfills, sewer lines, and the Tijeras Arroyo Golf Course. Based upon the historical use and disposal of chlorinated solvents, the extent of TCE in groundwater is probably associated with multiple aqueous releases of solvents and subsequent vapor-phase transport through the vadose zone. Nitrate in groundwater is probably derived from the release of sanitary waste and the application of fertilizers.

The hydrogeologic setting of the TAG study area is dominated by two water-bearing zones, the perched system and the regional aquifer, both of which are present within the upper Santa Fe Group. The perched system is not used for water supply. The COA, KAFB, and the Veterans Administration (VA) utilize the regional aquifer for water-supply purposes. In the central portion of the study area, the upper surface of the perched system is present at depths ranging from approximately 220 to 330 feet (ft) below ground surface (bgs); the perched system covers approximately 3.5 square miles and may extend across the northern boundary of KAFB. The direction of groundwater flow in the perched system is to the southeast. Discontinuous, yet overlapping multiple lenses of unsaturated

alluvial-fan sediments serve as a perching horizon beneath the perched system and above the regional aquifer. The upper surface of the regional aquifer is present at approximately 440 to 570 ft bgs in the central portion of the study area. In the TAG study area, the direction of groundwater flow in the regional aquifer is principally to the northwest towards the KAFB, COA, and VA water-supply wells. Groundwater in the perched system merges with the regional aquifer southeast of Tijeras Arroyo. The regional aquifer extends across the entire study area and the Albuqureque Basin.

Historically across the TAG study area, the maximum concentrations of TCE and nitrate in the perched system have been 9.6 μg/L and 44 mg/L, respectively. For the regional aquifer, the historical maximum concentrations of TCE and nitrate have been 3.2 μg/L and 49 mg/L, respectively. The following conclusions can be made:

- The distribution of TCE in the perched system is sporadic across the study area and is indicative of discrete TCE occurrences, not widespread contamination.
- The occurrence of TCE in the regional aquifer is negligible.
- The distribution of nitrate above the background level (4 mg/L) is laterally widespread in the perched system, yet discontinuous across the study area.
- Concentrations of nitrate in the regional aquifer above the background level (4 mg/L) are scattered across the TAG study area.

Constituents of Concern

TCE and nitrate.

Current Hazards

No hazards are present in surface or subsurface soils.

Current Status of Work

The first comprehensive SNL/NM groundwater document was the 1996 Sandia North Groundwater Investigation Plan. A pair of Sandia North status reports were prepared in 1998 and 2000. In late 2000, the term 'Sandia North' was replaced by 'Tijeras Arroyo'. The November 2002 TAG Continuing Investigation Report presents an integrated overview of all the SNL/NM, KAFB, and COA groundwater studies conducted in the TAG study area, and includes well completion diagrams.

The types of studies conducted in the TAG study area include groundwater sampling, soil-vapor sampling, borehole sampling, aquifer testing, colloidal borescope, borehole geophysical surveys, seismic surveys, and site-specific soil sampling. Process knowledge has been acquired by the review of engineering drawings, historical aerial photography, utility plans, and various documents.

As of January 2003, SNL/NM had installed 30 monitoring wells (25 groundwater and 5 soil-vapor) in the TAG study area. KAFB had installed 28 groundwater monitoring wells. The COA had installed 5 groundwater monitoring wells near the Eubank Landfill.

SNL/NM conducted quarterly groundwater sampling in the TAG study area until April 2002, but has since curtailed sampling activities until NMED provides additional guidance. Groundwater sampling results from March/April 2002 are the most recent and complete analytical data set for the TAG study area. Groundwater samples were collected from 50 of the 64 monitoring wells in the current monitoring well network (SNL/NM, KAFB, and COA monitoring wells). The maximum concentration of TCE in the perched system was 7.5 μg/L. Only two of the monitoring wells had TCE concentrations that exceeded the MCL of 5 μg/L. None of the regional-aquifer monitoring wells yielded samples with detectable concentrations of TCE.

For the March/April 2002 sampling event, the maximum concentration of nitrate in the perched system was 30 mg/L. A total of 26 perched-system monitoring wells had nitrate concentrations that exceeded the background level of 4 mg/L. Ten of the 26 perched-system monitoring wells had nitrate concentrations that exceeded the MCL (10 mg/L). For the regional aquifer, the maximum concentration of nitrate was 18 mg/L. A total of eight regional-aquifer monitoring wells had nitrate concentrations that exceeded background (4 mg/L). Three wells had nitrate concentrations that met or exceeded the MCL (10 mg/L).

Future Work Planned

SNL/NM has suspended TAG-related groundwater sampling and drilling until NMED comments are received for the TAG Work Plan (version August 29, 2002). KAFB and the COA continue to collect groundwater samples.

The TAG Work Plan identified data gaps and presented an approach for completing the characterization of TCE and nitrate contamination in groundwater in the TAG study area. Six monitoring wells are proposed for completion in the perched system, assuming that producible quantities of groundwater are encountered at each location. Two of the monitoring wells are proposed for installation on KAFB property. Four more monitoring wells are proposed for the vicinity of the Eubank Landfill. In addition, five soil-vapor boreholes also are proposed; soil-vapor samples will be collected at multiple depths to a maximum depth of approximately 250 ft and analyzed for TCE. A total of 51 groundwater monitoring wells (45 pre-existing and 6 proposed) will be sampled for six quarterly events. The first event will occur after the proposed monitoring wells are installed and properly developed. The groundwater samples will be analyzed using EPA methods 8260 and 353.2 for TCE and nitrate, respectively. Additional parameters will be measured for a select number of monitoring wells to assess aerobic/anaerobic conditions, denitrification potential, and conditions relevant for monitored natural attenuation. After the six groundwater-sampling events are completed, the analytical data will be evaluated to determine if the preparation of the final report is warranted, or if a corrective action is needed.

Waste Volume Estimated/Generated

No hazardous or radioactive waste has been generated.

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WELL DATABASE SUMMARY SHEET

Project Name:	IRP	Geo Location:	KAFB EAST LANDFILL
ER ADS #:	NA	Well Completion Date:	27-AUG-91
Well Name:	KAFB-0310	Completion Zone:	SILTY SAND
Owner Name:	KAFB	Formation of Completion:	SANTA FE
Date Drilling Started:	23-AUG-91	Well Comment:	
Drilling Contractor:	USGS		
Drilling Method:	MUD ROTARY		
Borehole Depth:	510		
Casing Depth:	455		

Survey Data

Survey Date:	01-JAN-97
Surveyed By:	HALL ENGINEERING COMPANY

State Plane Coordinates

(X) Easting:	416996.42
(Y) Northing:	1466797.27

Surveyed Elevations (FAMSL)

Protective Casing:	5419.24
Top of Inner Well Casing:	5413.81
Concrete Pad:	5416.79
Ground Surface:	5410.5

Calculated Depths and Elevations

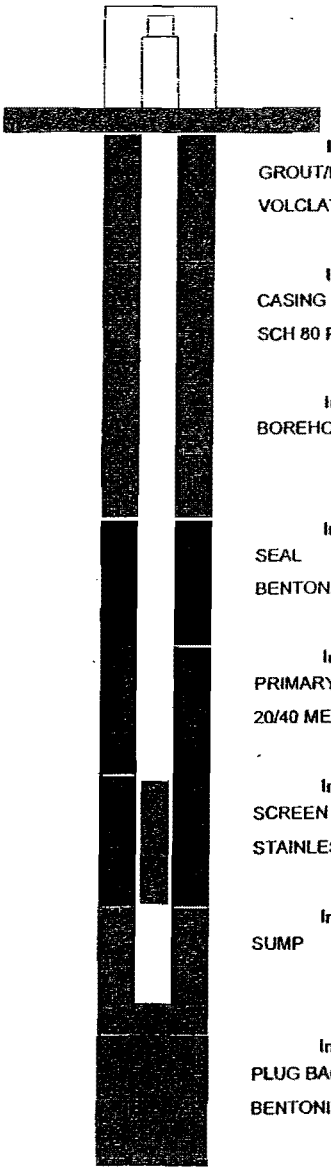
Initial Water Elevation: (FAMSL)

Initial Depth To Water: (FBGS)

Last measured water level was 5052.47 FASL measured on 05-AUG-96

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 1.67

Interval	Start	Stop
GROUT/BACKFILL	0'	320'
VOLCLAY		

Interval	Start	Stop
CASING	0'	455'
SCH 80 PVC	I.D. 3.826"	

Interval	Start	Stop
BOREHOLE	0'	510'
	O.D. 7.875"	

Interval	Start	Stop
SEAL	320'	331'
BENTONITE		

Interval	Start	Stop
PRIMARY PACK	331'	465'
20/40 MESH		

Interval	Start	Stop
SCREEN	400'	445'
STAINLESS STEEL	O.D. .01"	

Interval	Start	Stop
SUMP	445'	455'

Interval	Start	Stop
PLUG BACK	465'	510'
BENTONITE/PEA GRAVEL		

WELL DATABASE SUMMARY SHEET

Project Name:	IRP	Geo Location:	TIJERAS ARROYO/EAST LANDFILL
ER ADS #:	NA	Well Completion Date:	24-JUL-92
Well Name:	KAFB-0311	Completion Zone:	SOFT BROWN SILTY CLAY
Owner Name:	KAFB	Formation of Completion:	SANTA FE
Date Drilling Started:	20-JUL-92	Well Comment:	
Drilling Contractor:	USGS		
Drilling Method:	MUD ROTARY		
Borehole Depth:	470		
Casing Depth:	468		

Survey Data

Survey Date:	01-JAN-97
Surveyed By:	HALL ENGINEERING COMPANY

State Plane Coordinates

(X) Easting:	415335.94
(Y) Northing:	1468620.3

Surveyed Elevations (FAMSL)

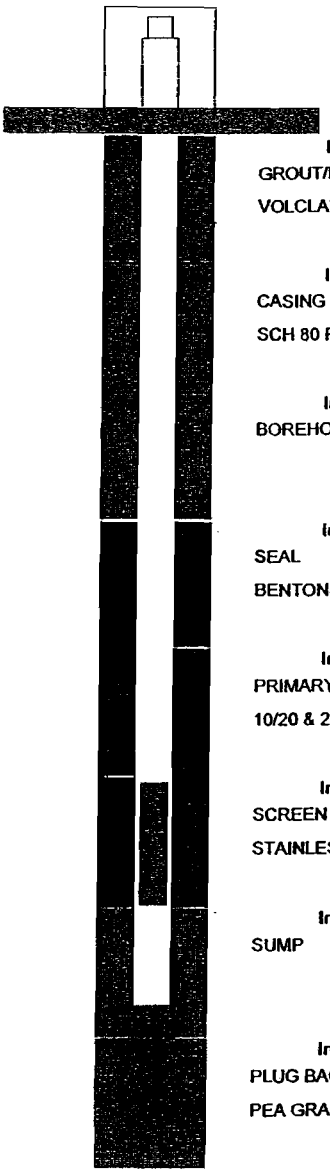
Protective Casing:	5355.45
Top of Inner Well Casing:	5350.62
Concrete Pad:	5353.57
Ground Surface:	5349

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4925.48
Initial Depth To Water: (FBGS)	428

Last measured water level was FASL measured on 25-SEP-97

Date Updated:	Date Printed:
01-OCT-01	08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 1.58

Interval	Start	Stop
GROUT/BACKFILL	0'	335'
VOLCLAY		

Interval	Start	Stop		
CASING	0'	468'		
SCH 80 PVC	I.D. 3.826"		O.D.	4.5"

Interval	Start	Stop		
BOREHOLE	0'	470'		
			O.D.	7.875"

Interval	Start	Stop
SEAL	335'	355'
BENTONITE PELLETS		

Interval	Start	Stop
PRIMARY PACK	355'	468'
10/20 & 20/40 MESH		

Interval	Start	Stop
SCREEN	433'	458'
STAINLESS STEEL		
	Slot Size	.01"

Interval	Start	Stop
SUMP	458'	468'

Interval	Start	Stop
PLUG BACK	468'	470'
PEA GRAVEL		

WELL DATABASE SUMMARY SHEET

Project Name:	IRP	Geo Location:	KAFB LAGOON
ER ADS #:	NA	Well Completion Date:	10-NOV-89
Well Name:	KAFB-0501	Completion Zone:	VFG/FG SAND AND SILT
Owner Name:	KAFB	Formation of Completion:	SANTA FE
Date Drilling Started:	07-SEP-89	Well Comment:	ALTERNATE NAME: LAGOONS - SE
Drilling Contractor:	USGS		
Drilling Method:	HOLLOW STEM AUGER/MUD ROTAF		
Borehole Depth:	515		
Casing Depth:	503		

Survey Data

Survey Date:

Surveyed By:

State Plane Coordinates

(X) Easting: 406793.248

(Y) Northing: 1468358.601

Surveyed Elevations (FAMSL)

Protective Casing:

Top of Inner Well Casing: 5358.04

Concrete Pad:

Ground Surface: 5358.04

Calculated Depths and Elevations

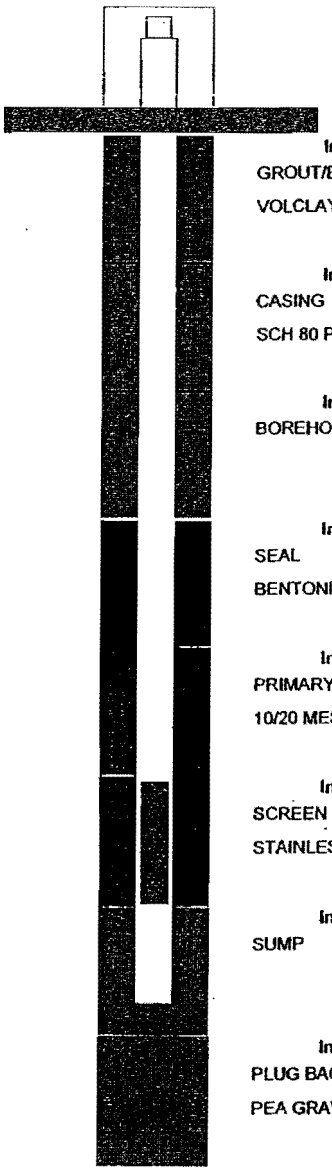
Initial Water Elevation: (FAMSL)

Initial Depth To Water: (FBGS)

Last measured water level was 4868.49 FASL measured on 21-DEC-95

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup:

Interval	Start	Stop
GROUT/BACKFILL	0'	410'
VOLCLAY		

Interval	Start	Stop
CASING	0'	503'
SCH 80 PVC	I.D. 4"	

Interval	Start	Stop
BOREHOLE	0'	515'
	O.D. 7.875"	

Interval	Start	Stop
SEAL	410'	430'
BENTONITE PELLET		

Interval	Start	Stop
PRIMARY PACK	430'	498'
10/20 MESH		

Interval	Start	Stop
SCREEN	473'	493'
STAINLESS STEEL		
	Slot Size	.02"

Interval	Start	Stop
SUMP	493'	503'

Interval	Start	Stop
PLUG BACK	503'	515'
PEA GRAVEL		

WELL DATABASE SUMMARY SHEET

Project Name:	IRP	Geo Location:	KAFB LAGOONS
ER ADS #:	NA	Well Completion Date:	21-JAN-90
Well Name:	KAFB-0504	Completion Zone:	VFG SAND
Owner Name:	KAFB	Formation of Completion:	SANTA FE
Date Drilling Started:	27-SEP-89	Well Comment:	ALTERNATE NAME: LAGOONS - SW
Drilling Contractor:	USGS		
Drilling Method:	HOLLOW STEM AUGER/MUD ROTAF		
Borehole Depth:	518		
Casing Depth:	500		

Survey Data

Survey Date: 01-JAN-90

Surveyed By:

State Plane Coordinates

(X) Easting: 406080.662

(Y) Northing: 1468493.37

Surveyed Elevations (FAMSL)

Protective Casing:

Top of Inner Well Casing: 5354.22

Concrete Pad:

Ground Surface: 5354.23

Calculated Depths and Elevations

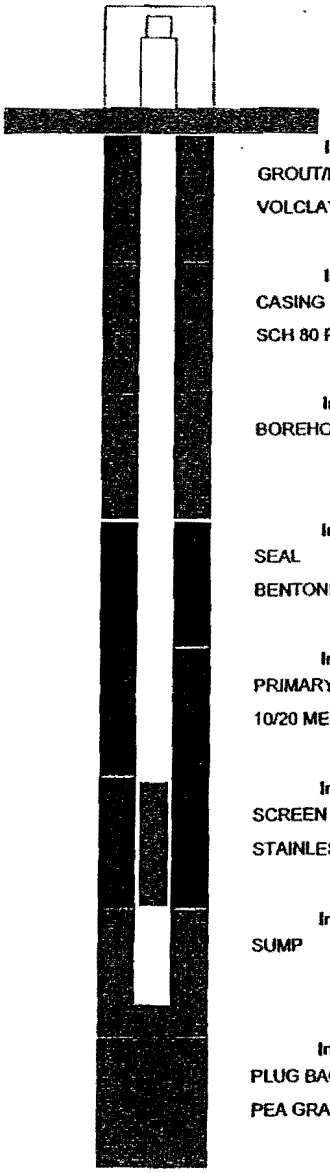
Initial Water Elevation: (FAMSL)

Initial Depth To Water: (FBGS)

Last measured water level was 4868.96 FASL measured on 28-AUG-95

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup:

Interval	Start	Stop
GROUT/BACKFILL	0'	422'
VOLCLAY		

Interval	Start	Stop
CASING	0'	500'
SCH 80 PVC	I.D. 3.826"	O.D. 4.5"

Interval	Start	Stop
BOREHOLE	0'	518'
		O.D. 7.875"

Interval	Start	Stop
SEAL	422'	442'
BENTONITE PELLET		

Interval	Start	Stop
PRIMARY PACK	442'	494.5'
10/20 MESH		

Interval	Start	Stop
SCREEN	470'	490'
STAINLESS STEEL		
	Slot Size	.02"

Interval	Start	Stop
SUMP	490'	500'

Interval	Start	Stop
PLUG BACK	500'	518'
PEA GRAVEL		

WELL DATABASE SUMMARY SHEET

Project Name:	IRP	Geo Location:	TIJERAS ARROYO SE OF CHANNEL
ER ADS #:	NA	Well Completion Date:	15-MAR-90
Well Name:	KAFB-0901	Completion Zone:	FG GRAVEL/SAND
Owner Name:	KAFB	Formation of Completion:	SANTA FE
Date Drilling Started:	03-FEB-90	Well Comment:	ALTERNATE NAME: TIJERAS - EAST
Drilling Contractor:	USGS		
Drilling Method:	MUD ROTARY		
Borehole Depth:	571		
Casing Depth:	537		

Survey Data

Survey Date: 01-JAN-97

Surveyed By: HALL ENGINEERING COMPANY

State Plane Coordinates

(X) Easting: 416938.84

(Y) Northing: 1470936.65

Surveyed Elevations (FAMSL)

Protective Casing:

Top of Inner Well Casing: 5387.4

Concrete Pad:

Ground Surface: 5387.13

Calculated Depths and Elevations

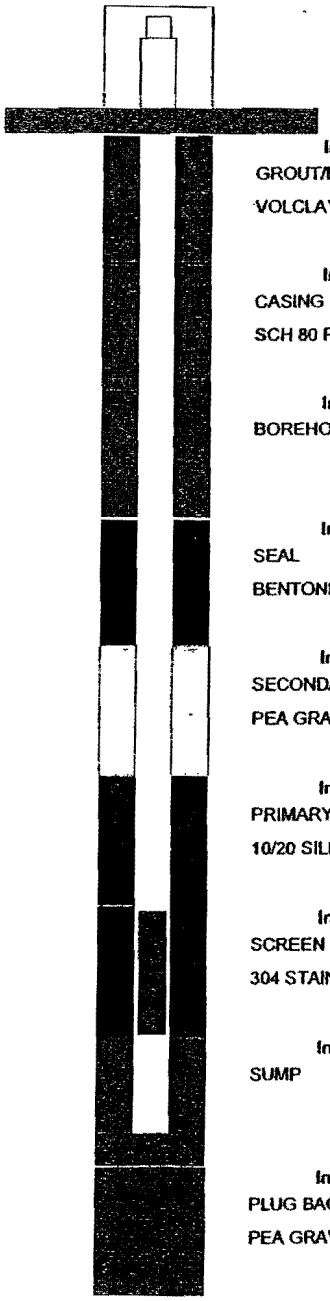
Initial Water Elevation: (FAMSL) 4911.13

Initial Depth To Water: (FBGS) 476

Last measured water level was FASL measured on 25-SEP-97

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup:

Interval	Start	Stop
GROUT/BACKFILL	0'	335'
VOLCLAY		

Interval	Start	Stop
CASING	0'	537'
SCH 80 PVC	I.D.	4"

Interval	Start	Stop
BOREHOLE	0'	571'
	O.D.	7.875"

Interval	Start	Stop
SEAL	335'	358.5'
BENTONITE PELLET		

Interval	Start	Stop
SECONDARY PACK	358.5'	461'
PEA GRAVEL		

Interval	Start	Stop
PRIMARY PACK	461'	539.5'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	465'	527'
304 STAINLESS STEEL		
	Slot Size	.02"

Interval	Start	Stop
SUMP	527'	537'

Interval	Start	Stop
PLUG BACK	537'	571'
PEA GRAVEL/BENTONITE		

WELL DATABASE SUMMARY SHEET

Project Name:	SWHC	Geo Location:	SOUTH OF PARADE GROUNDS
ER ADS #:	1330	Well Completion Date:	22-SEP-95
Well Name:	PGS-2	Completion Zone:	SILTY SAND
Owner Name:	SNL - NM	Formation of Completion:	UPPER SANTA FE UNIT
Date Drilling Started:	09-SEP-95	Well Comment:	3 SCREEN INTERVALS (535-565,585-595,625-645) SEPARATED BY BENTONITE CHIPS
Drilling Contractor:	USGS		
Drilling Method:	ROTARY MUD		
Borehole Depth:	660		
Casing Depth:	655		

Survey Data

Survey Date:	27-OCT-95
Surveyed By:	GREINER, INC.

State Plane Coordinates

(X) Easting:	410481.946
(Y) Northing:	1475379.818

Surveyed Elevations (FAMSL)

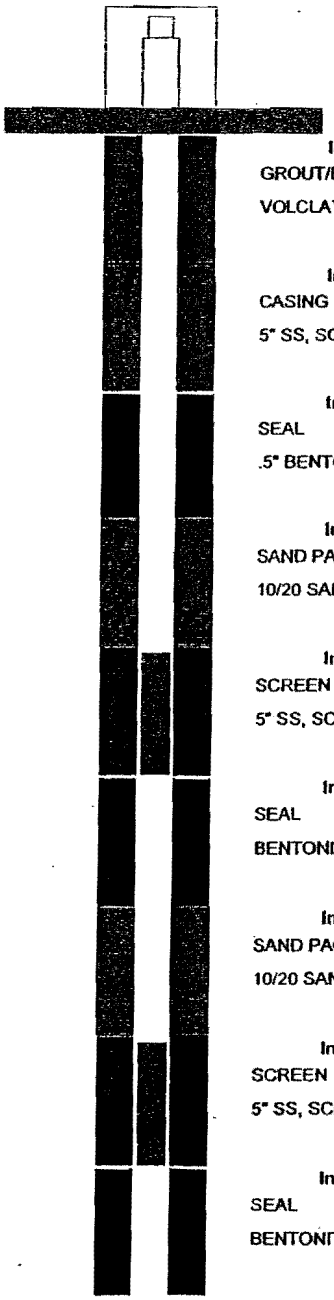
Protective Casing:	5405.99
Top of Inner Well Casing:	5405.62
Concrete Pad:	5405.27
Ground Surface:	5405.19

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4859.32
Initial Depth To Water: (FBGS)	546.3

Last measured water level was 4859.8 FASL measured on 15-AUG-96

Date Updated: 01-OCT-01	Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: .5

Interval	Start	Stop
GROUT/BACKFILL	0'	480'
VOLCLAY		

Interval	Start	Stop
CASING	0'	655'
5" SS, SCH 10	I.D. 5"	

Interval	Start	Stop
SEAL	480'	485'
.5" BENTONITE PELLET		

Interval	Start	Stop
SAND PACK	495'	567'
10/20 SAND		

Interval	Start	Stop
SCREEN	535'	565'
5" SS, SCH10	Slot Size	.02"

Interval	Start	Stop
SEAL	567'	580'
BENTONITE CHIPS		

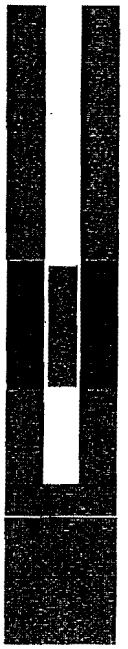
Interval	Start	Stop
SAND PACK	580'	596'
10/20 SAND		

Interval	Start	Stop
SCREEN	585'	595'
5" SS, SCH 10	Slot Size	.02"

Interval	Start	Stop
SEAL	596'	616'
BENTONITE CHIPS		

WELL DATABASE SUMMARY SHEET

Project Name:	SWHC	Geo Location:	SOUTH OF PARADE GROUNDS
ER ADS #:	1330	Well Completion Date:	22-SEP-95
Well Name:	PGS-2	Completion Zone:	SILTY SAND
Owner Name:	SNL - NM	Formation of Completion:	UPPER SANTA FE UNIT
Date Drilling Started:	09-SEP-95	Well Comment:	3 SCREEN INTERVALS (535-565,585-595,625-645) SEPARATED BY BENTONITE CHIPS
Drilling Contractor:	USGS		
Drilling Method:	ROTARY MUD		
Borehole Depth:	660		
Casing Depth:	655		



Interval	Start	Stop
SAND PACK	616'	620'
16/40 SAND		
Interval	**Start**	**Stop**
SAND PACK	620'	660'
10/20 SAND		
Interval	**Start**	**Stop**
SCREEN	625'	645'
5" SS, SCH 10		
	Slot Size	.02"
Interval	**Start**	**Stop**
SUMP	645'	655'
Interval	**Start**	**Stop**
PLUG BACK	655'	660'
10/20 SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	TA-I ER SITE 190
ER ADS #:	1303	Well Completion Date:	22-MAR-97
Well Name:	TAI-W-01	Completion Zone:	SILTY SAND AND GRAVEL
Owner Name:	SNL/NM	Formation of Completion:	UPPER SANTA FE GROUP
Date Drilling Started:	06-MAR-97	Well Comment:	WELL DEVELOPMENT COMPLETED 28-APR-97
Drilling Contractor:	WATER DEVELOPMENT CORPOI		
Drilling Method:	AIR ROTARY-CASING HAMMER		
Borehole Depth:	613		
Casing Depth:	600		

Survey Data

Survey Date: 23-MAY-97

Surveyed By: GREINER, INC.

State Plane Coordinates

(X) Easting: 410373.39

(Y) Northing: 1472422.88

Surveyed Elevations (FAMSL)

Protective Casing:	5401.86
Top of Inner Well Casing:	5401.15
Concrete Pad:	5399.39
Ground Surface:	5399.1

Calculated Depths and Elevations

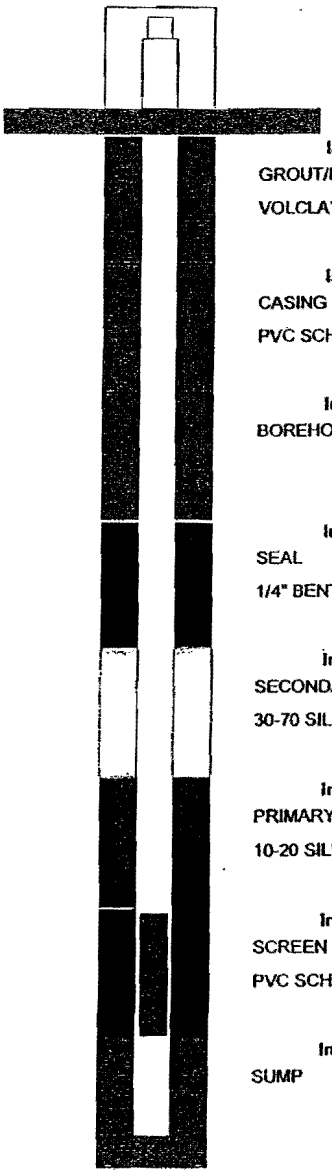
Initial Water Elevation: (FAMSL)	4861.58
Initial Depth To Water: (FBGS)	539.57

Last measured water level was FASL

measured on

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.05

Interval	Start	Stop
GROUT/BACKFILL	0'	559.2'
VOLCLAY GROUT		

Interval	Start	Stop
CASING	0'	575'
PVC SCHEDULE 80	I.D. 4.75"	O.D. 5.62"

Interval	Start	Stop
BOREHOLE	0'	613'
	O.D.	10"

Interval	Start	Stop
SEAL	559.2'	563.6'
1/4" BENT PELLETS		

Interval	Start	Stop
SECONDARY PACK	563.6'	566.5'
30-70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	566.5'	613'
10-20 SILICA SAND		

Interval	Start	Stop
SCREEN	575'	595'
PVC SCHEDULE 80		
	Slot Size	.02"

Interval	Start	Stop
SUMP	595'	600.8'

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	
ER ADS #:	1303	Well Completion Date:	27-FEB-98
Well Name:	TAI-W-02	Completion Zone:	SANDS,GRAVELS, CLAY
Owner Name:	SNL	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	11-FEB-98	Well Comment:	
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	578		
Casing Depth:	565.6		

Survey Data

Survey Date:	09-APR-98
Surveyed By:	SANTIAGO ROMERO JR.

State Plane Coordinates

(X) Easting:	412293.62
(Y) Northing:	1471918.76

Surveyed Elevations (FAMSL)

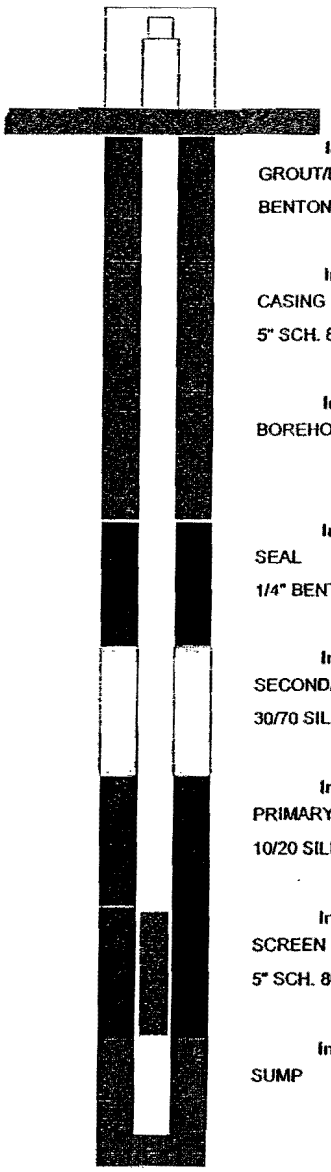
Protective Casing:	5414.23
Top of Inner Well Casing:	5413.95
Concrete Pad:	5414.23
Ground Surface:	5414.23

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4885.55
Initial Depth To Water: (FBGS)	528.4

Last measured water level was measured on FASL

Date Updated:	Date Printed:
01-OCT-01	08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: -.28

Interval	Start	Stop
GROUT/BACKFILL	0'	520'
BENTONITE PELLETS		

Interval	Start	Stop
CASING	0'	565.6'
5" SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	578'
	I.D. 10"	O.D. 12"

Interval	Start	Stop
SEAL	520'	530'
1/4" BENT. PELLETS		

Interval	Start	Stop
SECONDARY PACK	530'	534'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	534'	578'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	540'	560'
5" SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	560'	565.6'

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	
ER ADS #:	1303	Well Completion Date:	27-JAN-98
Well Name:	TAI-W-03	Completion Zone:	SANDS, GRAVELS,CLAY
Owner Name:	SNL	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	19-JAN-98	Well Comment:	
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	363		
Casing Depth:	362.6		

Survey Data

Survey Date:	09-APR-98
Surveyed By:	SANTIAGO ROMERO JR.

State Plane Coordinates

(X) Easting:	415058.11
(Y) Northing:	1473207.18

Surveyed Elevations (FAMSL)

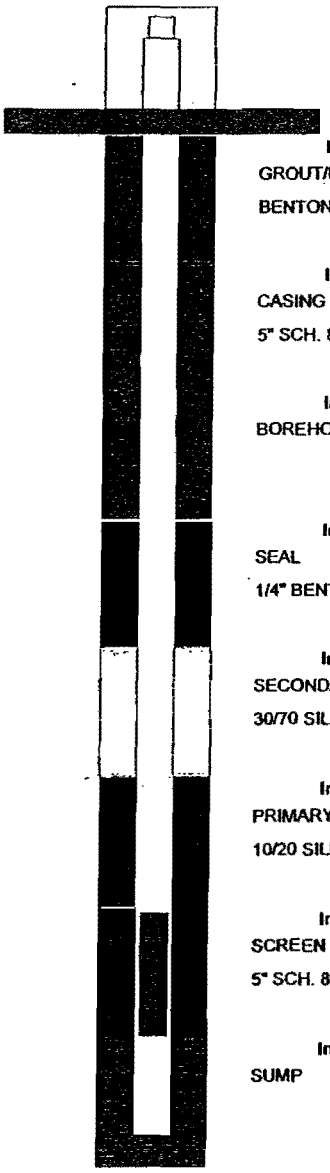
Protective Casing:	5454.91
Top of Inner Well Casing:	5454.36
Concrete Pad:	5452.66
Ground Surface:	5452.24

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5116.62
Initial Depth To Water: (FBGS)	337.74

Last measured water level was measured on FASL

Date Updated:	Date Printed:
01-OCT-01	08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 1.7

Interval	Start	Stop
GROUT/BACKFILL	0'	320'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	362.6'
5" SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	363'
	I.D. 10"	O.D. 12"

Interval	Start	Stop
SEAL	320'	326'
1/4" BENT. PELLETS		

Interval	Start	Stop
SECONDARY PACK	326'	330'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	330'	363'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	337'	357'
5" SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	357'	362.6'

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	SW CORNER EUBANK AND G AVENUE
ER ADS #:	1303	Well Completion Date:	06-OCT-98
Well Name:	TAI-W-04	Completion Zone:	SILTY GRAVELLY SAND
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	07-SEP-98	Well Comment:	WELL DEVELOPED 07-DEC-98. DRILLED AT 3 LOCATIONS BEFORE BOREHOLE WAS SUCCESSFULLY COMPLETED. NO PROBLEMS WITH WELL.
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	630		
Casing Depth:	601.7		

Survey Data

Survey Date: 15-JAN-99

Surveyed By: BOHANNAN HUSTON INC.

State Plane Coordinates

(X) Easting: 414813.45

(Y) Northing: 1474707.295

Surveyed Elevations (FAMSL)

Protective Casing:	5458.7
Top of Inner Well Casing:	5458.31
Concrete Pad:	5455.66
Ground Surface:	5455.55

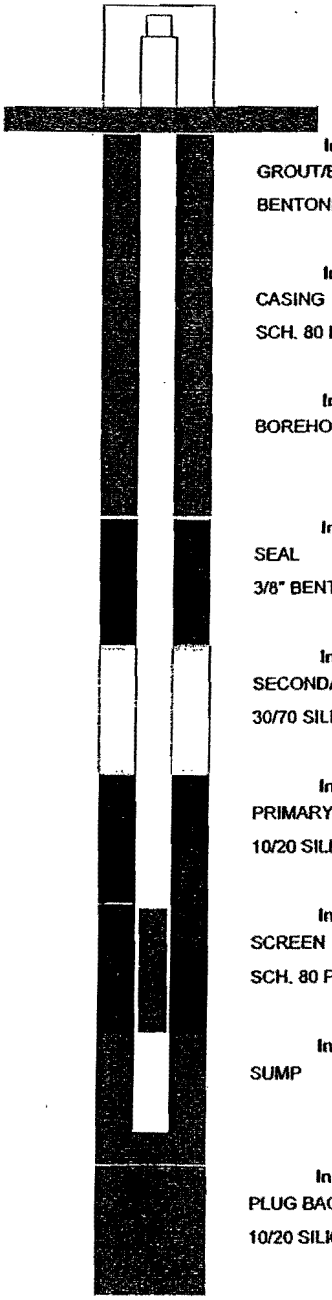
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4886.31
Initial Depth To Water: (FBGS)	572

Last measured water level was measured on FASL

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.76

Interval	Start	Stop
GROUT/BACKFILL	0'	560'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	601.7'
SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	630'
		O.D. 9.625"

Interval	Start	Stop
SEAL	560'	564'
3/8" BENTONITE PELL		

Interval	Start	Stop
SECONDARY PACK	564'	568'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	568'	630'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	576'	596'
SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	596'	601.7'

Interval	Start	Stop
PLUG BACK	601.7'	630'
10/20 SILICA SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	N. SIDE "F" AVENUE
ER ADS #:	1303	Well Completion Date:	16-NOV-98
Well Name:	TAI-W-05	Completion Zone:	FINE COURSE SAND
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	08-OCT-98	Well Comment:	WELL DEVELOPED 08-DEC-98. DRILLED AT 2 LOCATIONS BEFORE BOREHOLE COMPLETED. CASING INSTALLED AT 1ST LOCATION. ABANDONED DUE TO DROPPED TREMIE. NO PROBLEMS ENCOUNTERED DURING 2ND INSTALLATION.
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	625		
Casing Depth:	623.2		

Survey Data

Survey Date: 15-JAN-99

Surveyed By: BOHANNAN HUSTON, INC.

State Plane Coordinates

(X) Easting: 412758.816

(Y) Northing: 1475381.943

Surveyed Elevations (FAMSL)

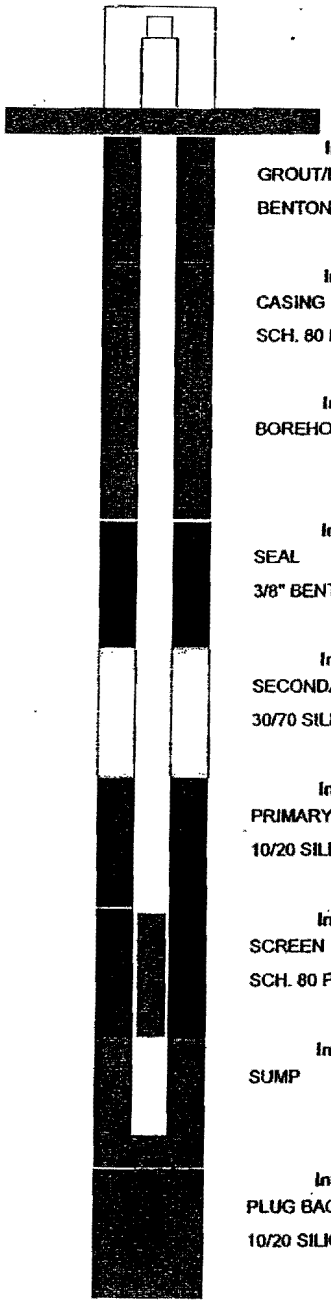
Protective Casing:	5433.42
Top of Inner Well Casing:	5433.11
Concrete Pad:	5431.68
Ground Surface:	5431.45

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4857.8	
Initial Depth To Water: (FBGS)	575.62	
Last measured water level was measured on		FASL

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 1.66

Interval	Start	Stop
GROUT/BACKFILL	0'	580'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	623.2'
SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	625'
		O.D. 9.625'

Interval	Start	Stop
SEAL	580'	585'
3/8" BENTONITE PELL		

Interval	Start	Stop
SECONDARY PACK	585'	589'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	589'	625'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	597.5'	617.5'
SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	617.5'	623.2'

Interval	Start	Stop
PLUG BACK	623.2'	625'
10/20 SILICA SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	
ER ADS #:	1303	Well Completion Date:	27-FEB-98
Well Name:	TAI-W-06	Completion Zone:	SANDS, GRAVELS, CLAY
Owner Name:	SNL	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	24-FEB-98	Well Comment:	
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	330		
Casing Depth:	325.6		

Survey Data

Survey Date:	09-APR-98
Surveyed By:	SANTIAGO ROMERO JR.

State Plane Coordinates.

(X) Easting:	412331.38
(Y) Northing:	1471918.6

Surveyed Elevations (FAMSL)

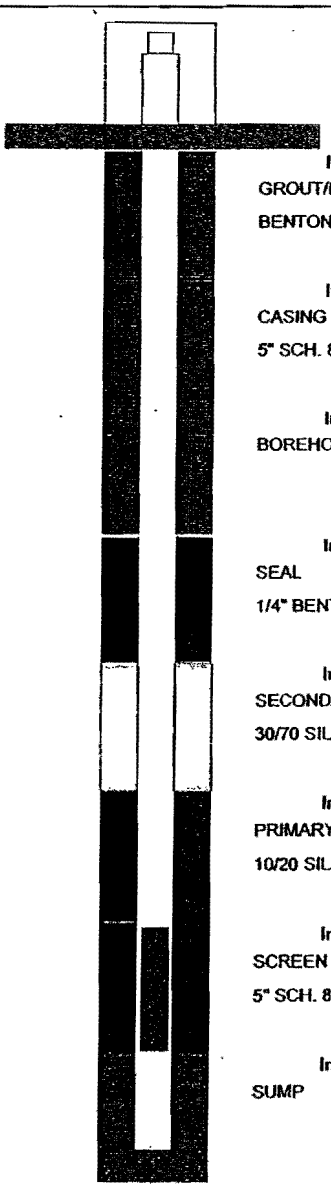
Protective Casing:	5414.71
Top of Inner Well Casing:	5414.43
Concrete Pad:	5414.71
Ground Surface:	5414.71

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5114.68
Initial Depth To Water: (FBGS)	299.75

Last measured water level was FASL measured on

Date Updated:	Date Printed:
01-OCT-01	08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: -.28

Interval	Start	Stop
GROUT/BACKFILL	0'	285'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	325.6'
5" SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	330'
		O.D. 10"

Interval	Start	Stop
SEAL	285'	291'
1/4" BENT. PELLETS		

Interval	Start	Stop
SECONDARY PACK	291'	294'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	294'	330'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	300'	320'
5" SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	320'	325.6'

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	N. SIDE OF TANK FARM
ER ADS #:	1303	Well Completion Date:	13-AUG-98
Well Name:	TAI-W-07	Completion Zone:	SILTY CLAYEY SAND
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	11-AUG-98	Well Comment:	WELL DEVELOPED 04-DEC-98. VERY LOW PRODUCER. NO PROBLEMS ENCOUNTERED DURING WELL INSTALLATION.
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	290		
Casing Depth:	289.1		

Survey Data

Survey Date: 15-JAN-99

Surveyed By: BOHANNAN HUSTON, INC.

State Plane Coordinates

(X) Easting: 410446.228

(Y) Northing: 1472422.68

Surveyed Elevations (FAMSL)

Protective Casing:	5402.74
Top of Inner Well Casing:	5402.25
Concrete Pad:	5400.13
Ground Surface:	5400.08

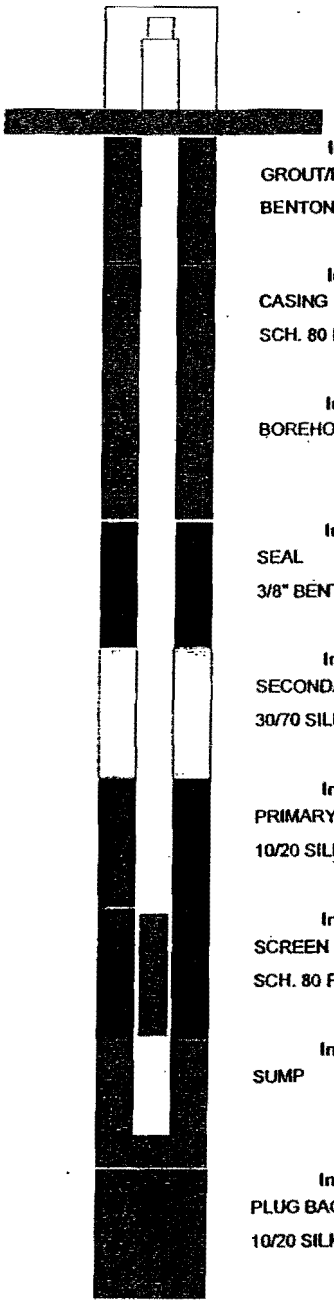
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5128.25
Initial Depth To Water: (FBGS)	274

Last measured water level was FASL measured on

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.33

Interval	Start	Stop
GROUT/BACKFILL	0'	252'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	289.1'
SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	290'
		O.D. 9.625'

Interval	Start	Stop
SEAL	252'	257.8'
3/8" BENTONITE PELL		

Interval	Start	Stop
SECONDARY PACK	257.8'	262.5'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	262.5'	290'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	268.6'	288.6'
SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	288.6'	289.1'

Interval	Start	Stop
PLUG BACK	289.1'	290'
10/20 SILICA SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	TECHNICAL AREA II	Geo Location:	NW CORNER TA-II
ER ADS #:	1303	Well Completion Date:	01-APR-93
Well Name:	TA2-NW1-325	Completion Zone:	SAND
Owner Name:	SNL	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	25-MAR-93	Well Comment:	WATER LEVEL MEASURED ON 07-OCT-93
Drilling Contractor:			
Drilling Method:	AIR ROTARY/DRIVE CASING		
Borehole Depth:	330.9		
Casing Depth:	330.3		

Survey Data

Survey Date: 09-NOV-93

Surveyed By: GREINER

State Plane Coordinates

(X) Easting: 412839.455

(Y) Northing: 1470779.575

Surveyed Elevations (FAMSL)

Protective Casing:	5419.825
Top of Inner Well Casing:	5419.27
Concrete Pad:	5417.308
Ground Surface:	5417.308

Calculated Depths and Elevations

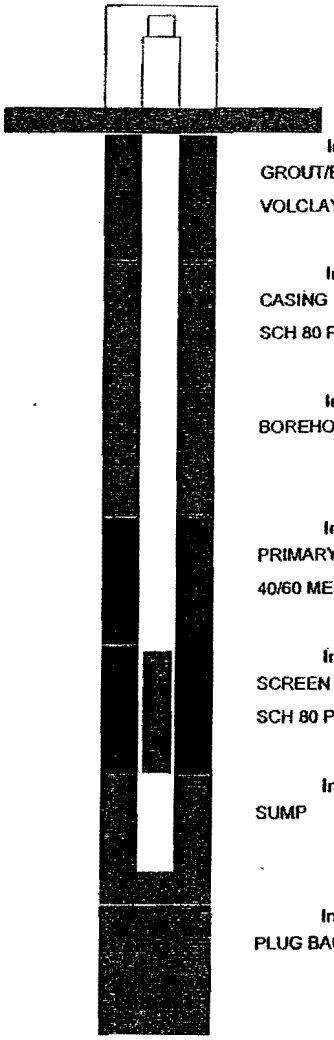
Initial Water Elevation: (FAMSL) 5110.772

Initial Depth To Water: (FBGS)

Last measured water level was FASL measured on 13-SEP-95

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup:

Interval	Start	Stop
GROUT/BACKFILL	0'	283'
VOLCLAY		

Interval	Start	Stop
CASING	0'	330.3'
SCH 80 PVC	I.D. 4.768"	O.D. 5.563"

Interval	Start	Stop
BOREHOLE	0'	330.9'
		O.D. 11"

Interval	Start	Stop
PRIMARY PACK	283'	330.9'
40/60 MESH SILICA		

Interval	Start	Stop
SCREEN	295'	325'
SCH 80 PVC		
	Slot Size	.01"

Interval	Start	Stop
SUMP	325'	330.3'

Interval	Start	Stop
PLUG BACK	330.3'	330.9'

WELL DATABASE SUMMARY SHEET

Project Name:	TECHNICAL AREA II	Geo Location:	NW CORNER TA-II
ER ADS #:	1303	Well Completion Date:	27-JUL-93
Well Name:	TA2-NW1-595	Completion Zone:	SAND
Owner Name:	SNL	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	08-JUL-93	Well Comment:	WATER LEVEL MEASURED ON 07-OCT-93
Drilling Contractor:			
Drilling Method:	AIR ROTARY/CABLE TOOL/SONIC		
Borehole Depth:	650		
Casing Depth:	598		

Survey Data

Survey Date: 09-NOV-93

Surveyed By: GREINER

State Plane Coordinates

(X) Easting: 412828.16

(Y) Northing: 1470791.739

Surveyed Elevations (FAMSL)

Protective Casing:	5419.254
Top of Inner Well Casing:	5418.588
Concrete Pad:	5417.275
Ground Surface:	5417.275

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)

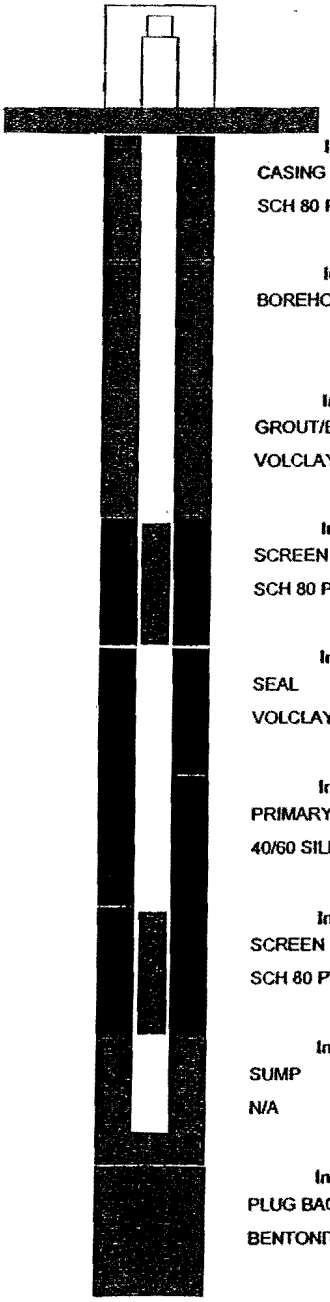
Initial Depth To Water: (FBGS)

Last measured water level was 4877.39 FASL

measured on 13-SEP-95

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup:

Interval	Start	Stop
CASING	0'	598'
SCH 80 PVC	I.D. 4.768"	O.D. 5.563"

Interval	Start	Stop
BOREHOLE	0'	650'
	O.D.	10"

Interval	Start	Stop
GROUT/BACKFILL	3'	523'
VOLCLAY		

Interval	Start	Stop
SCREEN	535'	555'
SCH 80 PVC		
	Slot Size	.01"

Interval	Start	Stop
SEAL	562'	572'
VOLCLAY		

Interval	Start	Stop
PRIMARY PACK	572'	605'
40/60 SILICA SAND		

Interval	Start	Stop
SCREEN	585'	595'
SCH 80 PVC		

Interval	Start	Stop
SUMP	595'	598'
N/A		

Interval	Start	Stop
PLUG BACK	605'	650'
BENTONITE PELLETS		

WELL DATABASE SUMMARY SHEET

Project Name:	TECHNICAL AREA II	Geo Location:	SW CORNER TA-II
ER ADS #:	1303	Well Completion Date:	30-NOV-92
Well Name:	TA2-SW1-320	Completion Zone:	SAND
Owner Name:	SNL	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	21-NOV-92	Well Comment:	WATER LEVEL MEASURED ON 07-OCT-93
Drilling Contractor:			
Drilling Method:	AIR ROTARY/DRIVE CASING		
Borehole Depth:	324.8		
Casing Depth:	324.6		

Survey Data

Survey Date: 09-NOV-93

Surveyed By: GREINER

State Plane Coordinates

(X) Easting: 412550.757

(Y) Northing: 1469669.428

Surveyed Elevations (FAMSL)

Protective Casing:	5410.03
Top of Inner Well Casing:	5409.181
Concrete Pad:	5407.364
Ground Surface:	5407.364

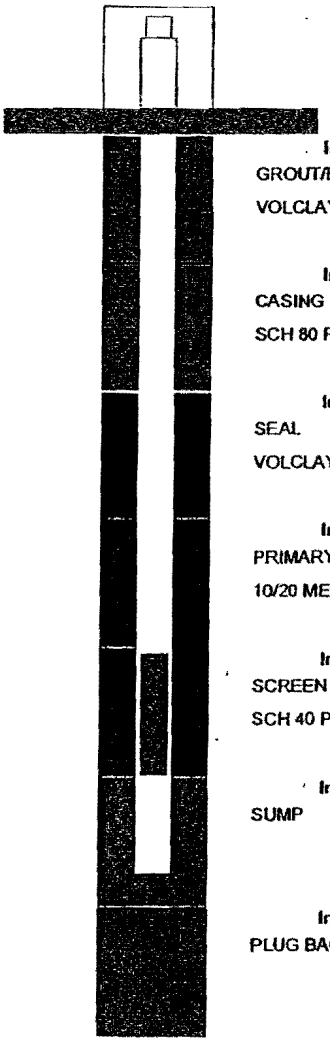
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5098.251
Initial Depth To Water: (FBGS)	310.93

Last measured water level was 5097.78 FASL measured on 13-SEP-95

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup:

Interval	Start	Stop
GROUT/BACKFILL	0'	277.5'
VOLCLAY		

Interval	Start	Stop
CASING	0'	324.6'
SCH 80 PVC	I.D. 3.826"	O.D. 4.5"

Interval	Start	Stop
SEAL	277.5'	287'
VOLCLAY PELLETS		

Interval	Start	Stop
PRIMARY PACK	287'	324.8'
10/20 MESH SILICA		

Interval	Start	Stop
SCREEN	299.6'	319.6'
SCH 40 PVC		
	Slot Size	.01"

Interval	Start	Stop
SUMP	319.6'	324.6'

Interval	Start	Stop
PLUG BACK	324.6'	324.8'

WELL DATABASE SUMMARY SHEET

Project Name:	TECHNICAL AREA II	Geo Location:	TA2 CENTRAL
ER ADS #:	1303	Well Completion Date:	27-JUN-94
Well Name:	TA2-W-01	Completion Zone:	SILTY SAND/GRAVEL
Owner Name:	SNL	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	07-MAR-94	Well Comment:	
Drilling Contractor:	WATER DEVELOPMENT		
Drilling Method:	SONIC CORING;AIR WATER		
Borehole Depth:	338		NEUTRON SHOWED SATURATION AT 314.5 AND BELOW SAND AND GRAVEL IN CUTTINGS IN SCREENED ZONE
Casing Depth:	332		

Survey Data

Survey Date: 05-AUG-94

Surveyed By: GREINER, INC.

State Plane Coordinates

(X) Easting: 413232.503

(Y) Northing: 1470118.94

Surveyed Elevations (FAMSL)

Protective Casing:	5417.496
Top of Inner Well Casing:	5417.322
Concrete Pad:	5414.999
Ground Surface:	5414.712

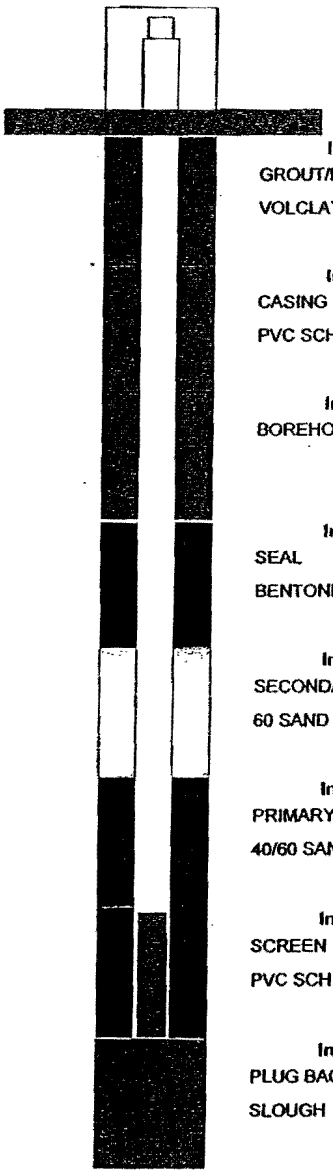
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5100.21
Initial Depth To Water: (FBGS)	314.5

Last measured water level was 5096.8 FASL measured on 13-SEP-95

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.5

Interval	Start	Stop
GROUT/BACKFILL	0'	301'
VOLCLAY GROUT		

Interval	Start	Stop
CASING	0'	332'
PVC SCH 80	I.D. 4.77"	O.D. 5.56"

Interval	Start	Stop
BOREHOLE	0'	338'
		O.D. 11.075'

Interval	Start	Stop
SEAL	301'	305'
BENTONITE PELLETS		

Interval	Start	Stop
SECONDARY PACK	305'	307'
60 SAND		

Interval	Start	Stop
PRIMARY PACK	307'	332.3'
40/60 SAND		

Interval	Start	Stop
SCREEN	312'	332'
PVC SCH 80		
	Slot Size	.01"

Interval	Start	Stop
PLUG BACK	332'	338'
SLOUGH		

WELL DATABASE SUMMARY SHEET

Project Name:	TA-II	Geo Location:	TIJERAS ARROYO;SE TA-II/TA-VI
ER ADS #:	1303	Well Completion Date:	09-NOV-95
Well Name:	TA2-W-19	Completion Zone:	GRAVELLY SAND/SANDY GRAVEL
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	08-NOV-95	Well Comment:	WELL DEVELOPED ON 29-NOV-95; CLEANED UP WELL W/TURBIDITY AT 2.6 (TCE=8.1 PPB)
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR-CASING ROTARY HAMMER		
Borehole Depth:	300		
Casing Depth:	285.87		

Survey Data

Survey Date: 08-DEC-95

Surveyed By: GREINER INC.

State Plane Coordinates

(X) Easting: 414163.596

(Y) Northing: 1468626.417

Surveyed Elevations (FAMSL)

Protective Casing:	5349.147
Top of Inner Well Casing:	5348.543
Concrete Pad:	5346.613
Ground Surface:	5346.263

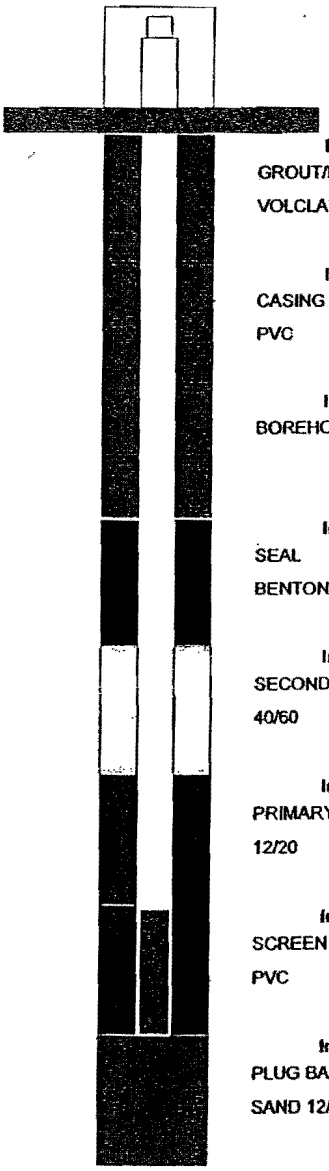
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5060.54
Initial Depth To Water: (FBGS)	288

Last measured water level was measured on FASL

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.13

Interval	Start	Stop
GROUT/BACKFILL	0'	249'
VOLCLAY GROUT		

Interval	Start	Stop
CASING	0'	285.87'
PVC	I.D. 4.8"	O.D. 5.25"

Interval	Start	Stop
BOREHOLE	0'	300'
	O.D.	10"

Interval	Start	Stop
SEAL	249'	254'
BENTONITE CHIPS		

Interval	Start	Stop
SECONDARY PACK	254'	260'
40/60		

Interval	Start	Stop
PRIMARY PACK	260'	300'
12/20		

Interval	Start	Stop
SCREEN	265.87'	285.87'
PVC		
	Slot Size	.2"

Interval	Start	Stop
PLUG BACK	285.87'	300'
SAND 12/20		

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	
ER ADS #:	1303	Well Completion Date:	09-FEB-98
Well Name:	TA2-W-24	Completion Zone:	SANDS, GRAVELS CLAY
Owner Name:	SNL	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	27-JAN-98	Well Comment:	
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	505		
Casing Depth:	490.6		

Survey Data

Survey Date:	09-APR-98
Surveyed By:	SANTIAGO ROMERO JR.

State Plane Coordinates

(X) Easting:	414479.82
(Y) Northing:	1469605.69

Surveyed Elevations (FAMSL)

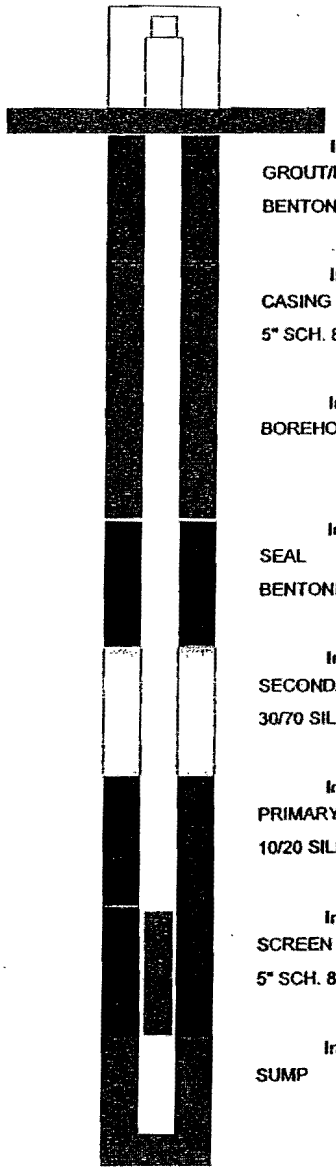
Protective Casing:	5361.48
Top of Inner Well Casing:	5360.99
Concrete Pad:	5359.26
Ground Surface:	5359.05

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4910.55
Initial Depth To Water: (FBGS)	450.44

Last measured water level was measured on FASL

Date Updated:	Date Printed:
01-OCT-01	08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 1.73

Interval	Start	Stop
GROUT/BACKFILL	0'	445'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	490.6'
5" SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	505'
	I.D. 10"	O.D. 12"

Interval	Start	Stop
SEAL	445'	451'
BENTONITE GROUT		

Interval	Start	Stop
SECONDARY PACK	451'	457'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	457'	505'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	465'	485'
5" SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	485'	490.6'

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	TIJERAS ARROYO
ER ADS #:	1303	Well Completion Date:	01-APR-97
Well Name:	TA2-W-25	Completion Zone:	SILTY SAND AND GRAVEL
Owner Name:	SNL/NM	Formation of Completion:	UPPER SANTA FE GROUP
Date Drilling Started:	24-MAR-97	Well Comment:	WELL DEVELOPMENT COMPLETED ON 28-APR-97
Drilling Contractor:	WATER DEVELOPMENT CORPOF		
Drilling Method:	AIR ROTARY-CASING HAMMER		
Borehole Depth:	520		ONE STAINLESS STEEL CENRALIZER ABOVE AND BELOW SCREEN
Casing Depth:	517.8		

Survey Data

Survey Date: 23-MAY-97

Surveyed By: GREINER, INC.

State Plane Coordinates

(X) Easting: 415262.01

(Y) Northing: 1470439.03

Surveyed Elevations (FAMSL)

Protective Casing:	5372.69
Top of Inner Well Casing:	5372.19
Concrete Pad:	5370.22
Ground Surface:	5369.8

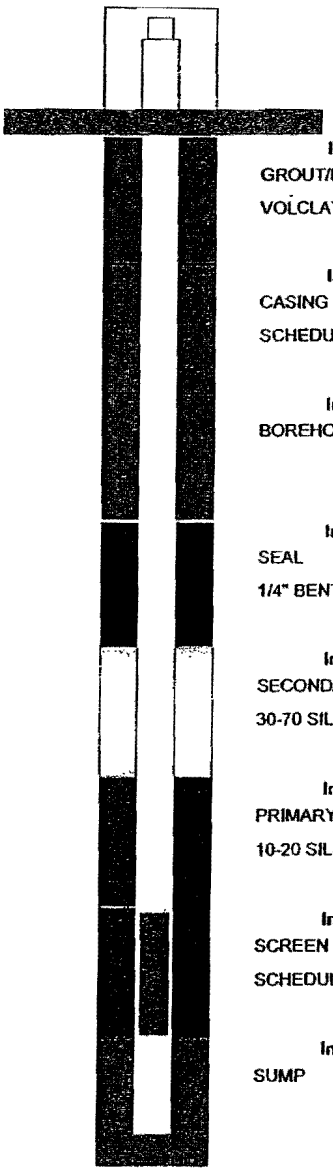
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4892.55
Initial Depth To Water: (FBGS)	479.64

Last measured water level was FASL measured on

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.39

Interval	Start	Stop
GROUT/BACKFILL	0'	475.4'
VOLCLAY GROUT		

Interval	Start	Stop
CASING	0'	492'
SCHEDULE 80 PVC	I.D. 4.75"	O.D. 5.62"

Interval	Start	Stop
BOREHOLE	0'	520'
		O.D. 10"

Interval	Start	Stop
SEAL	475.4'	481'
1/4" BENTONITE PELL		

Interval	Start	Stop
SECONDARY PACK	481'	487'
30-70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	487'	517.8'
10-20 SILICA SAND		

Interval	Start	Stop
SCREEN	492'	512'
SCHEDULE 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	512'	517.8'

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	
ER ADS #:	1303	Well Completion Date:	19-JAN-98
Well Name:	TA2-W-26	Completion Zone:	SANDS, GRAVELS, CLAY
Owner Name:	SNL	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	12-JAN-98	Well Comment:	
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	305		
Casing Depth:	301.6		

Survey Data

Survey Date:	09-APR-98
Surveyed By:	SANTIAGO ROMERO JR.

State Plane Coordinates

(X) Easting:	415265.37
(Y) Northing:	1470489.1

Surveyed Elevations (FAMSL)

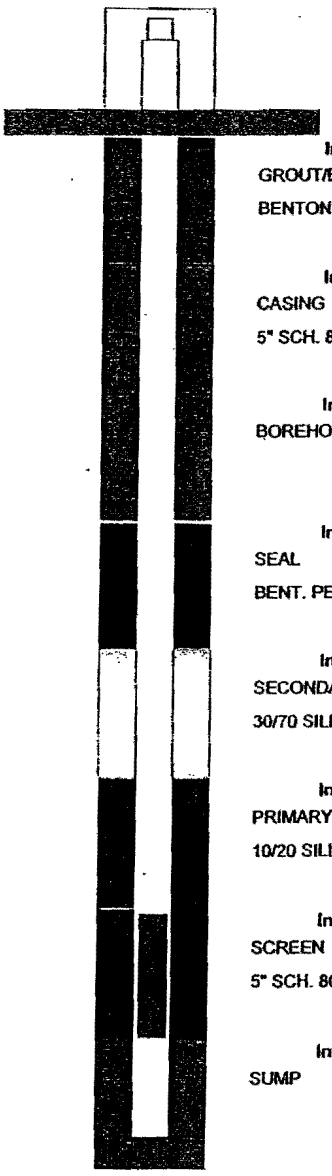
Protective Casing:	5373.68
Top of Inner Well Casing:	5373.1
Concrete Pad:	5371.47
Ground Surface:	5371.09

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5093.68
Initial Depth To Water: (FBGS)	279.42

Last measured water level was measured on FASL

Date Updated:	Date Printed:
01-OCT-01	08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 1.63

Interval	Start	Stop
GROUT/BACKFILL	0'	255'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	301.6'
5" SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	305'
		O.D. 10"

Interval	Start	Stop
SEAL	255'	261.5'
BENT. PELLETS		

Interval	Start	Stop
SECONDARY PACK	261.5'	271'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	271'	305'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	276'	296'
5" SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	296'	301.6'

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	**Geo Location:**	
ER ADS #:	1303	**Well Completion Date:**	09-FEB-98
Well Name:	TA2-W-27	**Completion Zone:**	SANDS, GRAVELS, CLAY
Owner Name:	SNL	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	04-FEB-98	**Well Comment:**	
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	306.5		
Casing Depth:	300.6		

Survey Data

Survey Date: 09-APR-98

Surveyed By: SANTIAGO ROMERO JR.

State Plane Coordinates

(X) Easting: 414514.63

(Y) Northing: 1469616.61

Surveyed Elevations (FAMSL)

Protective Casing:	5360.63
Top of Inner Well Casing:	5360.18
Concrete Pad:	5358.37
Ground Surface:	5358.1

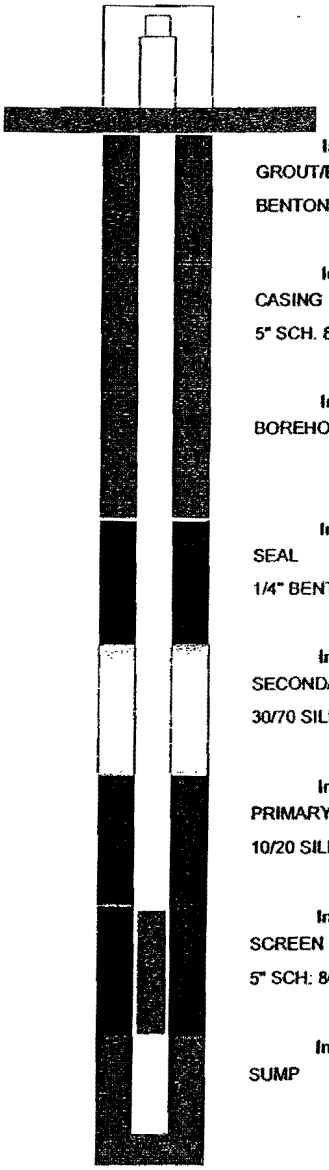
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5085.59
Initial Depth To Water: (FBGS)	274.59

Last measured water level was measured on FASL

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 1.81

Interval	Start	Stop
GROUT/BACKFILL	0'	259'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	300.6'
5" SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	306.5'
		O.D. 10"

Interval	Start	Stop
SEAL	259'	264.5'
1/4" BENT. PELLETS		

Interval	Start	Stop
SECONDARY PACK	264.5'	270'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	270'	306.5'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	275'	295'
5" SCH: 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	295'	300.6'

WELL DATABASE SUMMARY SHEET

Project Name:	SWHC	Geo Location:	TIJERAS ARROYO
ER ADS #:	1330	Well Completion Date:	12-JUL-94
Well Name:	TJA-2	Completion Zone:	GRAVELLY SAND
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	09-JUL-94	Well Comment:	THIS WELL REPLACES FAILED WELL TJA-1
Drilling Contractor:	USGS		
Drilling Method:	MUD ROTARY		
Borehole Depth:	310		
Casing Depth:	305		

Survey Data

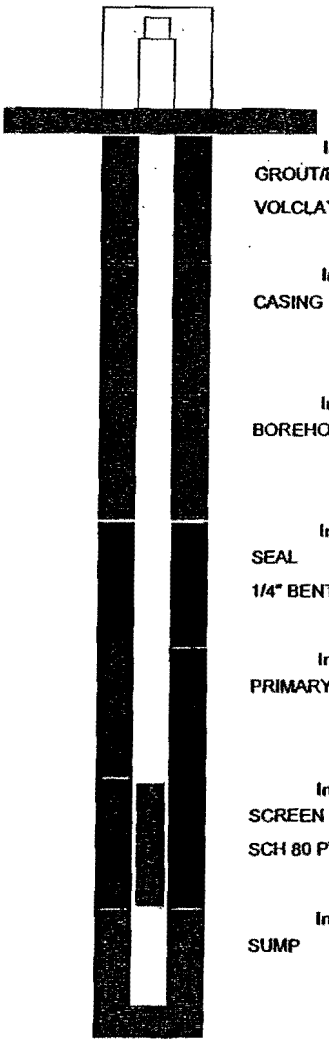
Survey Date:	01-JAN-97
Surveyed By:	HALL ENGINEERING COMPANY

State Plane Coordinates

(X) Easting:	415343.11
(Y) Northing:	1468620.36

Surveyed Elevations (FAMSL)

Protective Casing:	5351.603
Top of Inner Well Casing:	5350.533
Concrete Pad:	5348.825
Ground Surface:	5348.579



Completion Data Measured Depths (FBGS)

Casing Stickup: 1.84

Interval	Start	Stop
GROUT/BACKFILL	0'	248'
VOLCLAY BENT. SLURRY		

Interval	Start	Stop
CASING	0'	305'

I.D. 3.82" O.D. 4.5"

Interval	Start	Stop
BOREHOLE	0'	310'

O.D. 7.875"

Interval	Start	Stop
SEAL	248'	263'
1/4" BENT. PELLETS		

Interval	Start	Stop
PRIMARY PACK	263'	310'

Interval	Start	Stop
SCREEN	275'	295'
SCH 80 PVC		

Slot Size .02"

Interval	Start	Stop
SUMP	295'	305'

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5078.53
Initial Depth To Water: (FBGS)	274

Last measured water level was FASL measured on 25-SEP-97

Date Updated:	Date Printed:
01-OCT-01	08-NOV-01

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	E. OF SKEET RANGE, W. OF TA-IV
ER ADS #:	1303	Well Completion Date:	31-AUG-98
Well Name:	TJA-3	Completion Zone:	SAND AND GRAVEL
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	14-AUG-98	Well Comment:	WELL DEVELOPED 04-DEC-98. NO PROBLEMS ENCOUNTERED DURING WELL INSTALLATION. PROTECTIVE CASING EXTENDED 2/16/99.
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	522		
Casing Depth:	521.7		

Survey Data

Survey Date: 15-JAN-99

Surveyed By: BOHANNAN HUSTON, INC.

State Plane Coordinates

(X) Easting: 411705.936

(Y) Northing: 1467501.549

Surveyed Elevations (FAMSL)

Protective Casing:	5388.62
Top of Inner Well Casing:	5387.89
Concrete Pad:	5385.32
Ground Surface:	5385.07

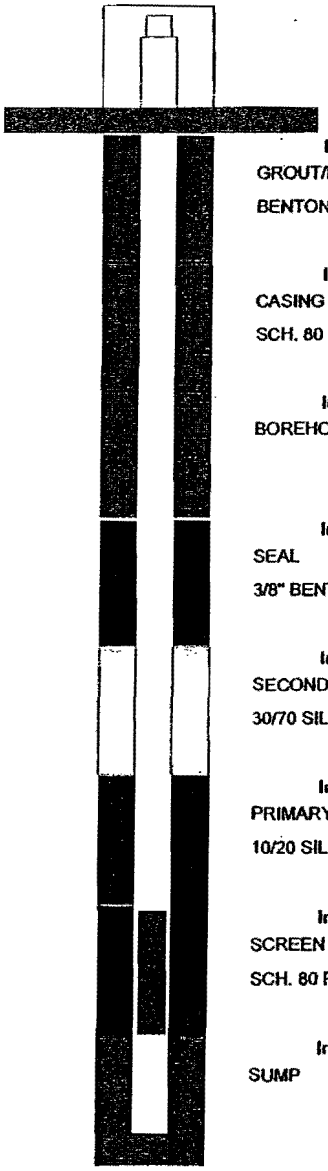
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4892.64
Initial Depth To Water: (FBGS)	495.25

Last measured water level was FASL measured on

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 3.01

Interval	Start	Stop
GROUT/BACKFILL	0'	480'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	521.7'
SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	522'
		O.D. 9.625"

Interval	Start	Stop
SEAL	480'	484'
3/8" BENTONITE PELL		

Interval	Start	Stop
SECONDARY PACK	484'	492'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	492'	521'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	496'	516'
SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	516'	521.7'

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	W. OF POWERLINE RD. S.SIDE TJ
ER ADS #:	1303	Well Completion Date:	04-AUG-98
Well Name:	TJA-4	Completion Zone:	SILTY GRAVELLY SAND
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	28-JUL-98	Well Comment:	WELL DEVELOPED 01-DEC-98 NO PROBLEMS WITH WELL INSTALLATION. PROTECTIVE CASING EXTENDED 2/16/99.
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	399		
Casing Depth:	385.7		

Survey Data

Survey Date: 15-JAN-99

Surveyed By: BOHANNAN HUSTON INC.

State Plane Coordinates

(X) Easting: 415135.481

(Y) Northing: 1467154.123

Surveyed Elevations (FAMSL)

Protective Casing:	5339.31
Top of Inner Well Casing:	5338.49
Concrete Pad:	5335.9
Ground Surface:	5335.8

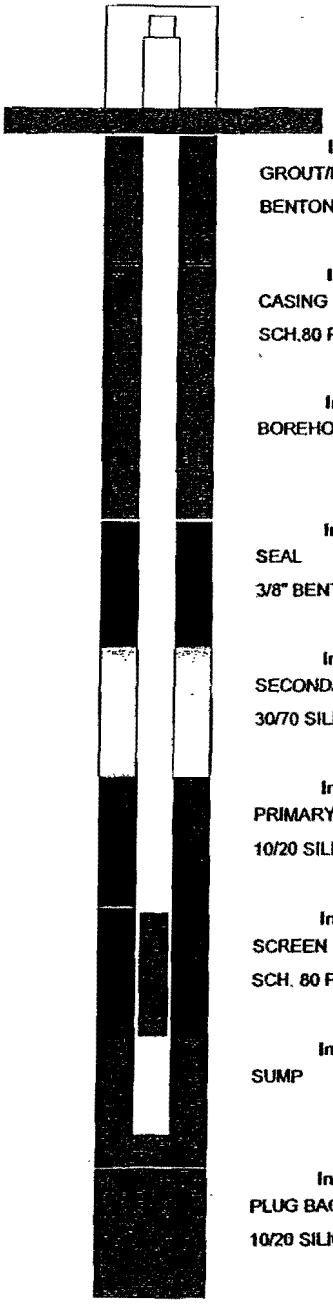
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5023.64
Initial Depth To Water: (FBGS)	314.9

Last measured water level was FASL measured on

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.86

Interval	Start	Stop
GROUT/BACKFILL	0'	345'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	385.7'
SCH.80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	399'
		O.D. 9.625"

Interval	Start	Stop
SEAL	345'	350'
3/8" BENTONITE PELL		

Interval	Start	Stop
SECONDARY PACK	350'	354.5'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	354.5'	399'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	360'	380'
SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	380'	385.7'

Interval	Start	Stop
PLUG BACK	385.7'	399'
10/20 SILICA SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	SANDIA NORTH GW	Geo Location:	W. OF POWERLINE RD. S.SIDE TJA
ER ADS #:	1303	Well Completion Date:	07-AUG-98
Well Name:	TJA-5	Completion Zone:	SAND AND GRAVEL
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	05-AUG-98	Well Comment:	WELL DEVELOPED 02-DEC-98. NO PROBLEMS ENCOUNTERED DURING WELL INSTALLATION. PROTECTIVE CASING EXTENDED 2/16/99
Drilling Contractor:	WATER DEVELOPMENT CORP.		
Drilling Method:	AIR ROTARY/CASING HAMMER		
Borehole Depth:	298		
Casing Depth:	292.7		

Survey Data

Survey Date: 15-JAN-99

Surveyed By: BOHANNAN HUSTON, INC.

State Plane Coordinates

(X) Easting: 415129.026

(Y) Northing: 1467136.269

Surveyed Elevations (FAMSL)

Protective Casing:	5339.56
Top of Inner Well Casing:	5338.66
Concrete Pad:	5335.943
Ground Surface:	5335.77

Calculated Depths and Elevations

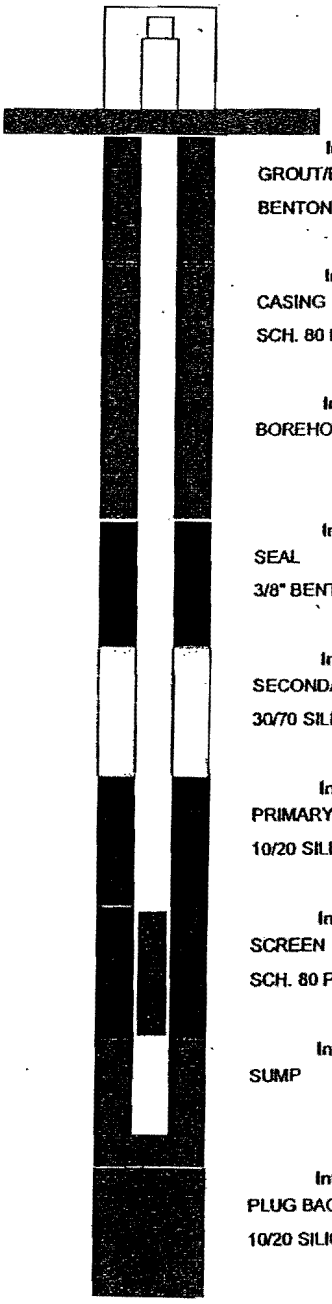
Initial Water Elevation: (FAMSL)	5070.99
Initial Depth To Water: (FBGS)	267.8

Last measured water level was FASL

measured on

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 3.07

Interval	Start	Stop
GROUT/BACKFILL	0'	249'
BENTONITE GROUT		

Interval	Start	Stop
CASING	0'	292.7'
SCH. 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
BOREHOLE	0'	298'
		O.D. 9.625"

Interval	Start	Stop
SEAL	249'	254'
3/8" BENTONITE PELL		

Interval	Start	Stop
SECONDARY PACK	254'	257'
30/70 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	257'	298'
10/20 SILICA SAND		

Interval	Start	Stop
SCREEN	267'	287'
SCH. 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	287'	292.7'

Interval	Start	Stop
PLUG BACK	292.7'	298'
10/20 SILICA SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	TIJERAS ARROYO GW	**Geo Location:**	S. OF TA IV, N OF TIJERAS ARYO
ER ADS #:	1303	**Well Completion Date:**	04-FEB-01
Well Name:	TJA-6	**Completion Zone:**	SILTY SAND
Owner Name:	SNL-NM	**Formation of Completion:**	SANTA FE GROUP
Date Drilling Started:	16-JAN-01	**Well Comment:**	ODEX 0-245' ROTARY MUD 245-300' 245-500' 8" TRICONE
Drilling Contractor:	LAYNE		
Drilling Method:	ODEX & ROTARY MUD		
Borehole Depth:	503		
Casing Depth:	480.7		

Survey Data

Survey Date: 19-JUN-01

Surveyed By: ASCI, VLADIMIR JIRIK

State Plane Coordinates

(X) Easting: 412434.41

(Y) Northing: 1466976.14

Surveyed Elevations (FAMSL)

Protective Casing:	5341.11
Top of Inner Well Casing:	5340.49
Concrete Pad:	5338.28
Ground Surface:	5337.9

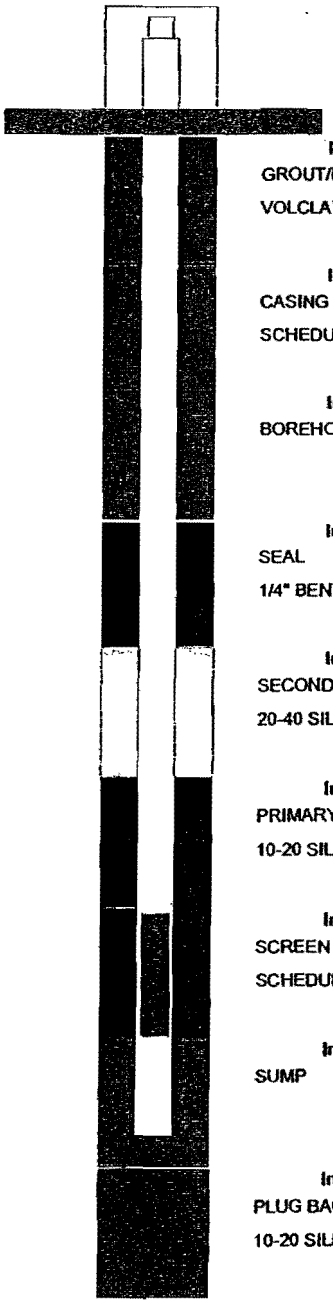
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4926.9
Initial Depth To Water: (FBGS)	450.5

Last measured water level was measured on FASL

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2.5

Interval	Start	Stop
GROUT/BACKFILL	0'	441'
VOLCLAY GROUT		

Interval	Start	Stop		
CASING	0'	480.7'		
SCHEDULE 80 PVC	I.D. 5"		O.D.	5.5"

Interval	Start	Stop		
BOREHOLE	0'	503'		
			O.D.	10"

Interval	Start	Stop
SEAL	441'	446.5'
1/4" BENTONITE PELTS		

Interval	Start	Stop
SECONDARY PACK	446.5'	451'
20-40 SILICA SAND		

Interval	Start	Stop
PRIMARY PACK	451'	480.7'
10-20 SILICA SAND		

Interval	Start	Stop
SCREEN	454.9'	474.9'
SCHEDULE 80 PVC		
	Slot Size	.02"

Interval	Start	Stop
SUMP	474.9'	480.7'

Interval	Start	Stop
PLUG BACK	480.7'	503'
10-20 SILICA SAND		

WELL DATABASE SUMMARY SHEET

Project Name:	TIJERAS ARROYO GW	Geo Location:	SW OF TA IV, N OF TIJERAS ARYO
ER ADS #:	1303	Well Completion Date:	07-MAR-01
Well Name:	TJA-7	Completion Zone:	SILTY SAND / CLAYEY SILT
Owner Name:	SNL-NM	Formation of Completion:	SANTA FE GROUP
Date Drilling Started:	03-MAR-01	Well Comment:	PERCHED AQUIFER WELL
Drilling Contractor:	LAYNE		
Drilling Method:	ODEX		
Borehole Depth:	316		
Casing Depth:	316.3		

Survey Data

Survey Date: 19-JUN-01

Surveyed By: ASCI, VLADIMIR JIRIK

State Plane Coordinates

(X) Easting: 411737.38

(Y) Northing: 1467543.6

Surveyed Elevations (FAMSL)

Protective Casing:	5389.18
Top of Inner Well Casing:	5388.6
Concrete Pad:	5386.06
Ground Surface:	5385.7

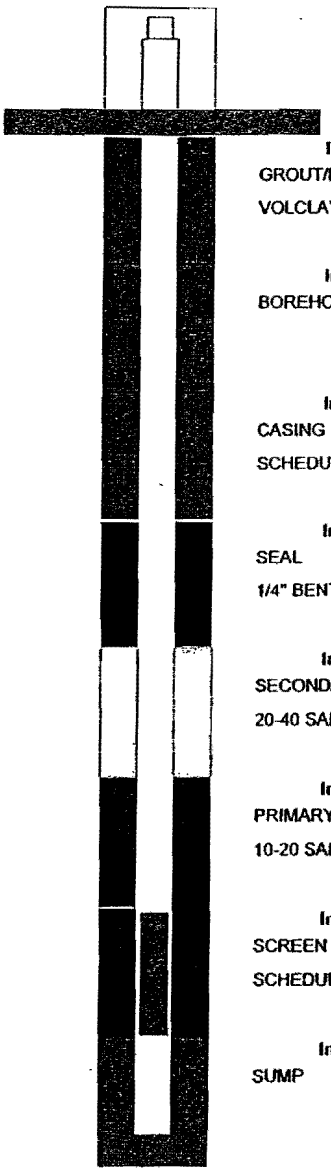
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5087
Initial Depth To Water: (FBGS)	298.7

Last measured water level was measured on FASL

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 3

Interval	Start	Stop
GROUT/BACKFILL	0'	275.5'
VOLCLAY GROUT		

Interval	Start	Stop
BOREHOLE	0'	316'

O.D. 8"

Interval	Start	Stop
CASING	0'	316.3'
SCHEDULE 80 PVC	I.D. 5"	O.D. 5.5"

Interval	Start	Stop
SEAL	275.5'	282'
1/4" BENTONITE PELTS		

Interval	Start	Stop
SECONDARY PACK	282'	283'
20-40 SAND		

Interval	Start	Stop
PRIMARY PACK	283'	316.3'
10-20 SAND		

Interval	Start	Stop
SCREEN	290.5'	310.5'
SCHEDULE 80 PVC		

Slot Size .02"

Interval	Start	Stop
SUMP	310.5'	316.3'

WELL DATABASE SUMMARY SHEET

Project Name:	SWHC	Geo Location:	N. OF WYOMING AND PENNSYLVANIA
ER ADS #:	1330	Well Completion Date:	27-AUG-95
Well Name:	WY0-1	Completion Zone:	SILTY SAND
Owner Name:	SNL/NM	Formation of Completion:	UPPER SANTA FE UNIT
Date Drilling Started:	15-AUG-95	Well Comment:	DUAL COMPLETION IN A SINGLE BOREHOLE WITH WYO-2
Drilling Contractor:	USGS		
Drilling Method:	ROTARY MUD		
Borehole Depth:	650		
Casing Depth:	570		

Survey Data

Survey Date: 27-OCT-95

Surveyed By: GREINER, INC.

State Plane Coordinates

(X) Easting: 409960.217

(Y) Northing: 1470026.768

Surveyed Elevations (FAMSL)

Protective Casing:	5390.29
Top of Inner Well Casing:	5389.83
Concrete Pad:	5387.85
Ground Surface:	5387.72

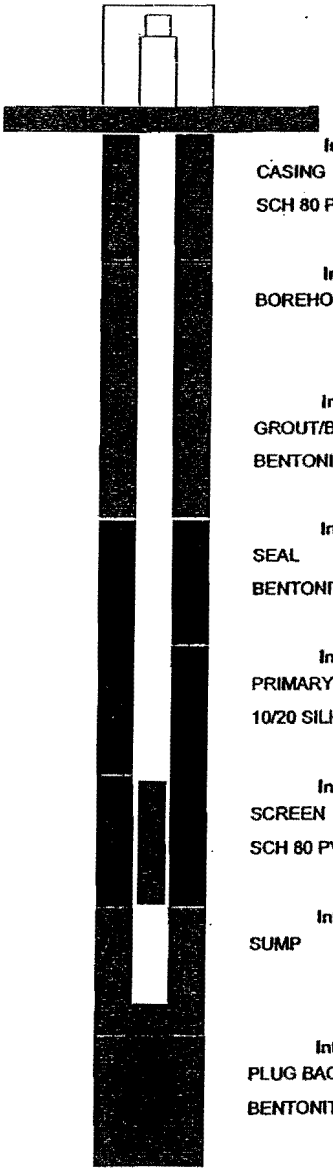
Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	4876.41
Initial Depth To Water: (FBGS)	513.42

Last measured water level was 4868.52 FASL measured on 28-JUN-96

Date Updated: 01-OCT-01

Date Printed: 08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2

Interval	Start	Stop		
CASING	0'	570'		
SCH 80 PVC	I.D. 4.25"		O.D. 4.75"	
Interval	**Start**	**Stop**		
BOREHOLE	0'	650'		
			O.D. 9.875"	
Interval	**Start**	**Stop**		
GROUT/BACKFILL	299'	476'		
BENTONITE CHIPS				
Interval	**Start**	**Stop**		
SEAL	299'	476'		
BENTONITE CHIPS				
Interval	**Start**	**Stop**		
PRIMARY PACK	476'	572'		
10/20 SILICA SAND				
Interval	**Start**	**Stop**		
SCREEN	510'	560'		
SCH 80 PVC				
			Slot Size	.02"
Interval	**Start**	**Stop**		
SUMP	560'	570'		
Interval	**Start**	**Stop**		
PLUG BACK	572'	650'		
BENTONITE CHIPS				

WELL DATABASE SUMMARY SHEET

Project Name:	SWHC	Geo Location:	N OF WYOMING & PENN. BLVDS
ER ADS #:	1330	Well Completion Date:	27-AUG-95
Well Name:	WYO-2	Completion Zone:	SILTY SAND ETC
Owner Name:	SNL - NM	Formation of Completion:	UPPER SANTA FE UNIT
Date Drilling Started:	15-AUG-95	Well Comment:	DUAL COMPLETION IN A SINGLE BOREHOLE WITH WYO-1. 2" SCH 80 PVC
Drilling Contractor:	USGS		
Drilling Method:	ROTARY MUD		
Borehole Depth:	650		
Casing Depth:	295		

Survey Data

Survey Date:	27-OCT-95
Surveyed By:	GREINER, INC.

State Plane Coordinates

(X) Easting:	409960.217
(Y) Northing:	1470026.768

Surveyed Elevations (FAMSL)

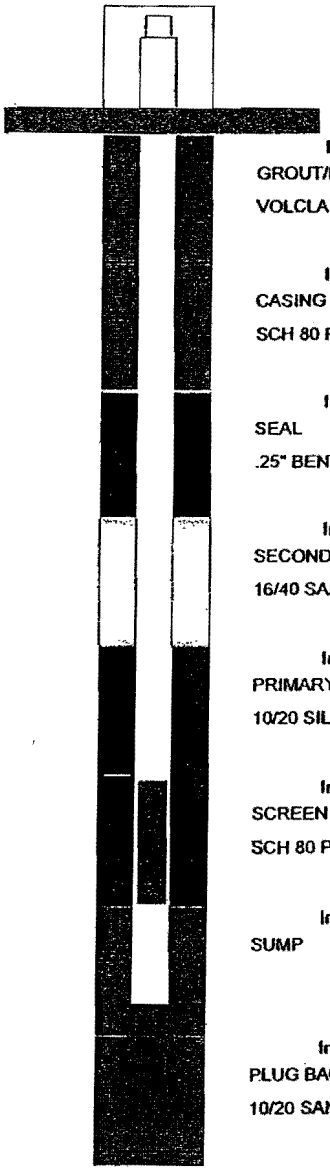
Protective Casing:	5390.29
Top of Inner Well Casing:	5389.83
Concrete Pad:	5387.85
Ground Surface:	5387.72

Calculated Depths and Elevations

Initial Water Elevation: (FAMSL)	5116.93
Initial Depth To Water: (FBGS)	272.9

Last measured water level was 5117.66 FASL measured on 28-JUN-96

Date Updated:	Date Printed:
01-OCT-01	08-NOV-01



Completion Data Measured Depths (FBGS)

Casing Stickup: 2

Interval	Start	Stop
GROUT/BACKFILL	0'	215'
VOLCLAY		

Interval	Start	Stop
CASING	0'	295'
SCH 80 PVC		

Interval	Start	Stop
SEAL	215'	220'
.25" BENT PELLETS		

Interval	Start	Stop
SECONDARY PACK	220'	233'
16/40 SAND		

Interval	Start	Stop
PRIMARY PACK	233'	299'
10/20 SILICON		

Interval	Start	Stop
SCREEN	265'	285'
SCH 80 PVC		

Slot Size .02"

Interval	Start	Stop
SUMP	285'	295'

Interval	Start	Stop
PLUG BACK	295'	299'
10/20 SAND		