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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 27, 2015

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RE: FINAL PERMIT DECISION AND RESPONSE TO COMMENTS ON SNL HAZARDOUS WASTE PERMIT AND PROPOSALS TO GRANT CORRECTIVE ACTION COMPLETE FOR 24 SWMUS AND AOCS SANDIA NATIONAL LABORATORY EPA ID # NM5890110518 HWB-SNL-02-002

Dear Messrs. Beausoleil and Hazen:

On December 19, 2014, New Mexico Environment Department (Department) Secretary Ryan Flynn signed a Final Order issuing a final Hazardous Waste Facility Permit (Permit) to the Department of Energy/Sandia Corporation (the Permittees) for treatment and storage of hazardous and mixed waste at the Sandia National Laboratories (SNL) Facility. Secretary Flynn also granted corrective action complete (CAC) status for 24 solid waste management units (SWMUs) and areas of concern (AOCs).

A 60-day public comment period on the draft Permit and the CAC proposals began on September 17, 2012 and was subsequently extended to February 14, 2013. At the request of commenters, a public hearing on the proposed Permit and CAC proposals was held from May 5 through May 8, 2014. The draft Permit was modified in response to comments received. The final Permit also incorporates changes made by the Secretary in the Final Order.

The Permit and the granting of CAC for the 24 SWMUs/AOCs will become effective on February 26, 2015, 30 days after issuance of the final Permit today. The Secretary's decision may be appealed under the provisions of the New Mexico Hazardous Waste Regulations, 20.4.1.901(H) NMAC, and § 74-4-14 of the New Mexico Hazardous Waste Act.

Enclosed are the Final Order, the final Permit, and the Department's responses to public comment on the draft Permit and CAC proposals, including explanations for changes made to the draft Permit in preparing the final Permit pursuant to 20.4.1.901.A.(9), (10) and (12) NMAC.

The SWMUS and AOCs approved for CAC by this action include:

1. SWMU 4, LWDS Surface Impoundments
2. SWMU 5, LWDS Drainfield (TA-V)
3. SWMU 28-2, Mine Shafts
4. SWMU 46, Old Acid Waste Line Outfall
5. SWMU 49, Building 9820 Drains (Lurance Canyon)
6. SWMU 52, LWDS Holding Tanks
7. SWMU 91, Lead Firing Site (Thunder Range)
8. SWMU 101, Building 9926/9926A Septic System and Seepage Pit (Coyote Test Field)
9. SWMU 105, Mercury Spill (Building 6536)
10. SWMU 116, Building 9990 Septic System (Coyote Test Field)
11. SWMU 138, Building 6630 Septic System (TA-III)
12. SWMU 140, Building 9965 Septic System and Drywell (Thunder Range)
13. SWMU 147, Building 9925 Septic Systems (Coyote Test Field)
14. SWMU 150, Building 9939/ 9939A Septic System and Drainfield (Coyote Test Field)
15. SWMU 161, Building 6636 Septic System (TA-III)
16. SWMU 196, Building 6597 Cistern (TA-V)
17. AOC 1090, Building 6721 Septic System (TA-III)
18. AOC 1094, Live Fire Range East Septic System (Lurance Canyon)
19. AOC 1095, Building 9938 Seepage Pit (Coyote Test Field)
20. AOC 1101, Building 885 Septic System (TA-I)
21. AOC 1114, Building 9978 Drywell (Coyote Test Field)
22. AOC 1116, Building 9981A Seepage Pit (Solar Tower Complex)
23. AOC 1117, Building 9982 Drywell (Solar Tower Complex)
24. SWMU LTES-1, Cable Debris Site

Several of the above listed SWMUs and AOCs require controls and have been listed in Table K-3 of Permit Attachment K and Table M-1 of Permit Attachment M.

Please contact Dave Cobrain of my staff at (505) 476-6055 if you have questions regarding this matter.

Sincerely,

Kathryn Roberts
Director
Resource Protection Division
New Mexico Environment Department

Enclosures

cc: J. Kieling, NMED HWB
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File: SNL 2015 and Reading
HWB-SNL-02-002

RESOURCE CONSERVATION AND RECOVERY ACT FACILITY OPERATING PERMIT

PARTS 1 THROUGH 8

EPA ID No. NM5890110518

issued to the

U.S. DEPARTMENT OF ENERGY/SANDIA CORPORATION

for the

SANDIA NATIONAL LABORATORIES
HAZARDOUS AND MIXED WASTE TREATMENT AND STORAGE UNITS AND POST-CLOSURE CARE OF THE CORRECTIVE ACTION MANAGEMENT UNIT

located in

BERNALILLO COUNTY, NEW MEXICO

prepared by the

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS WASTE BUREAU
2905 RODEO PARK DRIVE EAST, BUILDING 1
SANTA FE, NEW MEXICO 87505

January 2015

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PERMIT PART 1 GENERAL PERMIT CONDITIONS

1.1 AUTHORITY

This Permit is issued pursuant to the authority of the New Mexico Environment Department (Department) under the New Mexico Hazardous Waste Act (HWA), NMSA 1978, §§ 74-4-1 through 74-4-14, in accordance with the New Mexico Hazardous Waste Management Regulations (HWMR), 20.4.1 NMAC.

Pursuant to the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 to 6992k, and 40 CFR Part 271 and Part 272 Subpart GG, the State of New Mexico, through the Department, is authorized to administer and enforce the state hazardous waste management program under the HWA in lieu of the federal program.

This Permit contains terms and conditions that the Department has determined are necessary to protect human health and the environment. (*See* 40 CFR § 270.32(b)(2)).

Any violation of a requirement in this Permit may subject the Permittees or their officers, employees, successors, and assigns to: 1) a compliance order under § 74-4-10 of the HWA or § 3008(a) of RCRA (42 U.S.C. § 6928(a)); 2) an injunction under § 74-4-10 of the HWA or § 3008(a) of RCRA (42 U.S.C. § 6928(a)), or § 7002(a) of RCRA (42 U.S.C. § 6972(a)); 3) civil penalties under §§ 74-4-10 and 74-4-10.1 of the HWA or §§ 3008(a) and (g) of RCRA (42 U.S.C. §§ 6928(a) and (g)), or § 7002(a) of RCRA (42 U.S.C. § 6972(a)); 4) criminal penalties under § 74-4-11 of the HWA or §§ 3008(d), (e), and (f) of RCRA (42 U.S.C. §§ 6928(d), (e), and (f)); or 5) some combination of the foregoing. The list of authorities in this paragraph is not exhaustive and the Department reserves the right to take any action authorized by law to enforce the requirements of this Permit.

1.2 PERMITTEES AND PERMITTED ACTIVITY

The Secretary of the New Mexico Environment Department issues this Permit for hazardous and mixed waste management at the Sandia National Laboratories (SNL) to the United States Department of Energy (DOE), the owner of SNL, and Sandia Corporation, operator of SNL (EPA ID Number NM5890110518).

This Permit authorizes DOE and Sandia Corporation (the Permittees) to manage, store, and treat hazardous and mixed waste at SNL, and establishes the general and specific standards for these activities, pursuant to the HWA and the HWMR. This Permit also establishes standards for closure and post-closure care of permitted units at SNL, and corrective action pursuant to the HWA and HWMR.

1.2.1 Scope of Permit

This Permit authorizes the storage of hazardous and mixed wastes at the Hazardous Waste Handling Unit (HWHU), treatment of hazardous waste at the Thermal Treatment Unit (TTU), the treatment and storage of hazardous and mixed wastes at the Radioactive and Mixed Waste Management Unit (RMWMU) and the Auxiliary Hot Cell Unit (AHCU), and the storage of hazardous and mixed waste at the Manzano Storage Bunkers (MSB), as identified in Section 1.4 of this Permit Part. Storage or treatment of hazardous or mixed wastes that requires a permit is not authorized at any other location at the Facility. This Permit also requires the Permittees to

conduct post-closure care of the CAMU and corrective actions at solid waste management units and areas of concern facility-wide.

1.3 PERMIT CITATIONS

Whenever the Permit cites a provision of 20.4.1 NMAC or Title 40 Code of Federal Regulations (40 CFR) the Permit shall be deemed to incorporate the citation by reference, including all subordinate provisions of the cited provision, and make binding the full text of the cited provision.

Hazardous waste management regulations are frequently cited throughout this Permit. The federal hazardous waste management regulations, 40 CFR Parts 260 through 273, are generally cited rather than the New Mexico Hazardous Waste Management Regulations, 20.4.1 NMAC. The federal regulations are cited because only the federal regulations set forth the detailed regulatory requirements; the State regulations incorporate by reference, with certain exceptions, the federal regulations in their entirety. Citing only the federal regulations also serves to avoid encumbering each citation with references to two sets of regulations. However, it is the State regulations that are legally applicable and enforceable. Therefore, for the purpose of this Permit, and enforcement of its terms and conditions, all references to provisions of federal regulations that have been incorporated into the State regulations shall be deemed to include the State incorporation of those provisions.

1.4 EFFECT OF PERMIT

As to those activities specifically authorized or otherwise specifically addressed under this Permit, compliance with this Permit during its term shall constitute compliance, for purposes of enforcement, with Subtitle C of RCRA and the HWA, and the implementing regulations at 40 CFR Parts 264, 266, and 268 to the extent, and with the exceptions, provided by 40 CFR § 270.4.

Compliance with this Permit shall not constitute a defense to any order issued or any action brought under: §§ 74-4-10, 74-4-10.1, or 74-4-13 of the HWA; §§ 3008(a), 3008(h), 3013, 7002(a)(1)(B), or 7003 of RCRA; §§ 104, 106(a), or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 to 9675; or any other federal, state or local law providing for protection of public health or the environment.

This Permit does not convey any property rights of any sort or any exclusive privilege, nor authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Compliance with this Permit does not relieve Permittees from the responsibility of complying with all applicable state or federal laws and regulations. (*See* 40 CFR §§ 270.4, 270.30(g)).

1.5 SEVERABILITY

The provisions of the Permit are severable, and if any provision of this Permit, or any application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

1.6 DEFINITIONS

Terms used in this Permit shall have the same meanings as those in the HWA, RCRA, and their implementing regulations unless this Permit specifically provides otherwise. Where a term is not defined in the HWA, RCRA, implementing regulations, or this Permit, the meaning of the term shall be determined by a standard dictionary reference, EPA guidelines or publications, or the generally accepted scientific or industrial meaning of the term.

ñArea of Concernò (AOC) means any area that may have had a release of a hazardous waste or hazardous constituents, which is not a solid waste management unit.

ñConsent Orderò means the April 29, 2004 Compliance Order on Consent issued to the Permittees pursuant to the HWA and the New Mexico Solid Waste Act (SWA), NMSA 1978, § 74-9-36(D), and any subsequent modifications thereof.

ñCorrective Actionò means all corrective action necessary to protect human health and the environment for all releases of hazardous or mixed waste or hazardous constituents from any Solid Waste Management Unit (SWMU) or Area of Concern (AOC) at the Facility, regardless of the time at which waste was placed in the Unit, as required under HWA § 74-4-4.2(B) and 40 CFR § 264.101. Corrective Action may address releases to air, soil, sediment, surface water or groundwater.

ñCorrective Action Completeò means the requirements for corrective action have been satisfied by the Permittees as determined by the Department.

ñDaysò refers to calendar days unless specified otherwise in this Permit.

ñDepartmentò means the New Mexico Environment Department and any successor or predecessor agencies.

ñDOEò means the United States Department of Energy, and any successor departments or predecessor agencies.

ñEPAò means the United States Environmental Protection Agency and any successor or predecessor agency.

ñFacilityò means the Sandia National Laboratories including all contiguous land, and structures, other appurtenances, and improvements on the land. The Facility includes five Technical Areas (TAs) located within Kirtland Air Force Base (KAFB) and several remote test areas located on KAFB and the adjacent lands withdrawn from the U.S. Forest Service: Foothills Test Area, Central Coyote Test Area, Southwest Test Area, and Canyons Test Area. Within KAFB and the adjacent lands withdrawn from the U.S. Forest Service, the Facility comprises approximately 15,054 acres (23.5 square miles).

For the purpose of implementing corrective action under 40 CFR § 264.101, RCRA Section 3008(h), or the HWA, NMSA 1978, § 74-4-10(E), the Facility includes all contiguous property under the control of the owner or operator seeking a permit under the HWA. The Facility also includes all the SWMUs and AOCs listed in Attachment K of this Permit. The regional location of the Facility is shown in Figure 1 of Permit Attachment L (Figures).

ñFederal Facility Compliance Orderò (FFCO) means the Order issued by the Department to the United States Department of Energy, and Sandia Corporation on October 4, 1995 pursuant to

section 3012(b) of RCRA, 42 U.S.C. § 6939(c), as amended by the Federal Facility Compliance Act (the Act) of 1992, Public Law 102 386, 106 Stat. 1505 (1992).

ñForeign Sourceò means a hazardous waste source outside the United States.

ñGroundwaterò means water below the land surface in a zone of saturation.

ñHazardous Constituentò or ñHazardous Waste Constituentò means 1) any constituent identified in 40 CFR Part 261 Appendix VII; 2) any constituent identified in 40 CFR Part 261, Appendix VIII, or 3) any constituent listed in Table 1 of 40 CFR § 261.24. For purposes of corrective action, ñhazardous constituentò and ñhazardous waste constituentò also means any constituent identified in 40 CFR Part 264 Appendix IX.

ñHazardous Wasteò means any solid waste, or combination of solid wastes which because of its quantity, concentration, or physical, chemical, or infectious characteristics meets the description set forth in NMSA § 74-4-3(K), or is listed as a hazardous waste or exhibits a hazardous waste characteristic under 40 CFR Part 261.

ñHazardous Waste Management Regulationsò means the New Mexico Hazardous Waste Management Regulations, 20.4.1 NMAC.

ñHazardous Waste Management Unitò means a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples of Hazardous Waste Management Units include a surface impoundment, a waste pile, a land treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed.

"Interim Measures" means actions necessary to minimize or prevent the further migration of hazardous constituents and limit actual or potential human and environmental exposure to hazardous constituents while long-term corrective action remedies are evaluated and, if necessary, implemented.

ñMixed Wasteò means waste that contains both hazardous waste subject to the HWA and RCRA, and radioactive materials, including source, special nuclear or byproduct material, subject to the Atomic Energy Act of 1954, as amended. (42 U.S.C. § 2011 et seq.).

ñOff-Site Sourceò means a generator of hazardous or mixed waste or a treatment, storage, or disposal facility (TSDF) managing hazardous or mixed waste located within the United States of America, but outside the Permitteesô Facility boundary.

ñPermitò means this Permit, EPA ID No. NM5890110518, issued to the Permittees for the Facility pursuant to the HWA and the HWMR, to operate hazardous and mixed waste treatment and storage units and to conduct post-closure care and corrective action, as it may be modified or amended. This Permit consists of Permit Parts 1 through 8 and Attachments A through M.

ñPermitted Unitò means a Hazardous Waste Management Unit authorized for operations or for which post-closure care is required by this Permit. The Permitted Units authorized by this Permit are listed in Attachment J (Hazardous and Mixed Waste Management Units), Table J-1.1 (Units Permitted for Storage in Containers (Process Code SO1)), Table J-1.2 (Units Permitted for Treatment (Process Codes TO4 and X01) and Table J-2 (Permitted Units Undergoing Post-

Closure Care (Process Code S99)). The locations of the Permitted Units are shown in Figure 2, Permit Attachment L (Figures).

ñPermitteesò mean Sandia Corporation and the United States Department of Energy (DOE). Permittees are jointly and severally subject to the conditions of this Permit.

ñRCRAò means the Resource Conservation and Recovery Act of 1980 as amended (42 U.S.C. §§ 6901 to 6992K]) by the Hazardous and Solid Waste Amendments (HSWA) in 1984.

"Release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of any hazardous or mixed waste or hazardous constituents into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous waste or hazardous constituents).

"Remediation Waste" means all solid, hazardous, and mixed wastes; and all media (including groundwater, surface water, soils, and sediments) and debris; that are managed for implementing cleanup.

ñSandia Corporationò means a corporation organized under the laws of the State of Delaware, doing business in the State of New Mexico as a wholly owned subsidiary of Lockheed Martin, Inc., and as identified on the Part A application submitted pursuant to 40 CFR § 270.13.

ñSolid Waste Management Unitò (SWMU) means any discernible unit at which solid waste has been placed at any time, and from which the Department determines there may be a risk of a release of hazardous waste or hazardous constituents, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at the Facility at which solid wastes have been routinely and systematically released; they do not include one-time spills. (*See* 61 Fed. Reg. 19431, 19442-43 (May 1, 1996)).

ñTechnical Areaò (TA) means a specific parcel of land controlled by the Permittees and owned by the U.S. Department of Energy.

1.7 EFFECT OF INACCURACIES IN PERMIT APPLICATION

This Permit is based on information submitted in the Permitteesô Part A and Part B of the Permit Applications dated February 2002, and subsequent revisions and supplemental information, herein referred to as the Application.

Any inaccuracies found in the Application may be grounds for the termination, revocation and re-issuance, or modification of the Permit in accordance with 40 CFR §§ 270.41 through 270.43, which are incorporated herein by reference, and for enforcement action.

1.8 PERMIT ACTIONS

1.8.1 Duration of Permit

This Permit shall be effective for a fixed term of ten years from its effective date, except as provided in Permit Section 1.8.3 (40 CFR § 270.50(a)). The effective date of this Permit shall be 30 days after notice of the Departmentôs decision has been served on the Permittees or such later time as the Department may specify.

1.8.2 Permit Modification

This Permit may be modified for both routine and significant changes as specified in 40 CFR §§ 270.41 through 270.43, and any modification shall conform to the requirements specified in these regulations. The filing of a permit modification request by the Permittees, or the notification by the Permittees of planned changes or anticipated noncompliance, does not stay the applicability or enforceability of any permit condition. (40 CFR § 270.30(f)).

1.8.3 Permit Suspension, Termination, and Revocation and Re-Issuance

This Permit may be suspended, terminated, or revoked and re-issued for cause as specified in § 74-4-4.2 of the HWA and 40 CFR §§ 270.41 and 270.43.

1.8.4 Permit Re-Application

If the Permittees intend to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittees shall submit a complete application for a new permit at least 180 days before the expiration date of this Permit unless permission for a later date has been granted by the Department in compliance with 40 CFR §§ 270.10(h) and 270.30(b). The Department may not allow the Permittees to submit applications later than the expiration date of this Permit. (40 CFR § 270.10(h)).

Regardless of whether the Permittees intend to continue any other activity regulated by this permit, the Permittees shall submit at a minimum a complete application for a new permit for post-closure care of the CAMU at least 180 days before the expiration date of this Permit, unless permission for a later date has been granted by the Department or post-closure care has been terminated prior to the expiration date of this Permit in accordance with the requirements set forth in Permit Section 7.1. The application for the CAMU post-closure care permit may be included in an application for other regulated activities.

1.8.5 Continuation of Expiring Permit

If the Permittees have submitted a timely and complete application for renewal of this Permit, in compliance with 40 CFR §§ 270.10 and 270.13 through 270.28 and Permit Section 1.8.4, this Permit shall remain in effect until the effective date of the new permit if, through no fault of the Permittees, the Department has not issued a new permit on or before the expiration date of this Permit. (40 CFR § 270.51).

1.9 DUTIES AND REQUIREMENTS

1.9.1 Duty to Comply

The Permittees shall comply with all conditions in this Permit, except to the extent and for the duration such noncompliance is authorized in a temporary emergency permit pursuant to 40 CFR § 270.61. Any Permit noncompliance, except under the terms of an emergency permit, constitutes a violation of the HWA and RCRA and is grounds for enforcement or other Department action and may subject the Permittees to an administrative or civil enforcement action, including civil penalties and injunctive relief, as provided in Permit Section 1.1, or permit

modification, suspension, termination, or revocation, or denial of a permit application or modification request under § 74-4-4.2 of the HWA and 40 CFR §§ 270.41 and 270.43.

1.9.2 Transfer of Permit

The Permittees shall not transfer this Permit to any person except after prior written approval of the Department. The Department will require modification or revocation and re-issuance of the Permit, as specified in 40 CFR §§ 270.40(b) and 270.41(b)(2), to identify the new Permittee and incorporate other applicable requirements under the HWA, RCRA, and their implementing regulations. The prospective new Permittee shall file a disclosure statement with the Department, if applicable and as specified at § 74-4-4.7 of the HWA, prior to modification or revocation and re-issuance of the Permit.

Before transferring ownership or operation of the Facility, the Permittees shall notify the new owner and operator in writing of all applicable requirements of this Permit and 40 CFR Parts 264 and 270. (40 CFR §§ 264.12(c) and 270.30(l)(3)).

1.9.3 Need to Halt or Reduce Activity Not a Defense

The Permittees shall not use as a defense in an enforcement action that it would have been necessary to halt or reduce permitted activities in order to maintain compliance with the conditions of this Permit. (40 CFR § 270.30(c)).

1.9.4 Duty to Mitigate

In the event of noncompliance with this Permit, the Permittees shall take all reasonable steps to minimize releases of hazardous wastes and hazardous constituents to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. (40 CFR § 270.30(d)).

1.9.5 Proper Operation and Maintenance

The Permittees shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the Permittees to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance and quality control (QA/QC) procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with this Permit. (40 CFR § 270.30(e)).

1.9.6 Duty to Provide Information

The Permittees shall furnish to the Department, within a reasonable time as specified by the Department, any relevant information which the Department may request to determine whether cause exists for modifying, suspending, terminating, or revoking and reissuing this Permit or to determine compliance with this Permit.

The Permittees shall also furnish to the Department, upon request, copies of records that are required to be kept by this Permit. Information and records requested by the Department pursuant to this condition shall be provided in hard copy paper form or in an electronic format useable by the Department. (40 CFR §§ 264.74(a) and 270.30(h)).

This Permit condition shall not be construed to limit in any manner the Department's authority under § 74-4-4.3 of the HWA, § 3007(a) of RCRA, or other applicable law.

1.9.7 Inspection and Entry

The Permittees shall allow authorized representatives of the Department, upon the presentation of credentials and at reasonable times, and under the conditions of this Permit, to:

1. Enter upon the Permittees' premises where the Permitted Unit or activity is located or conducted or where records must be kept;
2. Have access to and photograph any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required;
3. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required;
4. Have access to, and copy, any records that must be kept; and
5. Sample or monitor, for the purposes of ensuring Permit compliance or as otherwise authorized by the HWA or RCRA, any substances or parameters at any location.

(40 CFR § 270.30(i)).

The Permittees shall provide full access, for the purposes above, to authorized representatives of the Department, limited only by any access restrictions established to protect human health or the environment. To the extent that any such access restrictions exist, the Permittees shall provide a means for authorized representatives of the Department to accomplish these purposes through the use of remote-operated technology or by other safe methods.

1.9.8 Representative Sampling

All samples and measurements taken by the Permittees under this Permit shall be representative of the medium, waste, or other material being sampled. (*See* 40 CFR § 270.30(j)(1)).

1.9.9 Duty to Report

1.9.9.1 Reporting Planned Changes

The Permittees shall give advance written notice to the Department as soon as possible, of any planned physical alterations or additions to any Permitted Unit at the Facility. (40 CFR § 270.30(l)(1)).

1.9.9.2 Reporting Anticipated Noncompliance

The Permittees shall give advance written notice to the Department of any planned changes to any permitted unit at the Facility or activity which may result in noncompliance with Permit

requirements. For a new facility, the Permittees may not treat, store, or dispose of hazardous waste; and for a facility being modified, the Permittees may not treat, store, or dispose of hazardous waste in the modified portion of the facility except as provided in § 270.42 until the provision of § 270.30(l)(2)(i) and (ii) are satisfied. (*See* 40 CFR § 270.30(l)(2)).

1.9.9.3 24 Hour and Subsequent Reporting

The Permittees shall report to the Department, both orally and in writing, any noncompliance that may endanger human health or the environment. (*See* 40 CFR § 270.30(l)(6)). This report shall be submitted in accordance with Permit Sections 1.9.9.4 and 1.9.9.5

1.9.9.4 24 Hour Oral Report

The Permittees shall make an initial oral report within 24 hours after the time the Permittees become aware of the circumstances of the noncompliance. The oral report shall include, at a minimum, the following information:

1. A description of the occurrence and its cause including:
    a. a). name, address, and telephone number of the owner or operator, and name and telephone number of person making the report;
    b. b). name, address, and telephone number of the Facility;
    c. c). date, time, and type of incident;
    d. d). name and quantity of materials involved;
    e. e). the extent of injuries, if any;
    f. f). an assessment of actual or potential hazards to the environment and human health outside the Facility, where this is applicable; and
    g. g). the estimated quantity and disposition of recovered material that resulted from the incident. (40 CFR § 270.30(l)(6)(ii)).
2. Information concerning the release of any hazardous waste which may endanger public drinking water supplies;
3. Any information of a fire or explosion at a permitted unit which may threaten the environment or human health; and
4. Any information of a release or discharge of hazardous waste which may threaten the environment or human health outside the permitted unit. (40 CFR §§ 270.30(l)(6)(i)(A) and (B)).

The oral report shall be made by calling the Hazardous Waste Bureauôs main telephone number (505) 476-6000 during regular business hours, or by calling the New Mexico Department of Public Safety dispatch telephone number (505) 827-9329 during non-business hours, and requesting that the report be forwarded to the Department spill number.

1.9.9.5 Five Day Written Report

The Permittees shall submit a written report in hard copy or via e-mail within five days after the time the Permittees become aware of the noncompliance under Permit Section 1.9.9.3. Any such report transmitted by e-mail is not subject to the certification and signatory requirements under Permit Section 1.12. However, if such a report is provided to the Department by e-mail, the Permittees must also submit to the Department the same written report or an updated report within 15 days after the Permittees become aware of the noncompliance. The written report must meet the certification and signatory requirements of Permit Section 1.12. The Permittees must include in the written report the information required in Permit Section 1.9.9.4 (items 1-3) and the following information:

1. The period of the noncompliance including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
2. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. (*See* 40 CFR §§ 270.30(l)(6)(iii) and 270.32(b)(2)).

The Department may extend the time for submitting the written report up to fifteen (15) calendar days. (40 CFR § 270.30(l)(6)(iii).

1.9.9.6 Reports Required by the Contingency Plan

If any emergency requires implementation of the Contingency Plan provided in Permit Attachment D, the Permittees shall comply with the reporting requirements required by 40 CFR § 264.56(i), Permit Section 2.13.5.3, and the Contingency Plan.

1.9.9.7 Reports of Other Noncompliance

The Permittees shall report, at the time monitoring reports are submitted, all other instances of noncompliance not reported under Section 1.9.9 of this Permit. These reports shall contain the information required by Permit Section 1.9.9.5. (*See* 40 CFR § 270.30(1)(10)).

1.9.9.8 Manifest Discrepancy Report

If a significant discrepancy in a manifest is discovered, the Permittees shall attempt to reconcile the discrepancy. If not resolved within 15 calendar days, the Permittees shall submit a letter report, including a copy of the manifest to the Department. (*See* 40 CFR § 264.72 and 40 CFR § 270.30(l)(7)).

1.9.9.9 Unmanifested Waste Report

If the facility accepts for treatment, or storage unmanifested hazardous or mixed waste from an off-site source, the Permittees shall meet the reporting requirements of 40 CFR § 264.76. (*See* 40 CFR § 270.30(l)(8)).

1.9.9.10 Biennial Report

A biennial report must be submitted by March 1 of each even numbered calendar year. The report must cover facility activities during the previous calendar year in accordance with the requirements of 40 CFR § 264.75. (*See* 40 CFR § 270.30(l)(9)).

1.10 ADMISSIBILITY OF DATA

In any administrative or judicial action to enforce a condition of this Permit, the Permittees waive any objection to the admissibility as evidence of any data generated pursuant to this Permit.

1.11 OTHER INFORMATION

Whenever the Permittees become aware that they failed to submit any relevant facts in the Permit Application, or submitted incorrect information in the Permit Application, or in any report to the Department, the Permittees shall promptly submit such facts or correct information in writing to the Department. (40 CFR § 270.30(l)(11)).

1.12 SIGNATORY REQUIREMENT

The Permittees shall sign and certify all applications, reports, or information submitted to or requested by the Department or required by this Permit, in accordance with the requirements in 40 CFR §§ 270.11 and 270.30(k). The Permittees shall provide written notification to the Department within thirty days of any changes concerning the names of and contact information for the responsible corporate and principal executive officers or their duly authorized representatives.

1.13 COMPLIANCE SCHEDULES

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted no later than 14 calendar days following each scheduled date. (40 CFR § 270.30(l)(5)).

1.14 SUBMITTAL OF REPORTS, NOTIFICATIONS, AND INFORMATION TO THE DEPARTMENT

1.14.1 Information Submittal

Unless otherwise provided in this Permit, the Permittees shall submit by certified mail, courier/delivery service, or hand delivery all reports, notifications, or other submissions that are required by this Permit to be sent or given to the Department.

A summary of the reporting requirements pursuant to this Permit is found in Attachment I (Compliance Schedule). This Attachment is not exhaustive and the absence of a reporting requirement in the Attachment shall not be interpreted to waive an otherwise applicable requirement.

The original plans, reports, notifications or other submissions shall be submitted to the Department by certified mail, courier/delivery service or hand delivery to:

Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone Number: (505) 476-6000
Facsimile Number: (505) 476-6030

And one copy to:

New Mexico Environment Department
Hazardous Waste Bureau
5500 San Antonio NE
Albuquerque NM 87109
Telephone Number: (505) 222-9500
Facsimile Number: (505) 222-9510

1.14.2 Approval of Submittals

All documents that the Permittees prepare under the terms of this Permit and submit to the Department that are subject to the provisions of 20.4.2 NMAC shall be subject to the procedures set forth therein. Documents requiring Department approval that are not subject to the provisions of 20.4.2 NMAC may be reviewed and approved, approved with modifications or directions, disapproved, denied, or rejected by the Department.

Upon the Departmentôs written approval, all submittals and associated schedules shall become enforceable as part of this Permit in accordance with the terms of the Departmentôs written approval, and such documents, as approved, shall control over any contrary or conflicting requirements of this Permit. This provision does not affect any public process that is otherwise required by this Permit, the HWA, or its implementing regulations.

1.14.3 Extension of Time

The Permittees may seek an extension of time in which to perform a requirement of this Permit, for good cause, by sending a written request for extension of time and proposed revised schedule to the Department. The request shall state the length of the requested extension and describe the basis for the request. The Department will respond in writing to any request for extension following receipt of the request. If the Department denies the request for extension, it will state the reasons for the denial.

1.15 CONFIDENTIAL INFORMATION

The Permittees may claim confidentiality for any information required to be submitted by this Permit. Any such claim must be asserted at the time of submittal in the manner prescribed on the

application form, or in the case of other submittal, by stamping the words ñconfidential business informationò on each page containing such information. If no claim is made, the Department may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information). (Section 74-4-4.3(D) and (F) of the HWA and 40 CFR § 260.2 and 40 CFR § 270.12).

1.16 RESERVED

1.17 INFORMATION REPOSITORY

The Permittees shall establish and maintain a physical Information Repository (IR) in accordance with the requirements of 40 CFR §§124.33(c) through (f), which are incorporated herein by reference. The Permittees shall propose for the Departmentôs approval a location for the IR within 30 days after the effective date of this Permit. The documents contained in the IR shall be accessible to the public during normal business hours. (*See* 40 CFR §§124.33 and 270.30(m))

The Permittees shall ensure that the IR contains the following documents:

1. The Permitteesô Part A and Part B Permit Applications associated with the permit renewal;
2. Permit modification requests associated with this Permit submitted pursuant to 40 CFR §270.42; and associated Department responses;
3. The Waste Minimization Report submitted pursuant to Permit Section 2.5;
4. Requests for extensions of time submitted pursuant to Permit Section 1.14.3;
5. Corrective action documents submitted pursuant to Permit Part 8; and
6. Each report submitted pursuant to Section 1.9.9 of this Permit if such report is required to be submitted in writing.

The Permittees shall establish the IR within 180 days of the effective date of this Permit or within 90 days of the Departmentôs approval of the location, whichever is later.

1.17.1 Index of Information Repository

The Permittees shall ensure that the IR includes an index of the documents contained in the IR. This index shall be accessible on the internet through a link on the Permitteesô web page. An online index that includes IR documents shall be acceptable if the IR is located in a publicly accessible library.

The Permittees shall add new documents to the IR within 30 days after the new documents are submitted to the Department.

The Permittees shall inform the public of the existence of the IR and the locations where it may be viewed by the following methods:

1. Written notice to all individuals on the facility mailing list 30 days after the IR becomes operational;

2. Public notice in area newspapers, including the Albuquerque Journal when the IR becomes operational;
3. Continuous notice on the Permitteesô web page of the existence of the IR; and
4. In the public notice for any of the Permitteesô initiated or requested permit modifications when such notices are required.

1.17.2 Notification of Repository Updates

1.17.2.1 Interested Persons List

The Permittees shall maintain a list of persons who have requested notification by e-mail of updates to the IR. The Permittees shall provide a link on the Permitteesô web page whereby members of the public may submit a request to be placed on the e-mail notification list. In the event that the web page stops operation, the Permittees shall use their best efforts to fully restore the page and its operation as soon as possible.

E-mail Notification

Within 30 days of submission to the Department of any document required to be included in the IR under Section 1.17 of this permit, the Permittees shall send an email notification to the list maintained under section 1.17.2.1 of this Permit.

1.18 COMMUNITY RELATIONS PLAN

The Permittees shall establish and implement a Community Relations Plan (CRP) to describe how the Permittees will keep communities and interested members of the public informed of Permit-related activities, including waste management, closure, post-closure, and corrective action. (*See* 40 CFR § 270.32(b)(2)).

The CRP must describe how the Permittees will:

1. Establish an open working relationship with communities and interested members of the public;
2. Keep communities, the Pueblo of Isleta, and interested members of the public informed of permit actions of interest (e.g., clean-up activities, implementation of the Contingency Plan, Permit modification requests);
3. Attempt to minimize disputes and resolve differences with communities, the Pueblo of Isleta and interested members of the public;
4. Provide a mechanism for the timely dissemination of information in response to individual requests; and
5. Provide a mechanism for communities, the Pueblo of Isleta, and interested members of the public to provide feedback and input to the Permittees semi-annually.

Within 180 days after the effective date of this Permit, the Permittees shall submit the CRP to the Department for approval. The Permittees shall implement and post the CRP on the Permitteesô web site within 180 days of approval by the Department. The Permittees shall maintain the CRP until the termination of this Permit.

The Permittees shall review the CRP at least annually and, if necessary, submit to the Department for approval an updated plan.

1.19 DISPUTE RESOLUTION

In the event the Permittees disagree, in whole or in part, with an approval, approval with modifications or directions, disapproval, denial, or rejection by the Department of any submittal subject to the provisions of Permit Section 1.14.2, the Permittees may seek dispute resolution. The Permittees may pursue any available legal remedy to resolve the dispute only after dispute resolution is exhausted.

1.19.1 Notice to the Department

To invoke dispute resolution, the Permittees shall notify the Department in writing within 30 days of receipt of the Departmentôs action subject to the dispute. Such notice shall set forth the specific matters in dispute, the position the Permittees assert should be adopted, the basis for the Permittees' position, and any matters considered necessary for the Secretaryôs determination.

1.19.2 Agreement or Disagreement between the Parties

The Department and the Permittees shall have thirty (30) calendar days from the Departmentôs receipt of notification provided under the above Permit Section to meet or confer to resolve any disagreement. In the event an agreement is reached, the Permittees shall comply with the terms of such agreement or, if appropriate, submit a revised submittal and implement the same in accordance with, and within the time frame specified in, such agreement.

1.19.3 Final Decision of the Secretary of the Department

If agreement is not reached within the thirty (30) calendar-day period, the Department Secretary will notify the Permittees in writing of his/her decision on the dispute, and the Permittees shall comply with the terms and conditions of the decision. Such decision shall be the final resolution of the dispute and shall be incorporated as an enforceable part of this Permit. The Permittees shall implement the decision in accordance with, and within the time frame specified in, such decision.

1.19.4 Actions Not Affected By Dispute

With the exception of those conditions under dispute, the Permittees shall proceed to take any action required by those portions of the submission and of this Permit that the Department determines are not affected by the dispute. The Department will specify in writing which portions of the submission are not affected by the dispute.

1.20 REAL PROPERTY CONVEYANCE AND TRANSFER

The provisions of this Permit Section (1.20) shall apply to the conveyance of fee from the United States to another entity (subsection 1.20.1), and shall apply to the transfer of real property to another federal entity (subsection 1.20.2), if such real property is subject to any requirement under this Permit. The requirements of this Permit Section do not apply to Facility real property

that is subject to requirements of Section III.Y of the Consent Order except as may be necessary for fully completing notice requirements.

1.20.1 Conveyance of Facility Property in Fee

DOE shall not convey any real property to a non-federal entity without submitting a notice to the Department, if such real property is subject to any requirement under this Permit. DOE shall submit the notice at least 120 days prior to the proposed effective date of conveyance.

The notice of real property conveyance shall:

1. Identify the boundaries of the land proposed for conveyance by providing the Department with a boundary survey certified by a registered professional surveyor;
2. Provide the new ownerôs name, address, telephone number, and status as a state, private, public, or other (non-federal) entity;
3. Describe the location and identity of any unit subject to this permit including existing solid waste management units and areas of concern and permitted units, on the land proposed for conveyance;
4. Describe any known or suspected presence of hazardous waste or hazardous constituents in soil, sediment, surface water, or groundwater at any depth within the boundaries of the land proposed for conveyance;
5. Describe the status of any past, present, or planned investigations or remediation of contamination of soil, sediment, surface water, or groundwater at any depth within the boundaries of the land proposed for conveyance;
6. Comply with the requirements of § 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9620(h); and
7. State any applicable restriction (e.g., ñthe property shall not be used for any purpose other than [define the use scenario on which the Permittees have based their cleanup of the property]. That means that the property shall not be used for [define less restrictive uses]ò).

1.20.1.1 Determination of Need for Further Action

The Department will determine whether closure, post-closure, and any corrective actions implemented by the Permittees with regard to the property are protective of human health and the environment in light of the new ownerôs intended use of the property. If the Department determines that the closure, post-closure care activities, or the corrective actions are not sufficiently protective in light of the new ownerôs intended use, the Department will notify the Permittees whether additional actions are necessary. The DOE must ensure the new owner is made aware of any remaining obligations associated with the property. Upon receipt of a determination that no (future) closure, post-closure and corrective action activities are necessary, the Permittees shall submit a permit modification request to reflect the Facilityôs new property boundary.

1.20.1.2 Restricted Use

When DOE conveys to a non-federal entity real property that has been remediated to a level less protective than that deemed by the Department appropriate for residential use, DOE shall include

in the deed a restriction that limits future use of the property to the particular use scenario on which the Permittees have based their cleanup of the property (e.g., if the property was cleaned based on an industrial use scenario, future use of the property would be limited to industrial use). The language of the deed restriction governing future land use necessarily will differ for each deed, depending upon the facts and circumstances of the property being transferred. Such restriction shall, at a minimum, be consistent with the following language:

The property shall not be used for any purpose other than [define the use scenario on which the Permittees have based their cleanup of the property]. That means that the property shall not be used for [define less restrictive uses].

At least 60 days prior to transfer, DOE shall provide the Department the opportunity to review and comment upon the language of the proposed deed restriction limiting future land use. The Department may provide comments on such proposed language.

1.20.1.3 Enforceability against Subsequent Owners

The covenant required by CERCLA § 120(h)(3)(A)(ii), and the deed restriction described above in this Section (to the extent the property is not remediated for unrestricted use), are requirements within the meaning of CERCLA § 310(a)(1), 42 U.S.C. § 9659(a)(1). The contract of sale will state that the parties to the contract agree that the deed restriction to be set forth in the deed is a requirement within the meaning of CERCLA § 310(a)(1), 42 U.S.C. § 9659(a)(1). DOE shall ensure such statement within the Contract of Sale will survive the conveyance of the real property. The deed conveying title from DOE to the new owner shall state that the restriction on land use set forth in the deed is intended to be an equitable servitude running with the land, that both the Department and the DOE are beneficiaries and that such restriction is enforceable by the Department and the DOE against any subsequent owner that fails to comply with its terms. The deed shall be recorded in the appropriate recording office in the chain of title of the property to give record notice of the use restriction to subsequent owners of the property.

1.20.1.4 EPA Institutional Controls Tracking System

For any deed conveying title from DOE that contains a restriction on future land use, the Permittees shall, within 90 days of the conveyance, notify EPA Region 6 of the conveyance and identify for EPA the location of the property that is the subject of the conveyance.

1.20.2 Transfer of Facility Property to another Federal Agency

If any portion of the Facility subject to the requirements of this Permit will be transferred from DOE to another entity, department, or instrumentality of the United States, the Permittees shall provide written notice of such transfer to the Department at least 120 days prior to the transfer. If, however, the Permittees learn of such decision fewer than 120 days prior to the transfer, the Permittees shall provide written notice to the Department as soon thereafter as is reasonably practicable.

The notice of operational transfer shall:

1. Identify the boundaries of the land proposed for transfer by providing the Department with a boundary survey certified by a registered professional surveyor;
2. Provide the new federal entityôs name, address, telephone number;

3. Describe the location and identity of any unit subject to this permit including existing solid waste management units and areas of concern and permitted units, on the land proposed for transfer;
4. Describe any known or suspected presence of hazardous waste or hazardous constituents in soil, sediment, surface water, or groundwater at any depth within the boundaries of the land proposed for transfer; and
5. Describe the status of any past, present, or planned investigations or remediation of contamination of soil, sediment, surface water, or groundwater at any depth within the boundaries of the land proposed for transfer;

1.20.2.1 Notice and Meeting

Appropriate representatives of DOE will meet with representatives of the Department and the transferee federal entity. Such meeting shall take place within 30 days after DOEôs written notice under this Permit Section (1.20.2.1). The meeting may occur following the transfer, if the United States determines that the transfer cannot be delayed. At the meeting, the parties will discuss the transferee entityôs intended use of the property. The Department and DOE will review the closure, post-closure, and any corrective actions taken with regard to the property, in light of the transferee entityôs intended use of the property.

1.20.2.2 Department's Determination

Within 60 days after the meeting required under Section 1.20.2.1, the Department will determine whether the closure, post-closure, and any corrective actions implemented by the Permittees with respect to the transferred property are protective of human health and the environment in light of the transferee entityôs intended use of the property. If the Department determines that they are not, the Department must explain its determination in writing and identify the specific additional actions or requirements that the Permittees must complete with regard to the property. To the extent practicable, the Permittees will complete any additional actions or requirements identified by the Department prior to the transfer of operational control. DOE may, however, conduct such additional actions or requirements following transfer of operational control, pursuant to a schedule approved by the Department. Such schedule shall be enforceable pursuant to the terms of this Permit.

If the Department does not notify the Permittees within 60 days following the meeting required under Section 1.20.2.1 that additional actions or requirements are necessary with respect to the transferred property, the Permittees will not be required to take additional actions under this Permit.

1.20.2.3 Contrary Land Use

If the Department determines that the transferee entity plans to use, or is using, the subject property in a manner contrary to the use(s) discussed at the meeting described under Section 1.20.2.1, the Department shall notify DOE and the transferee entity in writing. In such writing, the Department shall explain its concerns with regard to the proposed or current use of the property. Within 30 days thereafter DOE, the Department, and the transferee entity shall meet to discuss the Departmentôs stated concerns. The Department reserves its right to take any action, including administrative or judicial action, to address the contrary land use.

PERMIT PART 2 GENERAL FACILITY REQUIREMENTS

2.1 DESIGN, CONSTRUCTION, MAINTENANCE, AND OPERATION OF THE FACILITY

The Permittees shall design, construct, maintain, and operate the Permitted Units to minimize the possibility of a fire, explosion, or any sudden or non-sudden release of hazardous or mixed waste or hazardous waste constituents to air, soil, sediment, groundwater, or surface water which could threaten human health or the environment, as required by 40 CFR § 264.31.

2.2 WASTE SOURCES

2.2.1 Permitted Waste

The Permittees shall treat, store, or both, only those hazardous and mixed wastes specified in Part 3 (Storage of Hazardous and Mixed Waste), Part 4 (Treatment of Hazardous and Mixed Wastes) and 5 (Treatment by Open Burning), and Attachment B (Authorized Wastes) of this Permit. No wastes shall be managed at the CAMU except waste generated by post-closure care activities conducted at the CAMU and the Chemical Waste Landfill.

2.2.2 Hazardous and Mixed Waste from Foreign Sources

The Permittees shall not accept, store, treat, or otherwise manage at permitted units at the Facility hazardous and mixed wastes from foreign sources.

2.2.3 Hazardous and Mixed Waste from Off-site Sources

The Permittees may accept, store, treat or otherwise manage at the permitted units at the Facility, only the following hazardous or mixed wastes from off-site sources.

1. Treatment-derived waste or residues from wastes generated at the Facility, sent off site for treatment at off-site facilities, and subsequently returned to the Facility prior to final disposition off-site may be managed at the Facility only subject to the following conditions:
    a. for wastes with no available site for final disposal, the Permittees shall provide written notice in accordance with Permit Section 1.14.1, either through mailing of a hard copy letter or via electronic mail that will be followed by submittal of a hard copy letter, to the Department that there is no available site for final disposal within five days of receipt of the treatment-derived waste or waste residues at the Facility; or
    b. for wastes with an available final disposal path, the Permittees shall not store the wastes for more than 90 days prior to shipping the wastes off-site.
2. Waste generated by the Permittees as a result of investigation or remediation of a solid waste management unit (SWMU) or area of concern (AOC) listed in Attachment K

(Listing of SWMUs and AOCs) and Table K-1 (SWMUs and AOCs Requiring Corrective Action).

3. Wastes from Sandia National Laboratories operations located within the metropolitan Albuquerque area.

The Permittees shall receive from off-site sources under this permit section 2.2.3 only the hazardous or mixed wastes listed in Permit Attachment B (Authorized Wastes) for treatment and storage at the Permitted Units.

2.2.4 Restrictions on PCB-Contaminated Waste

The Permittees are prohibited from storing liquid hazardous or mixed wastes containing polychlorinated biphenyls (PCBs) at concentrations equal to or greater than 50 parts per million (ppm) unless such storage is in compliance with all requirements of 40 CFR § 761.65(b). The Permittees are prohibited from storing liquid hazardous or mixed wastes containing PCBs at concentrations greater than 50 ppm for more than one year from the date such waste was first placed into storage, pursuant to 40 CFR § 268.50(f).

2.3 LAND DISPOSAL RESTRICTIONS

The Permittees shall comply with the requirements of 40 CFR Part 268. The Permittees are prohibited from treatment and storage of hazardous or mixed wastes restricted from land disposal as specified in 40 CFR Part 268, unless the requirements of 40 CFR Part 268, Subpart E, are met.

Pursuant to 40 CFR § 268.7, the Permittees shall determine if a hazardous or mixed waste managed under this Permit must be treated before it may be land disposed in accordance with 40 CFR §§ 268.40, 268.45, 268.48, and 268.49. The Permittees shall make this determination in one or both of the following ways, as appropriate:

1. Testing the waste for either total constituent concentrations for the hazardous constituents of concern or the concentrations of hazardous constituents in an extract of the waste using Test Method 1311, depending upon whether the treatment standard for the waste is expressed as a total constituent concentration or the concentration of the constituent in the waste extract.
2. Using Acceptable Knowledge of the waste.

2.3.1 Prohibition on Dilution or Aggregation as a Substitute for Treatment

In accordance with 40 CFR § 268.3, the Permittees shall not dilute a waste that is restricted from land disposal or the residue from treatment of a restricted waste. Dilution to avoid an applicable treatment standard includes, but is not limited to, the addition of solid waste to reduce a hazardous constituentôs concentration and ineffective treatment that does not destroy, remove, or permanently immobilize hazardous constituents. The Permittees shall not aggregate a waste that is restricted from land disposal with other waste or materials as a substitute for compliance with 40 CFR § 268.3. Aggregating or mixing wastes as part of a legitimate treatment process is not considered impermissible dilution for purposes of complying with this Permit.

2.3.2 Documentation of Exclusion or Exemption

Pursuant to 40 CFR § 268.7(a)(7), the Permittees shall place a one-time notice in the Facility Operating Record for any land disposal prohibited wastes that the Permittees determine are excluded from the definition of hazardous or solid waste or determine are exempted from Subtitle C regulation under 40 CFR §§ 261.2 through 261.6 subsequent to the point of generation. Exemptions required to be documented include, but are not limited to, hazardous waste managed in wastewater treatment systems subject to the Clean Water Act (CWA) as specified at 40 CFR §§ 264.1(g)(6) and 260.10. The Operating Record shall include in this documentation a description of the process that generated the waste, the justification for its exemption or exclusion, and a description of the final disposition of the waste.

The Permittees shall not place in any land disposal unit the wastes specified in 40 CFR Part 268 after the effective date of the prohibition unless the Department has established disposal or treatment standards for the hazardous or mixed waste and the Permittees meet such standards and other applicable conditions of this Permit. Notwithstanding the foregoing, the Permittees may land dispose hazardous or mixed waste restricted by 40 CFR Part 268 which does not meet treatment standards if a variance from the treatment standards has been granted by the Department pursuant to 40 CFR §§ 268.44.

2.4 WASTE ANALYSIS

2.4.1 General Waste Characterization Requirements

The Permittees shall accept, store, treat, or otherwise manage at the Permitted Units at the Facility only those hazardous wastes and mixed wastes that have been characterized in accordance with 40 CFR § 264.13, the requirements of this Permit Part, and Permit Attachment C (Waste Analysis Plan).

At a minimum, the Permittees must obtain and document all of the necessary information that must be known to manage a hazardous or mixed waste in accordance with 40 CFR Parts 264, this Permit Part, and Permit Attachment C (Waste Analysis Plan), including but not limited to:

1. Applicable EPA hazardous waste numbers
2. Waste characterization necessary to prevent the mixing or placing of incompatible wastes in the same container (*see* 40 CFR § 264.17 and § 264.177) and to prevent the impairment of containers. (*See* 40 CFR § 264.172);
3. Waste characterization necessary to prevent accidental or spontaneous ignition or reaction of ignitable or reactive wastes, including, but not limited to, ignition or reaction in containers. (*See* 40 CFR § 264.17 and 40 CFR § 264.177);
4. Whether the waste contains free liquids; and
5. A description of the waste generation process that includes material inputs, or other information, as needed to determine hazardous waste codes and physical form of the waste.

The Permittees shall obtain and document the following additional information as needed to treat a hazardous or mixed waste in accordance with 40 CFR Part 268:

1. Applicable additional EPA hazardous waste numbers
2. Waste characterization necessary to determine whether the waste is prohibited from land disposal, including applicable underlying hazardous constituents and treatment requirements under 40 CFR §§ 268.40, 268.45 and 268.49 for treatment that will be performed at the Permitted Units.

The Permittees shall characterize waste by using sampling and analysis methods that are specified in SW-846, or approved by the Department, acceptable knowledge, or a combination of the two. When acceptable knowledge is insufficient to fully characterize a waste for management at a Permitted Unit, the Permittees shall utilize sampling and analysis to complete that characterization.

The Permittees shall maintain all waste characterization information in the Facility Operating Record. For records that contain waste characterization information concerning any hazardous or mixed wastes managed under this Permit, which are required to be archived elsewhere at the Facility (e.g., laboratory record books), the Permittees shall maintain a traceable identifier to this documentation or use another method to facilitate access to the information by the Permittees and the Department (*see* 40 CFR § 270.32(b)(2)). The Permittees shall maintain waste characterization documentation in accordance with the record retention requirements in Permit Section 2.14.4.

2.4.2 Sampling and Analysis for Hazardous and Mixed Wastes

The Permittees shall perform all sampling and analytical procedures used for waste characterization in accordance with Permit Attachment C, the most recent version of ñTest Methods for Evaluating Solid Waste, Physical/Chemical Methodsò (U.S. EPA Publication SW-846), or an equivalent method which has received prior written approval from the Department in accordance with 40 CFR § 260.21.

The Permittees shall ensure that samples collected and analyzed for waste characterization are representative of both the nature and the entire volume of the waste under consideration.

The Permittees shall ensure that the sampling and analytical procedures used preserve each sample in its original physical form and composition and ensure prevention of contamination or changes in concentration of the constituents to be analyzed.

The Permittees shall identify, collect or prepare, and analyze the appropriate number of quality control samples associated with each sample collected (including trip and field blanks, field duplicates, and field spikes). When performing laboratory analysis required under Section 2.4.2 of this Permit Part (2), the Permittees shall analyze the appropriate number of method blanks, laboratory duplicates, and other laboratory control samples to assess the quality of the data generated. The Permittees shall maintain a record of these quality assurance procedures and results in the Facility Operating Record, as required under 40 CFR § 264.73 and Permit Section 2.14.2.

If the Permittees use an independent contract laboratory to perform waste analyses, the Permittees shall require the analytical laboratory to conduct such analyses in accordance with the waste analysis conditions set forth in this Permit.

When using laboratory analysis to characterize an unknown waste for which no information is available concerning its chemical makeup or origin, the Permittees shall require the laboratory to report concentrations of all hazardous constituents listed at 40 CFR § 268.48, Table UTS, that the analytical test method used is capable of measuring, as specified at the most recent version of the U.S. EPAôs Test Methods for Evaluating Solid Wastes (SW-846). (*See* 40 CFR § 270.32(b)).

When using laboratory analyses to determine whether a waste meets its applicable Land Disposal Restrictions (LDR) treatment standard concentrations specified in 40 CFR § 268.40, Treatment Standards for Hazardous Wastes, in compliance with 40 CFR §§ 268.7(a) and (b), the Permittees shall ensure that the analytical method detection limits are appropriate for making such a determination. (*See* 40 CFR § 270.32(b)).

2.4.3 Acceptable Knowledge

If the Permittees use Acceptable Knowledge for waste characterization, the Permittees shall include in the Acceptable Knowledge documentation all of the background information assembled and used in the characterization process. Acceptable Knowledge documentation must be maintained in writing or in an electronic format in the Facility Operating Record. Acceptable Knowledge records must document the resolution of any data discrepancies between Acceptable Knowledge sources. When Acceptable Knowledge is insufficient to characterize a waste, the Permittees shall perform the necessary sampling and analysis to characterize the waste in accordance with Section 2.4.1 of this Permit Part.

The Permittees shall assign a traceable identification number to this documentation to facilitate access to this information by the Permittees and the Department for as long as required under Permit Section 2.14.2 of this Permit Part.

2.4.4 Waste Characterization Review

The Permittees shall ensure that the initial characterization of any hazardous or mixed waste is reviewed or repeated according to the frequency established in Sections C-3 and C-4 of Permit Attachment C (Waste Analysis Plan) to verify that characterization is accurate and up-to-date, as required by 40 CFR § 264.13(b)(4). The Permittees shall also:

1. Annually review the characterization of ten percent by volume of the hazardous and mixed wastes to verify that the characterization is accurate.
2. Recharacterize a hazardous or mixed waste whenever there is a change in waste-generating processes that may affect the physical or chemical properties, listed status of the waste, or the land disposal restriction status of the waste.
3. Recharacterize a hazardous or mixed waste whenever the Permittees are notified by an off-site facility that has received a hazardous or mixed waste from the Facility that the characterization of the waste received at the off-site facility does not match a pre-approved waste analysis certification or accompanying waste manifest or shipping paper.

Waste characterization reviews shall be documented in the Operating Record.

2.4.5 Wastes Received from Off-Site

If a hazardous or mixed waste is received at the Facility from an off-site source identified at Permit Section 2.2.3, the Permittees shall obtain waste characterization information from the source. If acceptable knowledge is used for the waste characterization, the Permittees shall require the source to provide all acceptable knowledge documentation used to characterize the waste (*see* 40 CFR § 270.32(b)(2)). In addition, the Permittees shall ensure that all applicable waste characterization requirements specified in Permit Section 2.4.1 have been met and documented.

The Permittees shall ensure that the waste matches the identity of the waste designated on the accompanying manifest or shipping paper. If discrepancies between the waste received from an off-site treatment facility and the information on the manifest are found, the Permittees shall comply with the requirements of 40 CFR § 264.72 to resolve the discrepancies.

2.4.6 Treatment-Derived Waste

The Permittees shall characterize treatment-derived wastes generated onsite by determining whether the waste is a hazardous or mixed waste in compliance with the requirements of Permit Section 2.4.1of this Permit Part, 40 CFR § 268.7(b) and Permit Attachment C (Waste Analysis Plan), and in compliance with the notification and record-keeping requirements specified in 40 CFR § 268.7(b)(3)(ii), Treatment Facility Paperwork Requirements Table.

2.4.7 Procedures to Ensure Compliance with LDR Requirements

The Permittees shall comply with LDR requirements for wastes through compliant management of wastes subject to LDR storage prohibitions, and through characterization of treated waste for LDR compliance, and processing of the applicable LDR certifications and notifications for such treated wastes.

2.4.8 Characterization of Wastes Generated Through Treatment of Hazardous or Mixed Wastes for LDR Compliance

Hazardous or mixed wastes generated through treatment at the Permitted Units (e.g., treated waste, treatment residue) shall be characterized as required by the off-site TSDF receiving the waste to determine whether it meets the applicable LDR treatment and in accordance with the requirements of this Permit.

Waste that must meet concentration-based treatment standards prior to shipment off-site for disposal shall be evaluated by the Permittees to determine if applicable constituent concentration levels have been attained, as described in Section C.3.1. 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 waste before treatment may not be necessary, as described in Section C.3.4.5.

If acceptable knowledge or use of a specified treatment technology is not appropriate for determining LDR compliance status, the treated waste or treatment residue shall be sampled and analyzed to determine if it meets LDR treatment standards. The analysis shall determine the total concentration of hazardous waste constituents in the waste, or the concentrations of hazardous waste constituents in an extract of the waste obtained using Test Method 1311 in SW-

846, as appropriate. Analytical results obtained in compliance with LDR requirements shall be retained within the Unit Operating Record. Characterization of treatment waste and treatment residues for LDR compliance will include hazardous waste constituents that were introduced as part of the treatment process, as discussed in Section C.3.4.3.

For wastes generated through treatment at one of the Permitted Units, the Permittees shall comply with the applicable requirements of 40 CFR § 268.7(b), § 268.40, and § 268.49. Hazardous and mixed wastes treatment residues and treated wastes that are determined through characterization to meet the applicable treatment standards will be sent to a permitted TSDF for disposal without further treatment. Wastes that have been generated through treatment using technologies specified in 40 CFR § 268.42 and § 268.44 shall also be sent to a permitted TSDF for disposal without further treatment. Treatment residues that do not meet all of the applicable treatment standards shall undergo further treatment at a Permitted Unit or be sent to a permitted TSDF for further treatment prior to land disposal.

Whenever the Permittees send waste to an off-site TSDF for treatment or disposal as described above, it shall be in accordance with that facilityôs waste acceptance criteria. For treated wastes and treatment residues, the Permittees shall review the LDRs as they relate to the further treatment or disposal of the treated waste or treatment residues at the TSDF that intends to accept the waste. Part of this review includes evaluating the waste for UHCs and Universal Treatment Standards, 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 D043 wastes. The Permittees shall 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 shall be maintained at the Facility as discussed in Section 2.14.2 Permit Part 2. The Permittees shall obtain approval from the TSDF and meet TSDF-specific waste analysis requirements (including LDR requirements) prior to shipment.

2.4.9 Waste Characterization for Compliance with RCRA Air Emission Requirements

The Permittees shall characterize hazardous wastes subject to emission controls in accordance with this Permit Section 2.4 (Waste Analysis) and Attachment C (Waste Analysis Plan).

The Permittees shall characterize hazardous wastes managed in containers to determine the average volatile organic compound (VOC) concentration relative to 500 parts per million by weight (ppmw) at the point of waste origination in compliance with 40 CFR Part 264, Subpart CC. The Permittees shall determine the average VOC concentration either by utilizing acceptable knowledge or by using the procedures specified in 40 CFR § 264.1083(a). The Permittees shall review and update this determination at least once every 12 months following the date of the initial determination in compliance with 40 CFR § 264.1082(c)(1).

The Permittees shall not be required to characterize the waste for its average VOC concentration in the following circumstances.

1. The container is used solely for management of mixed waste in accordance with all applicable regulations under the Atomic Energy Act and the Nuclear Waste Policy Act. (*See* 40 CFR § 264.1080(b)(6)); or

2. The container storing the wastes has a total capacity of less than 0.1 cubic meter (approximately 26 gallons). (*See* 40 CFR § 264.1080(b)(2)).

The Permittees shall not be required to determine the average VOC concentration of wastes if control of air pollution emissions from containers is achieved utilizing the container construction specifications and operation requirements specified in 40 CFR § 264.1086(b).

2.5 WASTE MINIMIZATION PROGRAM

The Permittees shall implement and maintain a waste minimization program to reduce the volume and toxicity of hazardous and mixed wastes generated at the Facility (*see* 40 CFR § 264.73(b)(9)). The waste minimization program shall include proposed, practicable methods of treatment and storage currently available to the Permittees to minimize the present and future threat to human health and the environment. The Waste Minimization Program shall include the following items:

1. Plan for reducing the volume and toxicity of hazardous and mixed waste at the Facility and recycling of hazardous and mixed waste at the Facility;
2. Employee training designed to identify and implement source reduction and recycling opportunities for all hazardous and mixed wastes;
3. Waste minimization and recycling implemented over the last year and additional waste minimization efforts that could be implemented at the Facility in the next federal fiscal year; and
4. Estimated costs devoted to waste minimization and recycling of hazardous and mixed waste.

The Permittees shall submit to the Department a report regarding progress made in the waste minimization program in the previous year. The report shall address items (1)-(4) above, shall show changes from the previous report, and shall be submitted annually by December 15 for the previous fiscal year ending September 30th.

2.6 DUST SUPPRESSION

The Permittees shall not use waste or used oil or any other material, which is contaminated with dioxin nor any other hazardous or mixed waste (other than a waste identified solely on the basis of ignitability), for dust suppression or road treatment (*see* 40 CFR § 266.23(b)). In addition, the Permittees shall not use waste or used oil or any other material contaminated with PCBs in this manner.

2.7 SECURITY

2.7.1 Barriers and Means to Control Entry

The Permittees shall prevent the unknowing entry and minimize the possibility for the unauthorized entry of persons or livestock onto the permitted units at the Facility. (*See* 40 CFR § 264.14).

The Permittees shall ensure the permitted unitsô security by implementing the following measures:

1. 24-hour surveillance system continuously monitoring and controlling entry into the permitted units at the Facility; or
2. Controlled entry into the permitted units at all times via gates, stations, or other means (e.g., attendants, locks, prohibited or controlled roadway access).

The Permittees shall maintain and ensure the effectiveness of all security fences, entry gates, and entry stations surrounding the permitted units as specified in Figures 4, 10, 16, 21-B, 26 and 32 in Permit Attachment L (Figures).

2.7.2 Warning Signs

The permanent perimeter fence surrounding each permitted unit and the entrance to the unit shall be posted with ñDanger: Unauthorized Personnel Keep Outò signs (or signs with equivalent language). The signs shall state the warning in English and Spanish, shall be legible from a distance of 25 feet, and shall be visible from any approach to each Permitted Unit. (*See* 40 CFR § 264.14(c)).

2.8 GENERAL INSPECTION REQUIREMENTS

The Permittees shall inspect all the permitted units for malfunctions, deterioration, operator errors, and discharges which has caused or may lead to:

1. A release of hazardous or mixed waste constituents to the environment; or
2. A threat to human health or the environment.

(*See* 40 CFR § 264.15(a)).

Inspections shall be conducted of all waste management structures, base materials, containers, monitoring equipment, safety and emergency equipment, security devices, and operating equipment that are important in preventing, detecting, and responding to environmental or human health hazards associated with hazardous or mixed wastes. (*See* 40 CFR §§ 264. 15(b)(1) and (b)(4)).

The Permittees shall implement the inspection program for the permitted units in compliance with the operating schedule, recordkeeping, and response action commitments in Attachment E (Inspection Plan).

The Permittees shall maintain Attachment E (Inspection Plan) at the administrative office of all applicable permitted units or at the permitted unit. The Permitteesô ability to access an electronic version of this Permitôs inspection requirements at the above locations shall be deemed to satisfy this Permit condition.

2.8.1 Inspection Schedule

The Permittees shall conduct inspections to identify problems in time to correct them before they harm human health or the environment (*see* 40 CFR § 264.15(a)). The Permittees shall inspect

the permitted units and all associated structures and equipment, in compliance with the inspection schedules contained in Attachment E (Inspection Plan).

2.8.2 Repair of Equipment and Structures

The Permittees shall remedy any deterioration or malfunction of equipment or structures discovered during an inspection on a schedule which ensures the problem does not lead to an environmental or human health hazard. (*See* 40 CFR §§ 264.15(c)).

2.8.3 Inspection Logs and Records

The Permittees shall record the results of each inspection conducted in accordance with Permit Section 2.8 and Attachment E. At a minimum, the Permittees shall produce a record of the date and time of the inspection, an identification of the permitted unit and associated structures or equipment, the name and signature of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions taken (see 40 CFR § 264.15(d)). The Permittees shall ensure that these records are clearly legible, all handwritten information is in ink, and errors are crossed out with a single line, initialed, and dated by the individual making the correction. The records shall be retained for the period of time specified in Permit Section 2.14.2.

The Permittees shall record the following observations or actions in the Facility Operating Record:

1. The results of any preventive maintenance activities including, but not limited to, maintenance on floors, secondary containment structures, unit drainage structures, and fire protection equipment at a permitted unit;
2. Any malfunctions and deterioration of such structures or equipment;
3. Any errors potentially affecting waste containment or compliance with this Permit;
4. The locations, dimensions, and repairs of all identified cracks or gaps in floors or base materials;
5. Any discharges of hazardous or mixed waste, hazardous constituents, or fire suppression systems at a permitted unit; and
6. Any occurrences that might cause or exacerbate contamination of a permitted unit.

The Permittees shall maintain inspection logs in the Facility Operating Record as specified in Permit Section 2.14.2.

2.9 PERSONNEL TRAINING

The Permittees shall ensure that all Facility personnel who are involved in hazardous or mixed waste management activities regulated under this Permit successfully complete all training programs in compliance with the training requirements of 40 CFR § 264.16, as well as the training requirements in Attachment F (Personnel Training Plan).

2.10 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittees shall comply with the requirements of 40 CFR §§ 264.17, 264.176, and 264.177. The Permittees shall follow the procedures for handling ignitable, reactive, and incompatible wastes specified in Permit Attachment A (Facility Description). The Permittees shall ensure that containers holding ignitable or reactive wastes are located at least 15 meters from the SNL Technical Area boundary with the following exceptions: at the MSB where they shall be stored at least 15 meters from the fence restricting access by non-Facility personnel at all times, and at the HWHU where they shall be stored at least 15 meters from the Facility property line. (*See* 40 CFR §§ 264.176).

The Permittees shall take precautions during the treatment or storage of ignitable or reactive waste, the mixing of incompatible waste, or the mixing of incompatible wastes and other materials to prevent reactions that could lead to or cause the following:

1. Generation of extreme heat, pressure, fire, explosions (except as a result of normal treatment operations at the TTU), or violent reactions;
2. Production of uncontrolled toxic mist, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;
3. Production of uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
4. Damage to the structural integrity of the container, permitted unit, or other structure associated with the permitted unit;
5. A threat to human health or the environment;
6. Spontaneous combustion; or
7. Reaction of wastes with water. Water-reactive wastes shall not be stored in waste management areas equipped with automatic water sprinkler systems. When water-reactive wastes are present in such waste management areas (e.g. for treatment or temporary staging), the Permittees shall isolate the wastes with water-resistant barriers such as cabinets or over pack drums to keep water from coming in contact with the waste.

(*See* 40 CFR § 264.17(b)).

2.10.1 Ignitable and Reactive Waste Precautions

The Permittees shall prevent accidental ignition or reaction of ignitable or reactive wastes by taking the following precautions.

1. Ensure there are no sources of open flames in, on, or around the containers;
2. Segregate and separate ignitable or reactive wastes and protect them from sources of ignition or reaction such as cutting and welding, frictional heat, sources of sparks (e.g., static, electrical, mechanical), hot surfaces, spontaneous ignition, and radiant heat (e.g., heat-generating wastes) except when deliberately introduced during treatment in accordance with Permit Part 4;

3. Ensure that no forklifts or other motorized equipment are used in the vicinity of open containers of ignitable or reactive wastes unless such equipment is designed for use in flammable environments.
4. Maintain adequate clearance around fire hydrants at permitted units;
5. Use only non-sparking/spark-proof tools when managing open containers of hazardous or mixed waste that contain ignitable or reactive wastes, and when opening or closing such containers. When flammable or reactive liquids are transferred from one container to another (for conductive containers), grounding procedures or equivalent methods shall be used to minimize or dissipate static electric charge;
6. Ensure appropriate lightning protection is provided for all storage and treatment units;
7. Perform inspection, testing, and maintenance of fire protection equipment;
8. Confine smoking and open flames to designated areas that are a minimum of 50 feet from areas where ignitable or reactive wastes are handled; and
9. Ensure that each permitted unitôs fire suppression system is compatible with the waste being stored or treated at the permitted unit.

2.10.2 Incompatible Waste Precautions

The Permittees shall ensure that any storage container holding a hazardous or mixed waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other waste or materials or protected from them by means of a dike, berm, wall, or other device. (*See* 40 CFR § 264.177(c)).

The Permittees shall ensure that wastes are not stored with incompatible wastes or materials within or on the same secondary containment structure. The Permittees shall ensure that all wastes are stored in containers made of or lined with materials that are compatible with the wastes. (*See* 40 CFR § 264.172).

The Permittees shall not store cyanides and cyanide mixtures or solutions with acids if a mixture of the materials could generate hydrogen cyanide. The Permittees shall not store Class 8 (corrosive) liquids above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) wastes except when it is known that the mixture of the wastes could not cause a fire or a dangerous evolution of heat or gas.

The Permittees shall ensure that hazardous or mixed wastes are not placed in an unwashed container (*See* 40 CFR § 264.177(b)) that previously held an incompatible waste or material.

2.10.3 Presence of Liquids in Containers

Containers that contain free liquids shall be stored in areas equipped with secondary containment. Before storing containers in areas without secondary containment, the Permittees shall verify that the containers do not contain free liquids by reviewing the information provided by the waste generator as detailed under the Waste Analysis Plan in Permit Attachment C.

2.11 PREPAREDNESS AND PREVENTION

2.11.1 Required Equipment

At a minimum, the Permittees shall maintain the equipment set forth in Permit Attachment D (Contingency Plan), and as required by 40 CFR § 264.32.

The Permittees shall 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 Permitted Unit. Permitted Units, except the TTU and the MSB, shall be equipped with fire suppression systems. The Permittees shall maintain portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment as required by 40 CFR § 264.32(c). The Permittees shall make available fire control inspection records upon request by the Department.

A list of required equipment, with the location and capabilities of the equipment, is provided in each Unit-specific Section of Permit Attachment D (Contingency Plan) of this Permit. (40 CFR § 264.32).

2.11.2 Testing and Maintenance of Equipment

The Permittees shall test and maintain the equipment specified in Permit Attachment D (Contingency Plan), as necessary, to assure its proper operation in time of emergency, as required by 40 CFR § 264.33.

This equipment shall undergo inspection at a frequency specified in Attachment E, and in accordance with 40 CFR §264.15(b)(4) to ensure proper functionality.

If testing identifies any nonfunctioning communication equipment, alarm system component or fire protection component, spill control or decontamination equipment, the Permittees shall ensure it is promptly repaired; and shall provide substitute equipment or systems during the time it takes to make repairs.

The Permittees shall assure that communications and alarm systems and fire protection, spill control, and decontamination equipment are inspected or tested according to the inspection plans and schedules detailed in Permit Attachment E. Maintenance, repair, and replacement of emergency equipment shall be performed as needed to ensure proper function and in a timely manner.

2.11.3 Access to Communications or Alarm System

The Permittees shall maintain access to the communications or alarm system as required by 40 CFR § 264.34, and in accordance with Permit Attachments D (Contingency Plan) and E (Inspection Plan).

The Permittees shall ensure that whenever waste is being managed at the permitted units, the personnel involved shall 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 or method must allow personnel to

contact the Unit-specific Emergency Coordinator and the Emergency Operations Center. (40 CFR § 264.32(a-b) and 40 CFR § 264.34).

2.12 HAZARDS PREVENTION

2.12.1 Preventing Hazards in Loading and Unloading

Only closed waste containers shall be accepted for transportation by vehicles to the Permitted Units. Prior to transport, containers shall be inspected to ensure that they are properly closed, labeled, secured, and in suitable condition for transport.

If loading and unloading operations occur outdoors, they shall be conducted in an area immediately adjacent to the Permitted Unit to minimize the distance that the waste must be moved. Spills that occur during loading or unloading operations shall be promptly cleaned up, and if an emergency, in accordance with spill response procedures contained in Permit Attachment D (Contingency Plan). All loading and unloading areas shall be level, and the asphalt, concrete, or other pavement maintained in good condition.

Loading and unloading areas shall be free of overhead obstructions and other obstructions to visibility and operations. All containers shall be handled in a manner to prevent shifting or falling while being stored or transported. Containers too large to hand carry shall be transported using forklifts, drum dollies, pallet jacks, or other appropriate equipment. Waste-handling equipment shall be maintained and operated in accordance with manufacturersô guidance. Except as necessary in an emergency, only qualified personnel trained in hazardous and mixed waste management procedures are allowed to handle waste at the Permitted Units. The Permittees shall be aware of weather conditions and other operations that could adversely affect the safety of waste management operations, and shall exercise caution.

2.12.2 Preventing Runoff or Flooding

Run-on of surface water from surrounding areas, run-off of hazardous or mixed waste or hazardous waste constituents, runoff of surface water contaminated with hazardous or mixed waste or hazardous waste constituents shall be prevented at Permitted Units by design and operating practices. Unit-specific run-on and run-off features and operating precautions are described in Permit Attachment A (Facility Description).

2.12.3 Preventing Contamination of Water Supplies

Hazardous or mixed waste releases shall be cleaned up promptly. Releases occurring outside buildings shall be contained promptly. (40 CFR § 270.32(b)(2))

2.12.4 Mitigating Effects of Equipment Failure and Power Outages

In the event of a power loss or equipment failure at a Permitted Unit, the Permittees shall place the affected equipment in a safe state, close or cover open containers of hazardous or mixed wastes that are present, stop operations until power is restored, or take other measures to ensure the failure or outage does not adversely affect human health or the environment. (*See* 40 CFR §§270.30(e)).

2.12.5 Preventing Undue Exposure

Facility personnel and visitors at Permitted Units and SWMUs/AOCs undergoing corrective action shall be required to use appropriate PPE to protect themselves from hazards, including but not limited to handling heavy containers, operating waste-handling equipment, weather conditions, and contact with or other exposure to hazardous or mixed wastes and hazardous waste constituents as required.

2.12.6 Arrangements with Local Authorities

The Permittees shall maintain Coordination Agreements with the police, fire department, State and local emergency response teams, and one or more local hospitals that would respond to emergencies at the Permitted Units. The Coordination Agreements shall be in writing executed by Permittees and the local authorities, and shall include the requirements provided in 40 CFR § 264.37(a). Agreements are listed in the Attachment D (Contingency Plan).

2.13 CONTINGENCY PLAN

2.13.1 Implementation of Contingency Plan

The Permittees shall implement the Contingency Plan (Attachment D) immediately whenever at a permitted unit (including any unit undergoing post-closure care):

1. A release of a hazardous or mixed waste or hazardous waste constituents occurs which could threaten human health or the environment;
2. An explosion occurs (other than normal operations at the TTU); or
3. A fire occurs (other than normal operations at the TTU).

(*See* 40 CFR § 264.51(b)).

2.13.2 Distribution

The Permittees shall maintain a current copy of the Contingency Plan, at or in the following locations:

1. Each Permitted Unit;
2. The Emergency Management and Response Office; and
3. The Facility Operating Record; this shall include all revisions and amendments.

The Permittees shall distribute copies of the current Contingency Plan to all entities with which the Permittees have arrangements in accordance with Permit Section 2.12.6.

The Permittees shall distribute the Contingency Plan within fifteen days of the effective date of this Permit and within fifteen days of the effective date of a modification of the Contingency Plan. The Permittees shall ensure that all copies of the Contingency Plan distributed outside the Facility are sent either through mailing of a hard copy letter or via electronic mail. The Permittees shall obtain a return receipt or other record of receipt to ensure distribution. A record of compliance with this requirement shall be maintained in the Facility Operating Record. (*See* 40 CFR § 270.32(b)(2)).

The Permittees shall ensure that evacuation routes for each Permitted Unit are prominently posted at each Permitted Unit. (*See* 40 CFR § 270.32(b)(2)).

2.13.3 Amendments to Plan

Pursuant to 40 CFR § 264.54 the Permittees shall review the Contingency Plan and amend the Plan, if necessary, whenever:

1. This Permit is revised;
2. The Contingency Plan fails during an emergency;
3. The Permittees modify a Permitted Unit in either its design, construction, operation, maintenance, or other circumstances in a manner that materially increases the potential for fires, explosions, or releases of hazardous or mixed wastes or hazardous waste constituents;
4. A change in the Permitted Unit design or operation affects the response necessary in an emergency;
5. The Permittees modify the list of Emergency Coordinators;
6. The Permittees modify the list of emergency response equipment; or
7. The Permittees review and evaluate their emergency response resources and capabilities with respect to hazardous or mixed waste management and find deficiencies.

The Permittees shall ensure that all amendments to the Contingency Plan adhere to the permit modification requirements at 40 CFR §§ 270.41 through 270.43, which are incorporated herein by reference, including the modification classifications at 40 CFR § 270.42 Appendix 1, Category B.6.

2.13.4 Emergency Coordinator

The Permittees shall designate an Emergency Coordinator required at 40 CFR § 264.55, who shall be responsible for coordinating all emergency response measures related to the management of hazardous or mixed wastes. An Emergency Coordinator shall be on call at all times, be familiar with the Contingency Plan, and shall have the authority to commit promptly the personnel and financial resources needed to implement the Contingency Plan (*see* 40 CFR § 264.55). The Permittees shall name at least one alternate Emergency Coordinator who shall assume the responsibilities of the Emergency Coordinator in accordance with Permit Attachment D (Contingency Plan).

The Permittees shall notify the Department in writing of changes to the personnel designated as Emergency Coordinators (EC) and listed with their telephone numbers in Attachment D (Contingency Plan), Table D-5 (HWHU EC list), Table D-7 (TTU EC list), Table D-9 (RMWMU EC list), Table D-11 (AHCU EC list), Table D-13 (MSB EC list), and Table D-15 (CAMU EC list). This notification shall be a Class 1 permit modification.

2.13.5 Required Emergency Procedures

2.13.5.1 Immediate Notifications

In the event of an imminent or actual emergency situation, Permitted Unit personnel shall immediately activate the internal facility alarm or communication systems to notify all facility

personnel. The Emergency Coordinator shall ensure that the appropriate federal, tribal, state, and local agencies with designated response roles are notified as necessary.

2.13.5.2 Hazard Assessment

The Emergency Coordinator shall, in the event of a fire, explosion, or release:

1. As soon as practicable, identify the character, source, amount, and areal extent of any released materials. Possible methods are by observation, review of facility records, or by chemical analysis (*see* 40 CFR § 264.56(b)); and
2. Assess possible hazards to human health or the environment that may result from the release, fire, or explosion, considering both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water runoff from water or chemical agents used to control fire and heat induced explosions). (*See* 40 CFR § 264.56(c)).

2.13.5.3 Reporting Emergencies

In the event that the Emergency Coordinator determines that there has been a release, fire, or explosion that may threaten human health or the environment outside the boundaries of the Facility, he or she shall report the emergencies as follows:

1. If an assessment indicates that evacuation of local areas may be advisable, he or she shall immediately notify the appropriate local and tribal authorities and shall be available to assist appropriate officials in deciding whether local areas should be evacuated (s*ee* 40 CFR § 264.56(d)(1)); and
2. Immediately notify the New Mexico Department of Public Safety dispatcher (1-505-827-9329), and the National Response Center (1-800-424-8802) (*see* 40 CFR § 264.56(d)(2)). This notification shall include the list of items found in Permit Attachment D Section D.8.

2.13.5.4 Mitigative Measures

When the Contingency Plan is implemented under Permit Section 2.13.5, the Emergency Coordinator shall take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous or mixed wastes at the Facility. These measures shall include, where applicable, stopping processes and operations, collecting and containing released wastes, and removing or isolating containers. (*See* 40 CFR § 264.56(e)).

2.13.5.5 Monitoring

When the Contingency Plan is implemented under Permit Section 2.13.5, the Emergency Coordinator shall utilize available air monitoring resources, as appropriate, to measure and characterize any air emissions both inside and outside the Facility boundary caused by a fire, explosion, or release to the atmosphere. (*See* 40 CFR § 270.32(b)(2)).

In the event that the Facility stops operations in response to a fire, release, or explosion, the Emergency Coordinator shall monitor for leaks, pressure buildup, gas generation, or ruptures in containers, valves, pipes, or other equipment as appropriate. (*See* 40 CFR § 264.56(f)).

2.13.6 Post-Emergency Procedures

Immediately after an emergency in which the Contingency Plan was implemented, the Emergency Coordinator shall provide for the treatment, storage, or disposal of recovered wastes, contaminated soils or surface water, or any other material or contaminated environmental media that resulted from the fire, explosion, or release at the Facility (*see* 40 CFR § 264.56(g)).

The Emergency Coordinator shall ensure that in the affected areas of the Facility:

1. No waste that may be incompatible with the released material is treated, stored, or disposed of in the impacted area until cleanup procedures are completed; and
2. All emergency equipment listed in the Contingency Plan is cleaned and fit for its intended use before operations are resumed

(*See* 40 CFR § 264.56(h)).

2.13.7 Need for Further Corrective Action

If, after implementation of the Contingency Plan in response to a fire, explosion or release, the Department determines the area affected by the fire, explosion or release has not been entirely remediated, the Permittees shall conduct corrective action as directed by the Department and in accordance with Permit Part 8 (Corrective Action Procedures).

2.13.8 Notification and Record Keeping

The Permittees shall notify the Department of implementation of the Contingency Plan in compliance with 40 CFR § 264.56(i).

Before operations resume in the Facilityôs affected areas the Permittees shall notify the Department that the Facility is in compliance with Permit Section 2.13.6.

2.14 RECORD KEEPING AND REPORTING

The Permittees shall comply with the record keeping and reporting requirements specified throughout this Permit and at 40 CFR § 264.73.

2.14.1 Manifest Systems

The Permittees shall comply with the record keeping and reporting requirements associated with manifests in accordance with 40 CFR §§ 264.71, 264.72, and 264.76, which are incorporated herein by reference, whenever a shipment of hazardous or mixed waste is either received at, or initiated from the Facility.

2.14.2 Operating Record

The Permittees shall comply with the recordkeeping and reporting requirements specified in 40 CFR § 264.73(a), 40 CFR § 270.30(j)(2) and (3), and elsewhere in this Permit. Pursuant to 40 CFR § 264.73, the Permittees shall maintain a written Operating Record for each Permitted Unit at the Facility for the active life of the Facility, except as provided by 20.4.1.501.A(5) NMAC, Permit Section 7.2.2 and Permit Attachment H (Post-Closure Care Plans).

Unless specifically prohibited by this Permit, an electronic record in format usable by the Department capable of producing a paper copy shall be deemed to be a written record. Any substantive alterations made to the electronic record shall be documented, dated, and made part of the Facility Operating Record.

The Permittees shall incorporate into the Facility Operating Record the following documents and all amendments, revisions and modifications to these documents:

1. A description of the hazardous or mixed waste received and the methods and dates of treatment and storage at each Permitted Unit in accordance with Appendix I of 40 CFR Part 264;
2. The location of each type of hazardous or mixed waste within each Permitted Unit and the total quantity of all hazardous or mixed wastes at each unit. This information must include cross-references to specific manifest document numbers for any waste received in accordance with Permit section 2.2.3;
3. Records and results of waste analyses and waste determinations that are performed pursuant to Permit Attachment C (Waste Analysis Plan), and 40 CFR §§ 264.13, and any section cited in 264.73(b)(3);
4. Reports and details of all emergencies that required the implementation of Permit Attachment D (Contingency Plan) as specified in 40 CFR § 264.56(i);
5. Information on any instance of fire, explosion, spill, or release from, or at, a Permitted Unit regardless of whether the incident required implementation of the Contingency Plan;
6. Records and results of inspections for each Unit as required in Permit Attachment E (Inspection Plan) and 20.4.1.501.A.(5) NMAC;
7. Monitoring, testing, analytical data, and response actions when required by 40 CFR §§ 264.602, 264.1082, 264.1083, and 264.1086 through 264.1090;
8. Notices to off-site generators as specified in 40 CFR § 264.12(b);
9. An annual certification, pursuant to 40 CFR 264.73(b)(9), stating a Facility program is in place to reduce the volume and toxicity of hazardous and mixed waste generated;
10. Copies of the notices and certifications required under 40 CFR §§268.7(b) and 268.9 for wastes treated at a Permitted Unit;
11. All monitoring reports and records required by this Permit, including but not limited to;
    a. records of all monitoring data used to complete Permit Application(s),
    b. all data gathered or generated during the closure or post-closure process, and
    c. all raw data, such as laboratory reports, drilling logs, bench scale or pilot scale data, and other supporting information gathered or generated during activities undertaken pursuant to this Permit. Raw data shall be made available to the Department upon request;
12. Documentation demonstrating distribution of the Contingency Plan in accordance with Permit Section 2.13.2;
13. Documentation demonstrating the installation and maintenance of secondary containment system coatings or sealants as required at Part 3, Permit Section 3.6;
14. Personnel training records including both introductory and continuing training programs used to prepare employees to safely operate and maintain each Permitted Unit in compliance with 40 CFR § 264.16(d) and (e), and Permit Attachment F (Personnel Training Plan)
15. Documentation of all instances where an indoor fire suppression system has been activated resulting in fire suppressants directly contacting hazardous or mixed waste;

16. This Permit, including the Waste Analysis Plan set forth in Attachment C (Waste Analysis Plan), the Contingency Plan as set forth in Attachment D (Contingency Plan), the Closure Plans set forth in Attachment G (Closure Plans), the Post-Closure Plan, as required under 40 CFR § 264.118 and all other Permit Parts and Attachments;
17. All correspondence and other documents related to post-closure care from the Department and U. S. Environmental Protection Agency.

The Permittees shall maintain each document required in the Operating Record at the Facility where they can easily be retrieved and reviewed; except the following documents which shall be maintained at the Permitted Units at the Facility:

1. Inspection Schedule and all completed inspection records for that Unit for the current calendar year as set forth in Attachment E (Inspection Plan), as required by 40 CFR § 264.15(b) and this Permit,
2. Records for the current year of all training required by this Permit for current personnel at that Unit, except personnel training records for the MSB shall be maintained at the RMWMU.
3. The Contingency Plan for the Unit (consisting of the general Facility requirements and the applicable Unit-specific requirements in Permit Attachment D).

Corrective action documents required by Part 8 of this Permit shall be retained at the Facility by the Permittees until closure of the Facility, in accordance with 20.4.1.501.A(5) NMAC.ò

2.14.3 Availability of Facility Operating Record

The Permittees shall furnish and make reasonably available for inspection, upon request by any officer, employee, or representative of the Department, the Facility Operating Record and all other records required under 40 CFR Part 264 or this Permit. (*See* 40 CFR § 264.74(a) and pursuant to 74-4-4.3 NMSA 1978). Information and records requested by the Department pursuant to this condition shall be made available for inspection in hard copy or in electronic format usable by the Department. (*See* 40 CFR § 270.32(b)(2)).

2.14.4 Record Retention

The Permittees shall retain all records required by this Permit during the course of any unresolved enforcement action regarding the Facility or as required by the Department. (*See* 40 CFR § 264.74(b)).

PERMIT PART 3 STORAGE OF HAZARDOUS AND MIXED WASTE

3.1 GENERAL CONDITIONS

The Permittees shall store and otherwise manage containers of hazardous and mixed waste in accordance with 40 CFR Part 264, Subpart I (Use and Management of Containers), which is incorporated herein by reference, and Attachment A (Facility Description).

The Permittees shall store containers of hazardous and mixed wastes subject to this Permit only at the permitted units specified in Attachment J (Hazardous and Mixed Waste Management Units), Table J-1.1 (Units Permitted for Storage in Containers (Process Code SO1)). The Permittees are authorized to store only those wastes identified by EPA Hazardous Waste Numbers (waste codes) listed in Attachment B (Authorized Wastes). The Permittees shall not store containers of hazardous or mixed waste in excess of the maximum capacities listed in Attachment J, Table J-1.1.

3.1.1 Storage Prohibitions

Hazardous and mixed wastes are prohibited from land disposal unless they meet the applicable regulatory treatment standards. Prohibited wastes (i.e., wastes that do not meet the applicable treatment standards) may be stored for up to one year at the Permitted Units in compliance with 40 CFR § 268.50. The Permittees shall assume that all of the hazardous and mixed wastes at the Facility are prohibited from land disposal (i.e., they do not meet the applicable treatment standards) and shall apply the one-year storage limit to all hazardous and mixed wastes stored at any Permitted Unit except as noted below:

1. Mixed wastes that are subject to the Federal Facilities Compliance Order (FFCO) (NMED 1995, as amended) between DOE, Sandia Corporation, and the Department can be stored at Permitted Units for more than one year even if they do not meet the treatment standards, provided such storage meets the requirements of the FFCO.
2. Hazardous and mixed wastes that do not meet the treatment standard(s) can be stored at Permitted Units for more than one year, solely for the purpose of accumulating sufficient quantities of hazardous or mixed wastes to facilitate proper recovery, treatment, or disposal, in accordance with 40 CFR § 268.50(c). Information regarding proper recovery, treatment, or disposal shall be maintained in the Operating Record described in Permit Part 2 Section 2.14.2. The Permittees shall bear the burden of proof that the storage beyond one year is necessary for proper recovery, treatment, or disposal.
3. Hazardous and mixed 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) shall be maintained in the Operating Record described in Permit Part 2 Section 2.14.2.

3.2 CONDITION OF CONTAINERS

The Permittees shall ensure that all containers used to store hazardous or mixed wastes subject to this Permit are in good condition (e.g., no severe rusting or structural defects) in accordance with 40 CFR § 264.171, which is incorporated herein by reference. If a container is not in good condition or begins to leak, the Permittees shall transfer the waste from such a container into a

container that is in good condition upon discovery of the problem, and in accordance with 40 CFR § 264.171.

3.3 ACCEPTABLE STORAGE CONTAINERS

The Permittees shall only use containers that comply with 40 CFR Part 264 Subpart I for storage of hazardous or mixed waste at Permitted Units.

3.4 COMPATIBILITY OF WASTE WITH CONTAINERS

The Permittees shall use containers made of, or lined with materials that will not react with, and are otherwise compatible with the hazardous or mixed waste to be stored so that the ability of the container to contain the waste is not impaired. (*See* 40 CFR § 264.172).

3.5 MANAGEMENT OF CONTAINERS

1. The Permittees shall ensure that all containers are kept closed during storage except when waste is added to or removed from the container or when a containerôs contents need to be repackaged (*see* 40 CFR § 264.173(a)), except as provided in 40 CFR § 264.1086(c)(3). The Permittees shall not open, handle, or store a container holding hazardous or mixed waste in a manner that may rupture the container or cause the container to leak. (*See* 40 CFR § 264.173(b)).
2. The Permittees shall mark containers either with the words ñHazardous Wasteò or with other words that identify the contents of the containers.
3. The Permittees shall ensure that when waste containers are moved during storage, the location of each hazardous or mixed waste and the quantity at each location is documented in accordance with Permit Section 2.12. (*See* 40 CFR § 264.73(b)(2)).

3.5.1 Storage Configuration and Required Aisle Space

1. The Permittees shall maintain adequate aisle space at all times to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment within the permitted units. Additionally, emergency egress aisles with a minimum aisle space of two feet must be maintained at all personnel doors. (*See* 40 CFR § 264.35).
2. Containers shall be placed on pallets as appropriate, and shall be stored in a stable configuration.
3. The stacking configuration of waste containers shall not exceed the load-bearing capacity of the floor or metal grating.
4. The Permittees shall store gas cylinders containing waste in a manner that provides support and restraint, (e.g., racks, baskets, or specially constructed pallets).
5. The Permittees shall store containers in a manner that allows for their inspection, as specified in Section 3.7 of this Permit Part, and such that their container labels are visible.

3.5.2 Outdoor Storage

The Permittees shall ensure that hazardous and mixed waste containers that are stored outdoors and are not being actively managed are protected from degradation caused by precipitation using weather protective equipment (e.g., secured tarp) or are protected by the design of the equipment.

3.6 CONTAINMENT SYSTEMS

3.6.1 Containers with Free Liquids

The Permittees shall maintain secondary containment systems in all permitted units used to store wastes which contain free liquids in compliance with 40 CFR § 264.175. Secondary containment systems shall also:

1. Have sufficient capacity to contain at least 10 percent of the volume of containers or the volume of the largest container, whichever is greater;
2. Prevent contact between containers and spilled material or waste;
3. Prevent run-on and run-off; and
4. Prevent releases of liquids.

The containment systems at the Permitted Units shall be designed to be sufficiently impervious to contain leaks, spills, or accumulated precipitation until the liquid is removed. Asphalt or asphaltic pavement shall not be used to construct secondary containment systems without the use of a sealing material that prevents adsorption or infiltration of hazardous or mixed waste or hazardous constituents into the asphalt or asphalt pavement.

Unless waste is removed or another form of secondary containment is provided, the Permittees shall immediately repair any damage to a secondary containment system. The Permittees shall perform any concrete or asphalt repair using an appropriate repair method (e.g., ACI standards or manufacturerôs recommendations), on a schedule that will prevent harm to human health or the environment. (*See* 40 CFR §§ 264.15(c), 270.32(b)(2)). The Permittees shall apply coatings or sealants, if applicable, to the repaired area before waste storage activities resume. The Permittees must record any damage or repair to containment systems in the inspection logs required by Permit Section 3.7.

Spilled or leaked waste and accumulated precipitation must be removed from the sump or collection area in as timely a manner as necessary to prevent overflow of the collection system. (*See* 40 CFR § 264.175(b)(5)). The Permittees shall determine the source of liquids that accumulate in secondary containment systems. If the source of the release can be clearly identified (e.g., a leaking container) the Permittees shall characterize the liquid based on knowledge of the source of leakage, and shall remove it and manage it appropriately. If the source cannot be identified, or if the liquid cannot be characterized based on knowledge of the source of the leakage, the Permittees shall follow the process described in Permit Attachment C to characterize the liquid for appropriate management. The liquid shall then be pumped into containers, or absorbed onto absorbent material, swept up, and placed into containers as appropriate.

Accumulated liquids or water generated during fire suppression activities in the Permitted Units shall be characterized using the process described in the Waste Analysis Plan contained in Permit Attachment C.

Accumulated liquids present in secondary containment systems from precipitation or snowmelt shall be characterized in accordance with Permit Attachment C and managed appropriately.

3.6.2 Containers that do not Contain Free Liquids

For containers that do not contain free liquids the Permittees shall ensure that:

1. The containers are stored in storage areas that are sloped or otherwise designed and operated to drain and remove liquid resulting from precipitation (s*ee* 40 CFR § 264.175(c)(1)); or
2. The containers are elevated or otherwise protected from contact with accumulated liquids (S*ee* 40 CFR § 264.175(c)(2)).

The Permittees shall comply with the secondary containment requirements for containers that do not contain free liquids and contain wastes that have the following waste codes: F020, F021, F022, F023, F026 and F027. (*See* 40 CFR § 264.175(d)(1)).

3.7 INSPECTIONS

The Permittees shall inspect the permitted units for the condition of containers and secondary containment systems, safety equipment, and aisle space for evidence of leaks; deterioration of the containment system by corrosion, cracking, differential settlement or other factors; and to ensure safety equipment and aisle space are adequate in the event of an emergency as specified in Attachment E (Inspection Plan). (*See* 40 CFR § 264.174).

Containers in which hazardous waste is placed shall be visually inspected at the time they first arrive at a Unit. A visual inspection shall be done to ensure that there are no cracks, holes, gaps, or other defects and that the cover or other closure devices are secured in the closed position. At each Permitted Unit where containers will be stored, the Permittees shall:

1. Check the condition of containers and the placement of their covers or other closure devices;
2. For containers subject to air emission standards in 40 CFR 264.1086(c), when a defect is detected for the container cover or closure devices, the Permittees shall make first efforts at repair of the defect no later than 24 hours after detection, and repair is to be completed as soon as possible but no later than 5 calendar days after detection. If a repair of a defect cannot be completed within 5 calendar days, then the hazardous waste shall be removed from the container and the container shall not be used to manage hazardous waste until the defect is repaired.
3. For containers not subject to air emission standards in 40 CFR 264.1086(c), the Permittees shall take corrective action in a timely manner upon discovery of a defect in a container or cover to ensure the problem does not lead to an environmental or human health hazard or noncompliance with this Permit.
4. Document container condition and any remedial actions taken.

3.8 AIR EMISSIONS

The Permittees shall control air emissions from each hazardous waste container at a permitted unit in accordance with the applicable regulations in 40 CFR Part 264 Subpart CC.

PERMIT PART 4 TREATMENT OF HAZARDOUS AND MIXED WASTES

4.1 GENERAL CONDITIONS

Treatment of hazardous and mixed waste shall be conducted only at the permitted units identified as utilizing waste process code T04 and specified in Attachment J (Hazardous Waste Management Units), Table J-1.2 (Units Permitted for Treatment (Process Codes TO4 and XO1)). The Permittees are authorized to treat only those hazardous and mixed wastes identified by EPA Hazardous Waste Numbers (Waste Codes) listed in Attachment B (Authorized Wastes). The Permittees shall not treat hazardous or mixed waste in excess of the maximum capacities identified in Attachment J, Table J-1.2.

Hazardous and mixed wastes that are treated at the Radioactive and Mixed Waste Management Unit (RMWMU) and Auxiliary Hot Cell Unit (AHCU) include manufactured items and wastes generated from specific processes and activities. To ensure that proper and accurate waste characterization occurs, the Permittees shall use the characterization procedures outlined in Section C.3 of Permit Attachment C, as well as sampling and analysis, as appropriate.

Hazardous and mixed wastes that are treated at the RMWMU and AHCU include:

1. Solid items exhibiting the hazardous waste characteristics of ignitability and/or reactivity;
2. Solid items (including debris) exhibiting the hazardous waste characteristic of toxicity or containing spent solvents or commercial chemical products;
3. Liquid wastes and wastewaters exhibiting the hazardous waste characteristics of ignitability, corrosivity, or reactivity; and
4. Liquid wastes and wastewaters containing toxicity characteristic constituents and organic compounds.
5. Liquid wastes consisting of or containing spent solvents or commercial chemical products.

Treatment processes and the associated treatment goals at the RMWMU and AHCU are discussed in Permit Attachment A, Sections A.4.5 and A.5.4, respectively. The treatment processes include:

1. Chemical deactivation to eliminate the hazardous waste characteristics of ignitability, corrosivity, and reactivity;
2. Thermal deactivation to eliminate the hazardous waste characteristic of reactivity in reactive wastes, including explosives;
3. Amalgamation to immobilize elemental mercury into a solid, leach-resistant form;
4. Stabilization to immobilize hazardous waste toxicity characteristic metals or eliminate free liquids, or both;
5. Macro-encapsulation to immobilize hazardous constituents; and
6. Physical treatment to change the physical character of the waste in order to make it more amenable to subsequent treatment or storage, or to reduce waste volume.

The hazardous and mixed wastes to be treated at the RMWMU and AHCU are typically assigned one or more of the following EPA Hazardous Waste Numbers: D001-D011, D018-D043, and F001-F005. The EPA Hazardous Waste Numbers for hazardous and mixed waste to be treated at the RMWMU and AHCU are determined through the characterization procedures described in

Permit Attachment C, Section C.3, in which process knowledge is supplemented by sampling and analysis, as appropriate.

4.2 DEPARTMENT APPROVAL

Approved treatment methods are described in Permit Parts 4.4 ï 4.9 below. Prior to treatment by any method not specified in this Permit, the Permittees must submit to the Department for its review and approval a detailed treatment plan for each waste that is to be treated. The treatment plan shall describe, at a minimum, the wastes to be treated, the volume or weight of the wastes, detailed descriptions of the methods of treatment, and how treatment efficacy will be verified. Such treatment plans shall not include treatment by the Permittees using tanks, incinerators, boilers, industrial furnaces, surface impoundments, or land treatment unless such plans are submitted as a request to modify this Permit.

The Department expects within 45 days of receipt of a plan to notify the Permittees of the treatment planôs approval, conditional approval, denial, or the need to submit a permit modification request if the treatment method requires a permit modification. If the method of treatment does not require a modification of this Permit, and if the Department does not so notify the Permittees, the Permittees may implement the plan provided that all applicable requirements of 40 CFR Parts 264 and 268, including 40 CFR 268 Subpart D, and this Permit are met, releases of waste and treated wastes are prevented, and the health and safety of workers and the public protected from harm related to implementation of the plan. Nothing in this Permit Part shall be read to obviate the requirement for a Permit Modification if necessary pursuant to 40 CFR § 270.42.

A detailed description of the treatment methods subject to the requirements of this Permit, including this Section 4.2, are described in Permit Attachment A (Facility Description).

4.3 CONTAINMENT SYSTEMS

Containers in which treatment is conducted under this Permit Part 4 shall be subject to the requirements of Permit Section 3.6 (Containment Systems).

4.4 PHYSICAL TREATMENT

Hazardous and mixed wastes shall be treated physically at the RMWMU and AHCU to reduce waste volume and change the physical character of the waste to make it more amenable to subsequent treatment or storage, or both. Hazardous and mixed wastes that are physically treated at the RMWMU and AHCU generally consist of solid items that exhibit the hazardous waste characteristics of ignitability, reactivity, or toxicity and include unknown solids, debris, aerosol cans and other pressurized containers.

Physical treatment shall include only the following:

1. Reducing waste volume by using commercially available tools (e.g., hammers, screwdrivers, wrenches, pliers, saws, drills, cutters) to separate items with hazardous constituents from larger items or from each other, including removal of coating and filler materials.

2. Removing glues or resins by dissolution in containers (e.g., trays or pails) in order to facilitate separation of items with hazardous waste constituents from each other or from other items. Dissolution shall take place within a fume hood.
3. Reducing the size of waste items by using tools (e.g. mallets, cutters, etc.) to crush or cut items into smaller pieces.
4. Puncturing aerosol cans within a container to allow recovery of the contents. The liquid contents of the aerosol cans must be collected in a container, and any gaseous propellants must be filtered through a carbon or other appropriate filter attached to a container.
5. Releasing pressurized contents of containers other than aerosol cans (e.g., gas cylinders). Organic gaseous contents must be filtered through a carbon filter. All contents must be vented to a chemical fume hood with a high-efficiency particulate air filtration system.

4.5 MACROENCAPSULATION

Solid hazardous and mixed waste items, including debris, are treated by macroencapsulation at the RMWMU and AHCU to immobilize hazardous waste constituents.

The Permittees shall perform macroencapsulation in containers. Macroencapsulation shall consist of completely encasing waste within a polymer coating or concrete, or within a jacket of inert inorganic materials to immobilize wastes such as debris-type solids containing hazardous constituents by completely surrounding the waste with a leach-resistant coating.

The Permittees shall perform macroencapsulation using any one of the following:

1. Encasing the waste in concrete, within a larger container that serves as a mold.
2. Coating the waste with polymer agents within a mold. Polymers used for macroencapsulation shall be 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 be performed with the drum acting as the mold. Temperature control of polymer macroencapsulation processes is critical and shall be carefully maintained to assure that adequate coating occurs.
3. Placing the waste along with inert void-filling materials as appropriate inside a commercially available container made of inert or non-corroding materials such as polyethylene or stainless steel and sealing the container to encapsulate the waste. This method may not be used to treat D008 radioactive lead solids.
4. Placing the waste in a container consisting of an outer shell with a liner of inert or noncorroding material such as polyethylene or stainless steel, along with inert void-filling material as appropriate, and then sealing the liner to encapsulate the wastes.

For options (3) and (4) above, the Permittees may use containers of various sizes, depending on the volume and dimensions of waste items to be macroencapsulated.

4.6 STABILIZATION AND SOLIDIFICATION

Hazardous and mixed wastes are treated by stabilization at the RMWMU and AHCU to immobilize hazardous waste toxicity characteristic metals or eliminate free liquids, or both.

Hazardous and mixed wastes that are stabilized at the RMWMU and AHCU generally consist of liquids, soils, and particulate-type wastes.

The Permittees shall perform stabilization in containers. Treatment shall take place within a fume hood when possible. Stabilization shall consist of binding hazardous metals so that the metals become chemically a part of the matrix or are physically bound within the matrix to immobilize toxicity characteristic metals.

Stabilization agents for toxic metals may include Portland cement, pozzolans, thermoplastics, organic polymers, and clays.

4.7 WASTE TREATED BY CHEMICAL DEACTIVATION

Hazardous and mixed wastes are treated by chemical deactivation at the RMWMU and the AHCU to remove the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity. Hazardous and mixed wastes that are chemically deactivated consist of solids or liquids, including laboratory chemical waste, process waste, and reactive hazardous wastes.

4.8 WASTE TREATED BY THERMAL DEACTIVATION

Hazardous and mixed wastes treated by thermal deactivation consist of reactive hazardous wastes that are solid items. Such wastes are treated at the RMWMU to remove the hazardous waste characteristic of reactivity.

4.9 WASTE TREATED BY AMALGAMATION

Mixed waste consisting of liquid elemental mercury is treated by amalgamation at the RMWMU to immobilize elemental mercury into a solid, leach-resistant form that has minimal potential for emission of mercury vapor.

PERMIT PART 5 TREATMENT BY OPEN BURNING

5.1 AUTHORIZATION OF THE THERMAL TREATMENT UNIT

The Permittees are authorized to treat by open burning hazardous waste at the Thermal Treatment (TTU) located at the northern part of TA-III in accordance with this Permit Part, 40 CFR Part 264, Subparts X and BB, and 40 CFR § 268.7(b) and the current Open Burn Permit issued by the City of Albuquerque Environmental Health Department.

The Permittees shall provide the Department a copy of its open burn permit issued by the City of Albuquerque by February 1st of each year or within 30 days of receipt of the permit. The City of Albuquerque open burn permit shall be maintained in the Operating Record. In addition, to verify air emissions from the TTU, the Permittee shall submit a work plan to conduct air sampling coincident with treatment operations, within one year of the effective date of this Permit.

The Permittees are authorized to treat at the TTU only silver acetylide/silver nitrate (SASN) and SASN mixed with only the solid and hazardous wastes identified in Table 5-1 of this Permit Part, and only if these wastes are generated by the Facility operations in Building 6715. Wastes that are not mixed with SASN at the point of generation shall not be mixed with SASN for the purpose of generating a hazardous waste that is authorized for treatment at the TTU.

A burn event encompasses the duration of a burn, and begins upon ignition of the propane fuel that is used to sustain a burn at the TTU, and ends upon deliberate extinguishment of the flame regardless of whether the flame is a result of the burning of propane, waste or both. More than one burn event may take place during treatment operations, and more than one burn event may take place during a given day, subject to the requirements of this Permit.

Treatment operations may last more than one working day, and include all waste management and other activities required to prepare for a burn event(s), the burn event(s), and all waste management and other activities that must be conducted following the burn event(s) to comply with the requirements of this Permit.

Treatment operations occur periodically and are initiated when wastes requiring treatment at the TTU are generated in Building 6715. For each treatment operation, burn events shall be conducted to treat all waste, kick-out, and treatment residues generated during that operation as expeditiously as practicable.

5.2 WASTE PROHIBITED FROM TREATMENT AT THE TTU

The Permittees shall not treat by open burning any of the following wastes or materials:

1. Waste generated at any location other than Building 6715 and ancillary locations (e.g., the process wastewater system) within the Building 6715 perimeter fence, or the TTU;
2. The hazardous component of mixed wastes;
3. Solid items, except for items mixed or contaminated with SASN;
4. Soils or remediation waste, except incidental soil deposited by the wind and soil as provided in Permit Sections 5.5.3 and 5.6.2 of this Permit Part for kick-out generated from the TTU that is mixed with soil; and
5. Waste containing polychlorinated biphenyls (PCBs).

5.3 MAXIMUM QUANTITY OF WASTE TO BE TREATED

The maximum volume of authorized solid and hazardous wastes present in the burn pan at any one time during a burn event at the TTU shall not exceed 21 gallons (80 liters). The maximum amount of SASN treated during any burn event shall not exceed 2.41 pounds (1.1 kilograms). The Permittees are prohibited from treating waste, on a per burn event basis, in excess of the quantities specified in Table 5-1.

TABLE 5-1
Types and Maximum Quantities of Solid and Hazardous Wastes Allowed for Treatment at the TTU per Burn Event

Solid or Hazardous Waste	Maximum quantity
Acetone (F003)	80 L
Acetonitrile (D001)	6 L
Nitric acid (D002)	0.25 L
Silver nitrate (D001, D011)	340 gram
SASN (D001, D003, D011)	2.41 lbs (1.1 kg)
PETN (D003)	0.88 lbs (0.40 kg)
Water(1)	210 L
solid items containing SASN (e.g., filters, paper, cloth, wood, or cardboard)	50 kg

The maximum amount of SASN and SASN mixed with other authorized solid and hazardous wastes (solid and liquid combined) that can be treated per calendar year shall not exceed 9,500 pounds (4,310 kg) or 1,200 gallons (4,550 liters).

The total volume of liquid wastes can exceed 21 gallons (80 liters) during a burn event as liquids can be periodically fed into the burn pan as a burn event proceeds.

5.4 PREVENTING EXPOSURE

1. Treatment operations shall be conducted on the day waste is loaded at the TTU, subject to the requirements of this Permit Part. If any conditions arise that prohibit commencement of treatment operations on the day waste is loaded at the TTU, treatment operations shall begin as soon as conditions allow for treatment in compliance with this Permit Part.
2. When wastes are present in the burn pan, the Permittees shall keep the burn pan closed by lowering the lid, except when wastes are being loaded into or unloaded from the pan or when treatment is occurring.
3. The TTU shall be operated remotely during burn events from a control console inside Building 6715. Operating personnel shall observe burn events using a video camera.

4. The TTU shall have a warning bell or buzzer. The sound produced by the warning bell or buzzer shall be louder than the TTU propane burners. Building 6715 or the TTU shall be equipped with a warning light in a visible location for personnel that are hearing impaired.

5.5 OPERATING PROCEDURES

5.5.1 Pre-Burn Operations

1. The Permittees shall notify the Permitteesô Emergency Management & Response organization personnel and the Kirtland Air Force Base Fire Department of anticipated treatment operations before treatment operations begin.
2. The Permittees shall inspect the TTU burn pad and pan, and its associated equipment, within 24 hours preceding a burn event (*see* Permit Attachment E, Inspection Plan).
3. The Permittees shall inspect the camera located in Building 6715 control building to ensure it is functional before waste is transferred to the TTU for a burn event.
4. The Permittees shall check the area in the vicinity of the TTU immediately preceding burn events to ensure that no unauthorized personnel are present in or around the TTU. Prior to a burn event, the fenced area surrounding the TTU and the area between Building 6715 and the TTU (Figure 10, Permit Attachment L (Figures)) shall be cleared of all personnel by announcing over the public address system that a burn event will soon commence and by use of a bell or buzzer warning signal and warning light.
5. Vegetation and other combustible substances within a 50-feet radius of the Burn Pan shall be removed before conducting any burn events, including keeping the grounds and berms within the perimeter fence clear of dry or dead weeds, or any other combustible substances.
6. Wastes shall not be stored at the TTU prior to treatment operations for longer than 24 hours, except as provided under Section 5.4 (1) of this Permit Part

5.5.2 Treatment Operations

5.5.2.1 General Requirements

1. No person shall be permitted to enter the TTU fenced area during a burn event. No personnel shall be between Building 6715 and the TTU fenced area during a burn event.
2. Any gates within the perimeter fence that surrounds the TTU shall be closed and locked during burn events and for a four-hour cool-down period after each burn event to prevent the entry of unauthorized personnel into the area.
3. A sign indicating that a burn event is underway shall be placed on the Building 6715 access gate. The sign shall be on the gate prior to the start of burn events and remain during burn events and during the four-hour cool down period following burn events.
4. A minimum of two people shall be present during burn events.
5. A minimum of four hours shall elapse between burn events before inspection of the burn pan except in cases of multiple burn events on the same day. In the case of multiple burn events on the same day, a pretreatment inspection will be performed if at least four hours elapse between burn events. If less than four hours elapse between burn events, a

pretreatment inspection will not be performed. The Permittees shall not conduct more than three burn events on a single day.

6. The TTU burn pan shall be covered with the lid except during burn events, during loading or unloading of wastes or treatment residues, or when inspections, maintenance, or repairs are taking place.
7. Only non-sparking tools shall be utilized at the TTU when waste is present.
8. Following a burn event, the TTU Operator shall be responsible for determining whether or not it is safe to approach the burn pan area. The TTU shall be closed for a minimum of four hours after a burn event before anyone is permitted to approach the burn pan area.
9. All wastes shall be treated on the same day waste is placed into the TTU burn pan, provided that if any conditions arise that prohibit commencement of a burn event, the burn event shall begin as soon as conditions allow for treatment in compliance with this Permit Part.
10. No fuel other than propane shall support open burning of waste.
11. Treatment operations shall not be conducted if there is an uncontrolled range fire within one mile from the TTU.

5.5.2.2 Solid Items

Authorized solid items, saturated (i.e., wetted or submerged) in water shall be containerized and carried to the TTU burn pan by personnel trained and qualified to manage the waste.

Authorized solid items shall be loaded manually into the burn pan. The operator shall open the screen door remotely from the control console in Building 6715. The door shall be operable only from the control console. The operator shall remove the key from the burner control, thus disabling the gas burner system before loading waste into the TTU Burn Pan. The same operator who loads the TTU burn pan shall control the gas burner system.

5.5.2.3 Liquids

Authorized liquids may be transferred to the burn pan through the waste transfer pump, waste transfer tubing, and ancillary pipes. The operator at the control console in Building 6715 shall operate the pump remotely.

Authorized liquid waste may be containerized and carried to the TTU burn pan by personnel trained and qualified to manage the waste. The containerized liquid waste shall be loaded into the burn pan following the steps in Section 5.5.2.2.

5.5.2.4 Hours of Operation

Burn events at the TTU shall be initiated only during the time period beginning one hour after astronomical sunrise and ending one hour before astronomical sunset. Burn events may continue beyond sunset as necessary to complete treatment already in progress.

5.5.2.5 Weather Conditions

1. Burn events at the TTU shall not be initiated when an electrical storm (with or without precipitation) exists within 10 miles of the TTU.

2. Burn events at the TTU shall not be initiated during inclement or threatening weather. Inclement or threatening weather is defined as : 1) sustained winds greater than 20 mph; 2) wind gusts exceeding 35 mph; 3) tornado watches or warnings; 4) snowstorms with visibility less than 2000 feet; 5) rain with accumulation rates greater than 0.3 inches per hour; and 6) hail, sleet, or ice storms.
3. Burn events at the TTU shall not be conducted when wind speeds at the Albuquerque Sunport exceed a sustained speed of 20 mph.
4. If one or more adverse weather conditions as defined in this Section develop during a burn event, the TTU operator shall evaluate the risk of continued operation against the risks of halting treatment operations. If the operator determines that weather conditions warrant ceasing treatment operations, the Permittees shall stop the burn event, deactivate the propane burners and close the lid on the burn pan as soon as it is safe. The TTU operator may saturate the untreated explosive waste with water to cool it and stabilize the explosive. If water is to be added to the waste, the operator will wait until the TTU is safe to approach, and will use water from the spigot located just inside the TTU fence. The operator will direct water from the spigot into the burn pan, being careful not to disperse waste from the pan. If available, water may also be pumped directly into the burn pan using the waste transfer pump.

The Permittees shall continue to comply with all requirements, including all security and safety requirements of this Permit concerning treatment operations from the time an aborted burn event is stopped through the time that the burn event is restarted and completed. An aborted burn event shall be re-started as soon as conditions allow for treatment in compliance with this Permit Part. Prior to restarting treatment, the operator shall determine whether it is necessary to wet the untreated waste and shall follow the procedures above if it is necessary.

5.5.3 Post-Burn Operations

The Permittees shall operate the burners for at least 30 minutes after observing evidence that all wastes have been completely combusted. The Permittees shall use visual and audible evidence to determine that all wastes have been deactivated and combusted. The cessation of audible popping noises and visual flashes of light and puffs of smoke indicate complete combustion of waste. Other evidence of the complete combustion includes the absence of yellow flames from the burn pan and the absence of liquid inside the burn pan.

After the cool-down period of at least four hours, but within one business day, the Permittees shall perform a post-treatment inspection to check for any untreated waste in the burn pan and any contamination or untreated waste ejected from the burn pan (ñkick-outò) during the preceding burn event(s). If the cool down period ends after sunset, the Permittees shall wait until after sunrise on the following morning to perform the inspection required by this section. If kick-out is observed, the Permittees shall wet it with water, and containerize the kick-out and any contaminated soil mixed with kick-out for treatment during the next burn event. If contamination is observed, the Permittees shall wet the contaminated area and decontaminate it with wet paper wipes or wash it with water. Residues and wipes shall be managed in accordance with Permit Section 5.5.4.

The Permittees shall remove treatment residues from the burn pan using plastic scoops or a vacuum cleaner equipped with a high-efficiency particulate air filter. The Permittees shall close

the lid on the TTU burn pan to prevent dispersal of any residue which could not be removed by the plastic scoop or vacuum cleaner. The Permittees shall remove treatment residues from the burn pan and clean treatment residues deposited on the top exterior of the lid with wet paper or cloth wipes within one working day of a burn event unless another burn event is to take place within one day, or one or more adverse weather conditions as defined in Section 5.5.2.2 is present. Residues that are removed from the burn pan and wipes used in cleaning the top exterior of the lid shall be containerized and managed in accordance with Section 5.5.4.

After treatment operations conclude, the Permittees shall notify their Emergency Management & Response organization personnel, to inform them that treatment operations have been completed.

5.5.4 Management of Treatment Residues

Residues that are removed from the burn pan and wipes used in cleaning the lid shall be characterized in accordance with Permit Attachment C. If the Permittees find any untreated waste or treatment residue requiring further treatment at the TTU, the waste may be left in the burn pan for treatment as soon as possible in compliance with the requirements of this Permit. Alternatively, untreated waste, treatment residue requiring further treatment at the TTU, contaminated paper wipes from cleaning the pad, or kick-out collected during inspection of the Unit after a burn event may be containerized and treated during the next burn event.

5.5.5 Alternative Treatment Assessment

The Permittees shall submit an open burn alternative treatment assessment report to the Department no later than the eighth anniversary of the effective date of this Permit. The assessment report shall include an analysis of risk to human health and the environment for each alternative discussed.

5.6 MAINTENANCE AND MITIGATION REQUIREMENTS

5.6.1 Accumulated Precipitation

If the burn pan lid is open during precipitation, any standing water in any portion of the burn pan shall be removed within one business day of a precipitation event, containerized, characterized in accordance with Permit Attachment C, and managed accordingly.

The Permittees shall make a hazardous waste determination of the water that has drained from the pad surrounding the burn cage and accumulated in the catch tank in accordance with 40 CFR § 262.11 and Permit Attachment C (Waste Analysis Plan) upon removal of any such water and manage the water appropriately.

5.6.2 Mitigation of Spills

1. Spills of solid items on the ground or on the TTU pad shall be wetted as needed to stabilize any unreacted explosive. Spills of solid or liquids shall be wiped or scooped up and placed in the burn pan or containerized for treatment, as appropriate and safe. Soils contaminated by a spill from the TTU shall be wetted, excavated, and placed in the burn pan or containerized for treatment, as appropriate.

2. In the event of a spill from the burn pan, the spilled waste shall be contained on the steel-lined concrete pad until it is wiped or scooped up as necessary to remove the spilled waste.
3. Spill cleanup wastes placed in the burn pan shall be treated in compliance with the requirements of this Permit.

5.6.3 Maintenance and Repair Activities

The Permittees shall check the surfaces of the burn cage, the pad, and the surrounding area with a portable propane burner before maintenance and repair activities that involve hot work or friction (e.g., cutting, welding, or grinding) to ensure that residual or untreated waste, treatment residue requiring further treatment at the TTU, or kick-out are not present to cause a hazard to workers.

5.7 WASTE ANALYSIS PLAN

The Permittees shall comply with the requirements of Section 2.4 of Permit Part 2 and Permit Attachment C (Waste Analysis Plan) for characterizing wastes to be treated at the TTU and wastes treated at the TTU.

5.8 RUN-ON AND RUN-OFF CONTROLS

The Permittees shall inspect monthly and prior to the first burn event that is conducted for any given day of treatment operations, and shall maintain as necessary, the surface water run-on and run-off control features (e.g., all associated retention structures, retaining walls, covers, berms, ditches) associated with the TTU in accordance with Permit Attachment E (Inspection Plan).

5.9 SOIL MONITORING REQUIREMENTS

5.9.1 Sampling and Analysis

The Permittees shall conduct a soil sampling program to monitor for hazardous waste or constituents released to soils as a result of treatment operations or spills, and to ensure that any releases from the Unit do not have an adverse effect on human health or the environment (*see* 40 CFR § 264.602). Samples shall be collected annually no later than August 1 of each year sampling is required, beginning no later than the first August after the effective date of this Permit. Samples shall also be collected no later than August 1 of the next year (year two) and of years four, seven, and nine after the effective date of this Permit. The Permittees shall provide oral and written notification to the Department of the scheduled sampling activities at least 15 days prior to commencing each sampling event.

Soil samples collected for the first two sampling events shall be analyzed for silver, semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and dioxin/furan congeners (Table 5-3). If the results for all samples analyzed for SVOCs, PAHs, and dioxin/furan congeners are less than or equal to their applicable New Mexico industrial soil screening levels (NMED 2012 or current, see Permit Section 5.9.2), soil samples collected for sampling years four, seven, and nine may be analyzed for silver only. However, if results are greater than their applicable New Mexico industrial soil screening levels, the Permittees shall

continue to analyze soil samples for any of those parameters listed in Table 5-3 that are greater than their applicable New Mexico industrial soil screening levels, in addition to silver, for each subsequent sampling event.

Soil samples shall be collected at a depth of 0-6 inches at the locations listed in Table 5-2 of this Permit Part. Soil samples shall also be collected at a depth of 2 feet for the first sampling event and analyzed for the same parameters required for the samples collected at a depth of 0-6 inches. Approved analytical methods, preservation methods, holding times, and container requirements are listed in Table 5-3 of this Permit Part. Sample locations must be surveyed pursuant to Permit Section 8.10.2.5.

Soil samples must be collected according to the requirements in Permit Section 8.10.2. The samples shall not contain vegetation, debris, or large rocks.

The Permittees shall document field activities in accordance with Permit Section 8.10.2.14. Information provided in the logbooks must be sufficient to allow reviewers to reconstruct sampling events, and must note any deviations from the requirements of this Permit Section (5.9). The sample documentation along with the data recorded in logbooks must ensure that each sample has a unique identification number and sufficient sample information to ensure traceability of each sample to a specific sample location. A chain-of-custody (COC) form shall be maintained with samples from the time of collection through shipment to the laboratory and analysis of the samples. The Permittees shall collect field quality control samples in accordance with Section 8.10.2.4.vii. The Permittees shall comply with the requirements of Permit Part 8.10.3 regarding sample analysis, including all applicable requirements for quality assurance samples and review of laboratory data. If re-usable sampling equipment is used for collection of soil samples, trowels and stainless steel bowls and any other equipment that comes in direct contact with the samples shall be decontaminated between each sample in accordance with the requirements of Permit Part 8.10.2.11.

The Permittees shall manage investigation-derived waste in accordance with Permit Section 8.10.2.13.

5.9.2 Reporting of Sampling Results and Risk Assessment

The risk assessment screening method outlined in the most current New Mexico Soil Screening Guidance (NMED 2012 or current) must be applied for assessing the risks to human health.

Sampling results (including associated field and laboratory quality control results), the comparison to the Soil Screening Guidance, and the results of the screening risk assessment based on an industrial receptor shall be reported to the Department by October 1 of each year that sampling occurs under this Permit Part.

5.9.3 References

NMED, 2012. NMED Risk Assessment Guidance for Site Investigations and Remediation.

SNL, 1996. Joint Sandia National Laboratory/New Mexico Kirtland Air Force Base Background Study.

TABLE 5-2 Summary of Sample Locations and Analytes	
Number and Locations of Samples (11 samples)	2 discrete samples from around the burn unit and within the berm area, 2 discrete samples from the top of the berm area with one sample being located immediately south of the burn unit, 2 discrete samples outside the berm area but within the fence, 1 discrete sample outside the fence to the East of the unit collected at 30 meters from the unit, 1 discrete sample outside the fence to the West of the unit, collected at 30 meters from the unit, 1 discrete sample outside the fence to the South of the unit collected at 30 meters from the unit 1 discrete sample outside the fence to the Northeast of the unit, collected at approximately 30 meters from the unit, and 1 discrete sample outside the fence to the Southeast of the unit, collected at approximately 30 meters from the unit
Surveying Locations	Locations to be surveyed and recorded using GPS
Sample Type	Surface soil (0-6 inches)
Analytes of Concern	Silver, SVOCs, PAHs, dioxins/furans
Quality Assurance	Field duplicate and matrix spike (frequency of one per 20 samples) and equipment blank (at least one per day) if re-usable sampling equipment is used.

Table 5-3
Soil Sample Analysis Requirements[1]

Parameter[2]	Laboratory Method(s)	Preservation	Holding Time	Container Requirements
Silver	6010/6020	None	6 months	Glass or plastic
SVOCs	8270	Cool to 4°C	14 days	Glass
PAHs	8310	Cool to 4°C	14 days	Glass
Dioxin/Furan Congeners	8280	Cool to 4°C	30 days	Glass

1. Unless otherwise noted, methods are taken from EPA SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 1986 and all approved updates. Use the most current method for analysis Method numbers shown in this table are subject to change through future updates and may differ from those shown here. Equivalent methods may be substituted only if the equivalent method includes the same analyte list, method detection limits equal to or lower than the original method, and equivalent or higher data quality. If an equivalent method is used, the Permittees shall provide justification in the report to the Department.

2. Parameters to be analyzed for may vary over the life of the Permit (see Permit Section 5.9).

PERMIT PART 6 CLOSURE REQUIREMENTS

6.1 INTRODUCTION

The Permittees shall close the Permitted Units in accordance with the requirements in 40 CFR §§ 264.110 through 264.116, 264.178 and 264.601 as applicable, this Permit Part (6), and the procedures described in the Permitted Unit-specific closure plans in Attachment G (*Closure Plans*). Closure is the permanent discontinuation of storage and treatment of hazardous or mixed wastes at a Permitted Unit.

It is anticipated that each Permitted Unit not currently in post-closure care will achieve the clean closure criteria at Permit Section 6.2.1 (*i.e.,* clean closed). Permitted Units that do not clean close remain subject to the requirements for post-closure care under 40 CFR Part 264 Subpart G and Permit Part 7.

The closure process for a particular Permitted Unit is not complete until the Department approves the Closure Report and Closure Certification required under Permit Section 6.7.

For the purpose of closure, Permitted Units may consist of structures, equipment, outdoor storage pads and driving surfaces, and environmental media. These components of a Permitted Unit shall undergo the decontamination and verification sampling procedures specified at Permit Sections 6.3.6 through 6.3.10.3 unless they are removed from the site at closure. Examples of structures include storage sheds; buildings; individual rooms within buildings; interior walls, floors and ceilings; containment systems; and fixtures appurtenant thereto (*e.g.*, stairs, railings, and ancillary piping). Examples of equipment include forklifts, secondary containment pallets, treatment apparatus, and hand tools utilized in waste management. Examples of outdoor storage pads and driving surfaces include concrete or asphalt pavements. Environmental media includes soil, groundwater, surface water, and any anthropogenic base materials (*e.g.*, base course or gravel).

Rooms such as restrooms, offices, storage rooms, and utility rooms at a Permitted Unit in which hazardous or mixed waste was not managed are exempt from closure procedures and performance standards. Office equipment, furnishings, and tools that have not contacted hazardous or mixed waste or been subject to a hazardous constituent release are also exempt from closure procedures and performance standards.

6.2 CLOSURE PERFORMANCE STANDARDS

The Permittees shall meet the following closure performance standards for all constituents of concern (see Permit Section 6.5(1)) at each Permitted Unit to be closed. The Permittees must:

1. Minimize the need for further maintenance; and
2. Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous and mixed waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface water, or atmosphere.

(*See* 40 CFR § 264.111).

6.2.1 Criteria for Clean Closure

Clean closure is achieved when:

1. All hazardous wastes have been removed from a Permitted Unit.
2. Any release of a hazardous waste or hazardous constituent to environmental media at or from the Unit has been remediated to a concentration level that is protective of human health and the environment. Concentration levels for environmental media may take into account non-residential exposure assumptions and future land use, provided that those assumptions are clearly stated and that any land use restrictions are maintained.
3. Structures and equipment associated with a Permitted Unit have been decontaminated to remove hazardous waste residues and hazardous constituents, or such structures and equipment have been removed and managed, in accordance with all applicable requirements.
4. All of the closure performance standards under Permit Section 6.2 have been met.
5. The Permittees have demonstrated that there is no potential for contaminated soils associated with a Permitted Unit to contaminate groundwater.

6.2.2 Inability to Achieve Clean Closure

If the Permittees are unable to achieve clean closure of a Permitted Unit under the provisions of Permit Section 6.2.1, they must implement post-closure care pursuant to Permit Part 7 and comply with 40 CFR §§ 264.117-264.120. The Permittees must also prepare a post-closure care plan and submit the plan to the Department within 90 days from the date that the Permittees or the Department determines that clean closure will not be or has not been achieved at the Permitted Unit. Additionally, pursuant to Permit Section 6.6 and prior to the commencement of the post closure period, the Closure Plan shall be amended to implement the procedures that are necessary to meet all of the closure performance standards under Permit Section 6.2.

6.3 CLOSURE PROCESS

6.3.1 Notification of Closure

The Permittees shall initiate closure by notifying the Department in writing that a Permitted Unit will undergo closure.

6.3.2 Time Allowed for Closure

The Permittees shall complete all closure activities required by this Permit Part and the Permitted Unit-specific closure plan at Attachment G (*Closure Plans*) no later than 180 days after initiating closure. The time allowed for closure may be extended if an extension is approved by the Department (*see* 40 CFR § 264.113(b)(1) and (2)) or it is necessary to amend the closure plan in accordance with Permit Section 6.6. If a closure plan must be amended, the Permittees shall complete all closure activities in accordance with the schedule in the Department-approved closure plan, including all amendments.

6.3.3 Closure Schedule

Closure of each Permitted Unit shall comply with the schedule presented in Table 6.1 (*Closure Schedule*) and the additional requirements in each Unit-specific closure plan in Attachment G.

TABLE 6.1
Closure Schedule

Closure Activity	Schedule
Notify the Department of the initiation of closure.	Day 0
Remove all hazardous and mixed wastes. Remove any solid waste that adversely interferes with closure activities.	No later than Day 90
Conduct records review	After initiating closure and before Structural Assessment
Conduct structural assessment	After removal of all wastes and before decontamination
Submit the records review and structural assessment report to the Department, and if necessary as a result of the records review and structural assessment, submit a request to modify the Closure Plan	After conducting the records review and structural assessment and before decontamination
Complete all closure activities	No later than Day 180 after closure is initiated or no later than specified in the Department-approved Closure Plan (including any Department ï approved amendments), whichever is later.
Submit final Closure Report and Certification to the Department.	No later than 60 days after completing closure activities
Completion of closure	After Department approval of the Closure Report and certification.

Note: The schedule above indicates calendar days in which the listed activities shall be completed from the day closure activities are initiated. Some activities may be conducted simultaneously.

6.3.4 Removal of Waste

The Permittees shall remove all hazardous and mixed waste from the Permitted Unit within 90 days of initiating closure at a Unit, and shall also remove any solid waste that adversely interferes with closure activities (*see* 40 CFR § 264.113(a)(1) and (2)).

6.3.5 Records Review and Structural Assessment

During closure the Permittees shall conduct a records review and structural assessment of the Permitted Unit and shall submit the review and assessment in the form of a written report to the Department for approval according to the schedule in Table 6-1. If the records review and

structural assessment report is disapproved by the Department, the Permittees shall correct the deficiencies identified by the Department, and if required by the Department, amend the Closure Plan for the Permitted Unit that is to be closed.

6.3.5.1 Records Review

The Permittees shall review the Operating Record for the Permitted Unit to perform two functions: 1) the identification of all hazardous and mixed wastes and hazardous constituents of concern managed at the Permitted Unit [as defined in Permit Section 6.5(1)], and 2) the identification of all potential releases at the Unit.

The Permittees shall prepare a written report that describes the record review process and the results of that review so the Department may be assured of the thoroughness of the review. The Permittees shall, as a result of the records review update the list of constituents of concern. The Permittees shall revise the Sampling and Analysis Plan (SAP) to accurately and completely reflect all constituents of concern managed at the Permitted Unit during the operating life of the Unit. If the list of constituents of concern would be updated only by adding new constituents, then the Permittees shall inform the Department of this fact in writing in the report for the records review. If the list of constituents of concern would be updated to eliminate one or more constituents, then the Permittees must update the list of constituents of concern in the SAP via an amendment of the closure plan in accordance with Permit Section 6.6.

The review of inspection logs and records associated with the implementation of the contingency plan shall be used to determine whether any spills, releases, defects, deterioration, or damage (*e.g.,* cracks in the flooring) has occurred at the Permitted Unit during the time hazardous or mixed waste was managed at the Unit that may have resulted in contamination of structures, equipment, or the environment. If the Operating Record indicates any such incident(s), the Permittees shall include in the written report a description of the location, dates, the nature of the release, and the types and volumes of waste or materials involved in the incident(s), and shall revise the SAP in accordance with Permit Section 6.6 to include the location of the incident and applicable sampling procedures.

The records review shall be completed before initiation of the structural assessment.

6.3.5.2 Structural Assessment

The structural assessment is a visual inspection and evaluation of the Permitted Unitôs physical condition, with the intent of identifying areas of contamination or potential contamination. The Permittees shall conduct a structural assessment by evaluating the Permitted Unit for evidence of a release (*e.g.,* stains) or damage (*e.g.,* cracks, gaps) to the flooring, containment structures, building materials, fixtures appurtenant thereto, or outdoor storage pads and driving surfaces. If the structural assessment reveals any evidence of a release or damage the Permittees shall, in accordance with Permit Section 6.6, amend the SAP to incorporate these locations for sampling and to include appropriate sampling procedures.

The Permittees shall notify the Department at least 30 days prior to conducting the assessment to provide the Department the opportunity to participate in the assessment. The structural assessment shall be conducted after wastes have been removed from the Permitted Unit, such that structural surfaces are visible, and before beginning any closure decontamination

procedures. The Permittees shall prepare a written report that describes the assessment conducted and the results of the assessment so the Department may be assured of the thoroughness of the assessment.

6.3.6 Decontamination and Removal of Structures and Equipment

During closure of a Permitted Unit the Permittees shall decontaminate or remove all contaminated structures and equipment in accordance with this Permit Part and the Unit-specific closure plan in Attachment G (*Closure Plans)*.

6.3.6.1 Decontamination

Pressure-washing or steam-cleaning shall be the sole methods used by the Permittees to decontaminate the exposed interior surfaces of structures, including but not limited to floors, walls up to 11 feet from the floor, windows, doors, and ceilings lower than 11 feet high. If a release is known to have impacted walls or ceilings higher than 11 feet from the floor, such walls or ceilings shall be decontaminated. Large pieces of equipment shall also be decontaminated via pressure-washing or steam-cleaning. Small hand tools shall be decontaminated utilizing the decontamination procedures for sampling and measuring equipment at Permit Section 8.10.2.11. Decontamination and verification sampling is not required for the internal components of equipment or structures if there is no evidence that a release has impacted such internal components.

The Permittees may propose an alternative decontamination method in an amended closure plan in accordance with 40 CFR § 264.112(c).

6.3.6.2 Removal

The Permittees may remove and transport off-site any structure or piece of equipment associated with a Permitted Unit instead of decontaminating the surfaces of these components and conducting decontamination verification.

Components proposed to be decontaminated in Permitted Unit-specific closure plans but that are unable to be sufficiently decontaminated may be removed during closure. This removal shall not require a modification to the closure plan but instead shall be described in the closure report identified at Permit Section 6.10.

Removed materials deemed waste shall be managed in accordance with Permit Section 6.9.

6.3.7 Verification Sampling of Structures and Equipment

The Permittees shall, after decontamination, collect samples to verify that the surfaces of structures and equipment to remain in place at a Permitted Unit have been decontaminated to meet the clean closure criteria specified at Permit Section 6.2.1. The Permittees shall at closure collect the type and quantity of samples at the locations required by this Permit Part and as specified in Permitted Unit-specific closure plan sampling and analysis plans (SAPs) at Attachment G.

Wet-wipe sampling shall be used to verify surface decontamination of structures and equipment and shall be conducted in accordance with Permit Section 6.3.10.1. For all constituents of

concern, the clean closure criteria will be considered achieved when wet-wipe sample analyses demonstrate constituent concentrations do not exceed background levels or are shown by risk assessment under a variance (see Permit Section 6.7) that the level of decontamination accomplished is protective of human health and the environment. In areas where wet-wipe sampling is to be conducted, background levels for a Permitted Unit shall be established through wet-wipe sampling of an area in the Permitted Unit that was not used for the management of hazardous or mixed wastes. Method detection limits must be the lowest practicable levels that can be achieved by a typical laboratory conducting analysis under EPA SW-846 methods.

If the first-time decontamination verification analysis associated with structures and equipment reveals concentrations that fail to meet the aforementioned criteria for organic and inorganic constituents of concern, the Permittees shall again decontaminate the associated component and again verify that decontamination. If after two attempts to decontaminate a particular component, verification analysis still fails to meet the criteria for constituents of concern the Permittees may petition the Department for a variance under Permit Section 6.7, remove the component from the Facility, or comply with Permit Section 6.2.2.

The Permittees may collect wipe samples for radionuclide analysis for use as indicators of contaminant releases in Units where radionuclides were stored or treated. The Permittees shall not, however, use these as surrogates for validation of attainment of closure at a Permitted Unit.

Decontamination verification of structural surfaces shall be accomplished via the sampling and analysis of discrete samples. The Permittees shall collect at least one wet-wipe sample for each large piece of equipment or fixture at a Permitted Unit.

Wipe samples for equipment or fixtures with surface areas of no greater than 10 ft^2 may be composited for the purpose of laboratory analysis on a batch basis not to exceed 10 pieces of equipment or fixtures per batch. If a composite sample fails to meet the criteria for one or more constituents of concern, all equipment or fixtures in the batch represented by the composite sample shall be decontaminated again and decontamination verification repeated for the constituent(s) of concern that did not meet the criteria. If after two attempts to decontaminate a particular batch of equipment or fixtures, verification analysis still fails to meet the criteria for one or more constituents of concern, the Permittees may petition the Department for a variance under Permit Section 6.7, remove the items in the batch from the Permitted Unit and manage them in accordance with Permit Section 6.9, or comply with Permit Section 6.2.2.

Except as provided below for volatile organic compounds (VOCs), decontamination verification samples shall be collected and analyzed for all of the constituents of concern listed in the SAP for each of the Permitted Unit-specific closure plans.

Structure surface wipe sampling frequencies are one sample:

1. Every 900 ft^2;
2. On structure surfaces with an area less than 900 ft^2 (*e.g.*, the floor, ceiling lower than 11 feet and each wall up to 11 feet in a small room);
3. In each designated indoor loading and unloading zone as the sample for the applicable 900 ft^2 area;
4. At the lowest level of each sump or secondary containment in the interior of a structure; and
5. At other locations as required by the Department.

To verify decontamination for VOCs, the Permittees may decontaminate the surfaces of structures and equipment a minimum of two times in lieu of conducting sampling and analysis for VOCs.

6.3.8 Sampling of Soil and Base Material

At closure the Permittees shall sample native soils associated with Permitted Units to determine the presence and concentrations of constituents of concern. This soil sampling shall in many cases require drilling through the outdoor storage pads and driving surfaces to access the soil. Base materials associated with (*i.e.*, above) a soil sample found to be contaminated shall be considered contaminated, except as provided below regarding asphalt pavement.

Soils shall undergo laboratory analysis to determine concentrations of constituents of concern relative to the clean closure criteria of Permit Section 6.2.1 for environmental media. Soil sampling frequency shall be:

A single native soil sample at a depth of 0 to 6 inches at the following locations:

1. Every 2,500 ft^2 below outdoor pads and driving surfaces;
2. Below designated outdoor loading and unloading zones as the sample for the applicable 2,500 ft^2 area;
3. Below all buried pipe joints of piping carrying waste or waste residuals;
4. Below every 30 linear feet along the axis of any in-ground open or covered drainage system carrying waste or waste residuals; and
5. At other locations as required by the Department.

Two native soil samples, one at a depth of 0 to 6 inches and another at 12 inches:

1. At each location where storm water discharges directly off of an outdoor paved surface that was used for waste handling, storage, treatment, loading and unloading;
2. At the lowest level of each outdoor sump or catchment basin;
3. At the lowest level of each outdoor fixed secondary containment area;
4. At the location of any spill or release of hazardous or mixed waste or hazardous constituents if not previously sampled when the spill or release was remediated, and if another release has not occurred or was unlikely to occur at the same location, and the supporting analytical data are provided to the Department in the records review and structural assessment report; and
5. At other locations as required by the Department.

Base materials found to be contaminated with constituents of concern are subject to the cleanup levels and risk assessment procedures for soil specified at Permit Sections 8.4.3, 8.4.4, and 8.4.5 to determine if they should be removed or otherwise remediated to protect human health and the environment. Base material samples shall be discrete and representative of the materials being sampled. The fraction of base materials that must be analyzed shall be that portion that passes a # 4 screen.

Soil and base materials samples must include a fraction to be analyzed for VOCs unless the Permittees can demonstrate that VOCs were never a hazardous or mixed waste managed at any time at the Permitted Unit or a hazardous constituent of such waste.

Soil and base materials under asphalt pavement shall not be considered contaminated if:

1. the only constituents of concern present are those that occur naturally or are constituent(s) of asphalt;
2. the records review and structural assessment did not indicate any potential releases that contaminated or could have contaminated the soil or base material; and,
3. the constituents of concern in soil and base materials do not exceed naturally occurring background concentrations or concentrations within the asphalt, whichever is greater.

If a release of hazardous or mixed waste or a hazardous constituent is discovered in soil or base materials, the Permittees shall abide by the release notification requirements at Permit Section 8.3.3 and the closure plan amendment requirements of Permit Section 6.6.

6.3.9 Removal of Contaminated Soil or Base Materials

For inorganic constituents of concern, soil sampling results shall be compared to the approved background levels for surface soil at the Facility to determine whether contamination is present.

The Permittees shall ensure that soils and base materials (*e.g.*, gravel) at a Permitted Unit that are contaminated with constituents of concern that pose an unacceptable risk to human health or the environment based on the closure performance standards in Permit Section 6.2 are removed from the Permitted Unit. The complete removal of such soil and base materials shall be verified by the Permittees through sampling and analysis to demonstrate that the vertical and horizontal extent of all such soil and base materials have been removed.

If the contaminated soil or other environmental media that pose an unacceptable risk to human health or the environment (i.e., soil or other media that do not meet the clean closure criteria in Permit Section 6.2.1) cannot be removed because it would be impracticable, the soil or other environmental media shall be subject to corrective action under Permit Section 6.8 and Permit Part 8.

Removed soils or materials deemed waste shall be managed in accordance with Permit Section 6.9.

6.3.10 Other Methods and Procedures

The Permittees shall document closure activities as specified at Permit Section 8.10.2.14.i. The Permittees shall manage wet-wipe and soil samples as specified at Permit Section 8.10.2.9. The Permittees shall at closure abide by the requirements for analyses at laboratories as specified at Permit Section 8.10.3.

6.3.10.1 Wet-Wipe Samples

Wet-wipe sampling shall be accomplished using a wipe material saturated with an appropriate solvent rubbed with consistent pressure over a consistent surface area. The wipe material must be a glass fiber cloth. The appropriate solvent is constituent or compound specific and must conform to Table 6-2. The appropriate amount of solvent shall be provided by the contract laboratory and shall conform to ASTM Standard E1792. The surface area of the wipe sample must be 100 cm^2 and must be an area not previously used for the collection of a wipe sample.

To ensure a consistent sampling surface area the Permittees shall utilize a template or chalk that will not contaminate the sample. The wet-wipe sample shall be collected within the entire

sample area by rubbing that area first in one direction using firm equal pressure. One side of the full wipe shall be used for the first pass. A second pass perpendicular to the first shall be made over the sample area using the wipe cloth folded in half with the side of the cloth used for the first pass inside the fold. A third pass shall be made following the procedures for the first two passes. Upon completion of wipe sampling the sample shall be sealed in an appropriate container.

Table 6-2

Analytical Parameter	Required Solvent[b]	Required Analytical Method[a]
Metals	de-ionized water	6010/6020
Mercury	de-ionized water	7470/7471
SVOCs	acetone/hexane	8270
VOCs	acetone/hexane	8260
PCBs	Isooctane	8080/8082
High Explosives	Acetonitrile	8330
Dioxin/Furan Congeners	Hexane	8280/8290
Herbicides	Isooctane	8150/8151
Cyanide	de-ionized water	9010/9012

a Methods from EPA SW-846 as revised and updated

b Required solvent to be determined at the time of closure according to the current analytical method from SW-846.

6.3.10.2 Soil Samples

The Permittees shall collect soil samples using the most effective, proven, and practicable method for recovery of samples and potential contaminants. The discrete soil samples collected shall be representative of the media being investigated.

Hollow-stem auger or direct push technology methods are the preferred methods for collecting soil samples. Trenching or hand augering are also appropriate sampling methods. If hollow-stem augers are used, a decontaminated split-barrel sampler lined with brass sleeves shall be used to obtain samples. Relatively undisturbed discrete base material and soil samples shall be obtained during the advancement of each boring for the purpose determining the base material/soil interface. The drilling and sampling equipment shall be properly decontaminated before collecting each sample.

Cuttings, cores, or other samples obtained from borings shall be screened in the field for evidence of potential contamination. Screening shall consist of visual examination and

headspace vapor screening for VOCs. Headspace vapor screening for VOCs shall be conducted in accordance with Permit Section 8.10.2.4.vi. Field screening results shall be recorded on the boring logs. Soil samples shall be collected at the location specified in the unit-specific closure plans and at the locations and depths specified at Permit Section 6.3.8. The sample locations shall be measured to the nearest foot and be recorded on a scaled site map upon completion of each boring. Both sample information (*e.g.,* depth) and visual observations of the cuttings and core samples shall be recorded on the boring log. Site attributes (*e.g.*, soil sample locations, outfalls, pertinent structures) shall be located to the nearest foot on the site map.

6.3.10.3 Quality Assurance

Both soil and wipe samples shall be evaluated for associated data quality assurance. Field duplicates will be collected at a rate of ten percent of the number of environmental samples. The Permittees shall collect and analyze equipment blanks from all sampling apparatus at a frequency of ten percent of the number of environmental samples if disposable sampling equipment is not used. The Permittees shall collect field blanks at a frequency of one per day. Reagent blanks shall be used if analytical procedures requiring reagents are employed in the field as part of the investigation or monitoring program. Blanks and duplicates shall be submitted for laboratory analyses associated with the project-specific media being sampled. Data shall be validated and evaluated for quality in accordance with Permit Section 8.10.3.2.

6.4 CLOSURE PLANS

Closure plans for the Permitted Units must include the steps necessary for each Unit to be closed in accordance with this Permit Part and 40 CFR §§ 264.112(b)(4), 264.114, 264.178 as applicable, and 264.601 through 264.603 as applicable. The Unit-specific closure plans are located in Permit Attachment G (*Closure Plans*). The closure plans shall at a minimum include all unique closure procedures, an anticipated closure schedule, and a sampling and analysis plan (SAP) specifying the analytes to be sampled for and specific sampling locations. Closure Plans shall also contain the information specified at 40 CFR § 264.112(b).

6.5 SAMPLING AND ANALYSIS PLANS

SAPs shall include provisions to verify decontamination of the surfaces of structures and equipment; and to determine whether or not a release of hazardous or mixed wastes or hazardous constituents to any environmental media has occurred.

All SAPs shall, at a minimum, include:

1. *List of Constituents of Concern.* A list of hazardous and mixed waste or hazardous constituents to be sampled and analyzed for shall be included in the SAP of the unit-specific closure plan for each Permitted Unit. The list shall include all Hazardous Wastes and Mixed Wastes and hazardous constituents known or likely to have been managed at the Permitted Unit, including those associated with the EPA waste codes identified in the Permitteesô Part A application (see also Permit Attachment B).
2. *Site Plan for Decontamination Verification and Soil Samples.* The site plan shall include a figure or figures depicting the boundaries of the Permitted Unit and sampling locations as required at Permit Sections 6.3.7 and 6.3.8.

3. *Type of Samples.* The type of samples to be collected (*e.g.*, wipe, soil) at each sampling location.
4. *Sampling Methods.* A description of the approved *EPA SW-846,* ASTM, or other sampling methods and procedures that will be used to collect each type of sample.
5. *Analytical Methods.* A description of the approved *EPA SW-846* laboratory analytical methods and associated method detection limits. Method detection limits shall be commensurate with the clean closure criteria at Permit Section 6.2.1.
6. *Quality Assurance and Quality Control Procedures*. The SAP must include a description of the quality assurance and quality control (QA/QC) procedures to be used, including but are not limited to:
    a. field and laboratory quality control samples (*e.g.*, duplicates, trip blanks, equipment blanks); and
    b. a description of all sample preservation, handling, labeling, and chain-of-custody procedures.
7. A description of methods for decontamination of re-usable sampling equipment; and,
8. A description of the management of waste derived from the sampling activities.

6.6 AMENDMENT TO CLOSURE PLAN

The Permittees shall amend a Permitted Unitôs closure plan whenever:

1. New environmental media sampling locations are determined or if one or more constituents of concern (Permit Section 6.5(1)) are eliminated from the SAP as a result of the Records Review and Structural Assessment;
2. Conditions in 40 CFR § 264.112(c)(2) exist; or
3. The Permittees are unable to achieve clean closure.

If necessary, the Permittees shall amend a Permitted Unitôs closure plan at closure to correctly and completely identify all constituents of concern as specified in Permit Section 6.5(1).

Amendment of a Closure Plan shall be performed in accordance with 40 CFR § 264.112(c).

If a closure plan must be amended, the Permittees shall submit a permit modification request to seek authorization of a change in an approved Permitted Unit-specific closure plan in accordance with 40 CFR § 270.42. The request must include a copy of the amended closure plan and all proposed modifications to the plan.

6.7 PETITION FOR A VARIANCE TO CLEAN CLOSURE CRITERIA

The Permittees may seek the Departmentôs approval of a variance from the decontamination verification requirements for organic and inorganic constituents of concern in Permit Section 6.3.7 by submitting to the Department a written request for a determination that the attainment of the requirement is impracticable because of the inherent properties of the materials undergoing wipe sampling. The Department would consider a risk-based demonstration of attainment if the level of risk for organic and inorganic constituents of concern is based on an unrestricted human exposure scenario.

The request shall include, but not be limited to, the following:

1. A statement of the proposed variance;
2. A discussion of decontamination and sampling activities conducted in accordance with the closure plan and the associated analytical results;
3. The analytical or other data demonstrating the effectiveness of decontamination;
4. The analytical or other data demonstrating the Permitteesô inability to attain the requirements under Permit Section 6.3.7;
5. A discussion of the properties of the equipment or surface pertinent to the requested variance and all analytical or other data demonstrating the chemical or physical properties of the equipment or surface that inhibit attainment of the requirements;
6. A justification for why further decontamination beyond the requirements in the closure plan would not be effective;
7. All other supporting documentation and analyses; and
8. Other information requested by the Department.

6.8 CORRECTIVE ACTION

If after removal of contaminated soil or base materials in accordance with Permit Section 6.3.8 the Permittees find the soil or other materials (*e.g.*, base materials) continue to pose an unacceptable risk to human health and the environment, the Permittees shall initiate and conduct corrective action in accordance with Permit Section 8.8.5, and shall amend the applicable closure plan in accordance with Permit Section 6.6 to describe the proposed corrective action. The proposed amended closure plan shall identify and describe the actions necessary to determine both the lateral and vertical extent of contamination of any release and obtain any other information necessary to determine the nature and risk of the contamination to human health and the environment and to choose an appropriate remedial action.

6.9 WASTE GENERATED DURING CLOSURE

By removing or decontaminating any structures, equipment, soil, or base materials during closure the Permittees may become a generator of waste. The Permittees shall manage those wastes in compliance with all applicable state, federal, and local requirements (*see* 40 CFR § 264.114).

6.10 CLOSURE REPORT AND CERTIFICATION

No later than 60 days after completing closure activities at a Permitted Unit, the Permittees shall submit a closure report (Report) for the Unit to the Department for review and approval. The Report shall document that the Permitted Unit has been closed in compliance with this Permit Part and the approved Unit-specific closure plan. A certification that is signed by the Permittees and by an independent New Mexico licensed professional engineer that the Unit was closed in accordance with the specifications in the approved closure plan must be included with the Report (*see* 40 CFR § 264.115).

The Report shall also contain:

1. A summary of all closure activities conducted, including at a minimum:
    a. the results of all investigations;
    b. remediation waste management;

   c. decontamination and removal activities; and
   d. sampling activities.

2. A discussion of any variance from the activities previously approved in a closure plan and the reason for the variance;

3. A detailed presentation of sampling results, including:

   a. sample identification;
   b. sampling location;
   c. laboratory analytical data, including any data qualifiers;
   d. method detection limit for each analyte;
   e. field and analytical laboratory quality control data
   f. identification of analytical procedure; and
   g. identification of analytical laboratory.

4. A discussion of data validation;

5. The location of supporting documentation, including:

   a. field logbooks;
   b. laboratory sample analysis reports;
   c. QA/QC documentation;
   d. chain-of-custody forms; and
   e. waste manifest.

6. The location of storage or disposal of hazardous and mixed waste resulting from closure activities; and

7. A copy of the Human Health and Ecological Risk Assessment Reports, if a risk assessment was necessary.

PERMIT PART 7 POST-CLOSURE CARE

7.1 GENERAL PROVISIONS FOR POST-CLOSURE CARE

The Permittees shall conduct all post-closure care activities at the Permitted Units identified in Attachment J (*Hazardous Waste Management Units)* Table J-2 (*Hazardous Waste Management Units Undergoing Post-Closure Care*) in accordance with this Permit Part, the provisions in 40 CFR §§ 264.117 through 264.120, which are incorporated herein by reference, and in accordance with the provisions of a Department-approved post-closure plan for the unit developed pursuant to Permit Section 7.1.1. (*See* 40 CFR § 264.117(d)).

For the Corrective Action Management Unit (CAMU), the Permittees shall conduct all post-closure activities in accordance with this Permit Part, Permit Section 7.3, the provisions in 40 CFR §§ 264.117 through 264.120, and in accordance with Permit Attachment H.

In accordance with 40 CFR § 264.117(a)(1), post-closure care for any Permitted Unit subject to these requirements must begin after completion of closure of the unit, continue for 30 years after that date, and must consist of at least the following:

1. Monitoring and reporting in accordance with the applicable requirements of 40 CFR Part 264, Subparts F, N, S, and X; and
2. Maintenance and monitoring of waste containment systems in accordance with the applicable requirements of 40 CFR Part 264, Subparts F, N, S, and X.

Any time preceding closure of a Permitted Unit subject to post-closure care requirements, or at any time during the post-closure period, the Department may, in accordance with the permit modification procedures in 40 CFR Parts 124 and 270:

1. Shorten the post-closure care period applicable to the Permitted Unit if all disposal units have been closed, if it is found that the reduced period is sufficient to protect human health and the environment; or
2. Extend the post-closure care period applicable to the Permitted Unit if it is found that the extended period is necessary to protect human health and the environment

(*See* 40 CFR §§ 264.117(a)(2)(i) and (ii)).

7.1.1 Post-Closure Plan

The Permittees shall ensure that the post-closure plan identifies all the activities after closure of each Permitted Unit for which clean closure is not achieved, and the frequency of these activities, including but not limited to:

1. A description of the planned monitoring activities and frequencies at which they will be performed to comply with 40 CFR Part 264, Subparts F, N, S, and X;
2. A description of the planned maintenance activities, and frequencies at which they will be performed to ensure, at a minimum:
    a. the integrity of the cap and final cover or other containment systems, if applicable, in accordance with the requirements of 40 CFR Part 264, Subparts F, N, S, and X;

b. the function of the monitoring equipment in accordance with the requirements of 40 CFR Part 264, Subparts F, N, S, and X;

3. The name, address and phone number of the person(s) or office to contact regarding the unit during the post-closure care period;
4. Sampling and analysis of waste, contaminated media, or both, during the post-closure period;
5. Security requirements during the post-closure period;
6. Inspection requirements, including schedules;
7. Alternative requirements, if any, under 40 CFR § 264.110(c), that apply to the closed unit, or a reference to the enforceable document containing those requirements; and
8. Post-closure plans shall define the beginning date and duration of post-closure care in accordance with this Permit Section 7.1. (*See* 40 CFR §§ 264.118(a) and (b)).

After certification of final closure has been approved by the Department, the person or office specified in Section 7.1.1(3) of this Permit Part shall keep the approved post-closure plan during the remainder of the post-closure care period. (S*ee* 40 CFR § 264.118(c)).

7.1.2 Amendment of the Post-Closure Plan

At any time during the post-closure care period, the Permittees may submit a written request to the Department to approve a permit modification to amend the requirements of this Permit Part or the requirements of an approved post-closure plan. The Permittees shall submit a written request for such a permit modification whenever modifications are needed because of changes in regulatory requirements or if modifications are needed to ensure protection of human health or the environment.

The Permittees shall submit a request for a permit modification in accordance with 40 § CFR 264.118(d). The written request must include a copy of the proposed amended post-closure plan for review and approval by the Department.

7.2 NOTICES, CERTIFICATIONS, AND RECORDS FOR POST-CLOSURE CARE

7.2.1 Notification Requirements

The Permittees shall maintain in the Facility Operating Record copies of all documentation submitted to the local zoning authority or the authority with jurisdiction over local land use. For units closed with wastes in place, no later than 60 days after certification of closure the Permittees shall submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Department a record of the type, location, and quantity of hazardous wastes and hazardous constituents remaining within each Permitted Unit. (*See* 40 CFR §§ 264.119(a). Such a record has already been submitted by the Permittees for the CAMU and does not need to be resubmitted when this Permit becomes effective.

7.2.2 Record Requirements

The Permittees shall maintain documentation of closure of all hazardous waste management units. (S*ee* 40 CFR § 264.119(b) and 40 CFR § 270.32(b)(2)).

For Permitted Units subject to post-closure care, the Permittees shall record a notation on the deed to the Facility property, or on some other instrument that is normally examined during the title search, that will in perpetuity notify any potential purchaser of the property of the following:

1. The land has been used to manage hazardous wastes;
2. Its use is restricted under 40 CFR Part 264, Subpart G; and
3. The survey plat and record of the type, location, and quantity of hazardous wastes managed at the Permitted Unit at the Facility has been filed with the Department.

The Permittees shall maintain training, operating, inspection and monitoring, and other required records. (*See* 40 CFR 264.73).

The Permittees shall maintain copies of all reports submitted to the Department during post-closure care period until the end of post-closure care. (*See* 40 CFR §§ 264.119(b)(1) and 270.32(b)(2)).

7.2.3 Completion of Post-Closure Care Requirements

No later than 60 days after completion of the post-closure care period for a hazardous waste management unit for which post-closure care is required, the Permittees shall submit to the Department a certification that the post-closure care for the hazardous waste management unit was performed in accordance with the requirements of the approved Post-Closure Plan developed pursuant to Permit Section 7.1.1, and for the CAMU, Permit Attachment H. The certification must be signed by the Permittees and an independent, New Mexico registered professional engineer. Documentation supporting the independent, registered professional engineer's certification must be furnished to the Department in conjunction with the certification. (*See* 40 CFR §§ 264.120 and 270.32(b)(2)).

7.3 POST-CLOSURE CARE OF THE CAMU

In addition to those specified in Permit Section 7.1, the Permittees shall comply with the requirements at 40 CFR § 264.552(e)(6)(v). As part of the requirements in this Permit, the Permittees shall conduct the following activities at the CAMU to protect human health and the environment:

1. Maintain the integrity and effectiveness of the final cover by making repairs as necessary to correct the effects of settling, subsidence, erosion, plant or animal intrusion, or other events that compromise the final cover;
2. Maintain and monitor the LCRS and the VZMS as specified herein;
3. Use engineering controls to minimize erosion damage to the final cover from run-on and run-off of surface water;
4. Maintain fencing, security signs, and locks;
5. Maintain training, operating, inspection and monitoring, and other required records; and
6. Submit an annual report to the Department in accordance with Permit Attachment H, Section H.9.

PERMIT PART 8 CORRECTIVE ACTION

8.1 CORRECTIVE ACTION REQUIREMENTS UNDER THE CONSENT ORDER

The Department and the Permittees have agreed to a Compliance Order on Consent (Consent Order) dated April 29, 2004, which requires the Permittees to conduct corrective action at all solid waste management units (SWMUs) and Areas of Concern (AOCs), at the Facility to fulfill the requirements of 40 CFR § 264.101. The Consent Order is an enforceable document pursuant to 40 CFR §§ 264.90(f), 264.110(c), and as defined in 40 CFR § 270.1(c)(7). Nothing in this Permit Part shall be construed to constitute a change to the Consent Order.

8.1.1 Integration with Consent Order

The Permittees shall conduct corrective action under this Permit (or other enforceable document) rather than the Consent Order, in the following circumstances:

1. New releases and newly discovered releases of hazardous waste or hazardous waste constituents from hazardous waste management units at the Facility;
2. At units undergoing closure and post closure care under 40 CFR Part 264, Subpart G, as they apply to Permitted Units at the Facility;
3. Implementation of the controls, including long-term monitoring, for any Solid Waste Management Unit (SWMU), Area of Concern (AOC), or hazardous waste management unit on Attachment K, Table K-3;
4. Releases of hazardous wastes or hazardous constituents that occur or are discovered after the date on which the Consent Order terminates.

(*See* § III.W.1 of the Consent Order).

The Permittees shall conduct corrective action as necessary to protect human health and the environment from any releases of hazardous waste or hazardous waste constituents pursuant to this Permit and in accordance with §§ 74-4-4(A)(5)(h) and (i) and 74-4-4.2(B) of the HWA and Section 3004(u) and (v) of RCRA, 42 U.S.C. § 6924(u) and (v) and 40 C. F. R. Part 264, Subparts F and G. Corrective action for releases from hazardous waste management units that commingle with releases originating from other sources undergoing corrective action under the Consent Order shall be conducted under the Consent Order. Any SWMU or AOC for which corrective action is required that is not subject to corrective action under the Consent Order shall be subject to corrective action under this Permit Part and 40 CFR §§ 264.100 and 264.101, which are incorporated herein by reference. The status of a SWMU or AOC will be indicated through placement in the appropriate Table in Permit Attachment K following the Class 3 permit modification process as specified in Permit Section 8.7.

8.2 GENERAL REQUIREMENTS

8.2.1 Identification and Status of SWMUs, AOCs and Hazardous Waste Management Units

Permit Attachment K, Table K-1 (SWMUs and AOCs Requiring Corrective Action under the Consent Order) lists the SWMUs and AOCs at the Facility for which corrective action is required under the Consent Order; Attachment K, Table K-2 (SWMUs and AOCs Requiring Corrective Action under the Permit) identifies the SWMUs, AOCs, and hazardous waste management units for which corrective action is required under this Permit. Table K-1 will be modified as appropriate to include any newly identified SWMUs, AOCs, and releases from hazardous waste management units for tracking purposes. Releases not associated with SWMUs or hazardous waste management units will be designated as AOCs on Tables K-1 and K-2. Attachment K, Table K-3 (Corrective Action Complete with Controls) lists the SWMUs, AOCs, and hazardous waste management units for which corrective action is complete with controls.

Permit Attachment K, Table K-4 (Corrective Action Complete without Controls) provides a listing of the SWMUs, AOCs, and hazardous waste management units for which corrective action is complete without controls and that do not require monitoring.

Attachment J, Tables J-1.1, J-1.2, J-2, and J-3, list the hazardous waste management units at the Facility and their status (e.g., permitted, under post-closure care, closed). A map showing the locations of SWMUs and AOCs at the Facility is presented in Figure 52.

8.3 GENERAL CONDITIONS

8.3.1 Corrective Action Beyond the Facility Boundary

The Permittees shall notify the Department, orally and in writing in accordance with Permit Section 1.9.9.4, upon discovering that a release of hazardous waste or hazardous constituents has migrated beyond the Facility boundary or has the potential to migrate beyond the Facility boundary.

In the event that hazardous waste or hazardous constituents migrate beyond the Facility boundary, the Permittees shall implement corrective action beyond the Facility boundary as necessary to protect human health and the environment, unless the Permittees demonstrate to the Department that, despite the Permitteesô best efforts, the Permittees are unable to obtain the necessary permission to undertake such actions. The Permittees are not relieved of any responsibility to clean up a release that has migrated beyond the Facility boundary where off-site access has been denied. On-site measures to address such releases shall be taken, to be determined on a case-by-case basis (*see* 40 CFR § 264.101(c)).

8.3.2 Off-Site Access

To the extent that any corrective action requirement of this Permit requires access to property not owned or controlled by the Permittees, the Permittees shall use their best efforts to obtain access from the present owners of such property to conduct the required activities and to request the present owners allow the Department access to such property to oversee such activities. In the

event that the Permittees do not obtain such access, the Permittees shall notify the Department in writing regarding its best efforts and its failure to obtain such access.

8.3.3 Newly Discovered Releases

The Permittees shall notify the Department, orally and in writing in accordance with Permit Section 1.9.9.3., upon discovery of any previously unknown release of hazardous waste or hazardous constituents into soil, sediment, surface water, or groundwater. The Department may determine that further investigation of the release is needed. The Department may also determine that corrective action is needed to address the release. If the Department makes such a determination, it will notify the Permittees in writing.

8.3.4 Field Activities

The Permittees shall notify the Department in writing of any field sampling or other field activities undertaken pursuant to any corrective action requirement of this Permit, and shall allow the Department to collect split samples upon request of the Department. For such sampling or other field activities, the Permittees shall notify the Department no less than 15 days prior to the commencement of such sampling.

8.3.5 Health and Safety Plans

The Permittees shall prepare Health and Safety Plans for all field activities undertaken pursuant to any corrective action requirement of this Permit.

Health and Safety Plans shall include:

1. A description of the area near the planned field activity;
2. A description of the known hazards and evaluation of the risks associated with each activity conducted, including, but not limited to, on and off-site exposure to contaminants during implementation of interim or final corrective measures, site characterization, or monitoring activities;
3. A list of key personnel and alternates who are responsible for site safety, response operations, and protection of public health;
4. A delineation of the work area;
5. A description of levels of protection to be worn by personnel in the work area;
6. Procedures established to control site access;
7. Decontamination procedures for personnel and equipment;
8. Site emergency procedures;
9. Emergency medical care procedures for injuries and toxicological problems;
10. Requirements for an environmental field-monitoring program if applicable;
11. Routine and special training requirements for responders if applicable; and
12. Procedures for protecting workers from weather-related problems.

Health and Safety Plans shall be in accordance with:

1. National Institute of Occupational Safety and Health (NIOSH) Occupation Safety and
2. Health Guidance Manual for Hazardous Waste Site Activities (1985); and
3. Applicable requirements in Occupational Safety and Health Administration regulations, particularly 29 CFR § 1910 and 1926.

8.3.6 Recordkeeping

The Permittees shall maintain all monitoring data, including sampling procedures, records of field measurements, laboratory analytical data, quality assurance/quality control documents, chain-of-custody records, well completion reports and periodic monitoring reports in the Facility Operating Record for a minimum of three years after the end of the operating life of the Facility and a minimum of three years after the end of any post-closure care periods.

8.4 CLEANUP LEVELS

The Department and the New Mexico Water Quality Control Commission (WQCC) have separately specified certain cleanup goals and methods of calculating cleanup levels. The Department has also specified certain reporting requirements for sites where corrective action is required in response to releases to the environment. In general, the Department has selected a human health target risk level of 10^{-5} for carcinogenic substances and a Hazard Index (HI) of 1.0 for non-carcinogenic substances as cleanup goals for establishing site-specific cleanup levels for one or more contaminants for which toxicological data are published. The Permittees shall follow the cleanup and screening levels described in this Permit Part in implementing the corrective action requirements of this Permit. In addition, cleanup levels for the protection of the environment shall address ecological risk consistent with the Departmentôs guidance for assessing ecological risk as specified in Permit Section 8.5.

8.4.1 Groundwater Cleanup Levels

The cleanup levels for all contaminants in groundwater shall be the WQCC groundwater quality standards, 20.6.2.3103 NMAC, the cleanup levels for toxic pollutants calculated in accordance with 20.6.2.7.WW NMAC, and the drinking water maximum contaminant levels (MCLs) adopted by EPA under the federal Safe Drinking Water Act (42 U.S.C. §§ 300f to 300j-26) or the New Mexico Environmental Improvement Board (EIB), 20.7.10 NMAC. If both a WQCC water quality standard and an MCL have been established for an individual substance, then the lower of the levels shall be the cleanup level for that substance. The WQCC standards apply to the dissolved portion of contaminants with the exception of mercury, organic compounds, and non-aqueous phase liquids. Mercury, organic compounds, and non-aqueous phase liquids shall be evaluated based on total, unfiltered concentrations; EPA MCL standards shall apply to the total unfiltered concentrations.

The most recent version of NMEDôs Tap Water Screening Levels listed in Table A-1 of Technical Background Document for Development of Soil Screening Levels (as updated) shall be used to establish the cleanup level if either a WQCC standard or an MCL has not been established for a specific substance. In the absence of an NMED tap water screening level then the EPA Regional Screening Levels for Chemical Contaminants at Superfund Sites (RSLs) for

tap water shall be used. If no WQCC groundwater standard or MCL has been established for a contaminant for which toxicological information is published, the Permittees shall use a target excess cancer risk level of 10^{-5} for carcinogenic substances and a HI of 1.0 for non-carcinogenic substances as the basis for proposing a cleanup level for the contaminant. If the background concentration of an inorganic constituent, as established in accordance with Permit Section 8.10.6, exceeds the standard then the cleanup level is the background concentration for that specific substance. Any cleanup level based on a risk assessment must be submitted to the Department for its review and approval.

The Permittees shall give notice by e-mail to persons on the e-mail notification list in accordance with Permit Section 1.17.2.2 of a submittal to the Department under this Permit Section (8.4.1).

8.4.2 Soil and Sediment

The cleanup levels for soil and sediments shall be the cleanup levels for soil set forth in Permit Section (8.4.3). Should the Permittees be unable to achieve the Soil Cleanup Levels established under Permit Section 8.4.3, they shall conduct risk assessments in accordance with Permit Sections 8.10.4 and 8.10.5. Any cleanup level based on a risk assessment must be submitted to the Department for its review and approval.

8.4.3 Soil Cleanup Levels

The Department has specified soil-screening levels that are based on a target total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target HI of 1.0 for residential, industrial land use, and the construction worker scenarios. If the potential for migration to groundwater is applicable for a site, the Department may determine that a dilution attenuation factor (DAF) of one or greater, as calculated using the Department-approved methods, for contaminated soils is appropriate to achieve clean closure. This approach may apply at sites where the migration of contaminants through the soil column to groundwater has occurred or when the Department determines that the potential exists for migration of contaminants through the soil column to groundwater. Soil cleanup levels shall be the target soil screening levels listed in the Departmentôs Technical Background Document for Development of Soil Screening Levels (as updated). If a Department soil screening level has not been established for a substance for which toxicological information is published, the soil cleanup level shall be established using the most recent version of the EPA RSL for residential and industrial soil for compounds designated as ñnò (non-carcinogen effects) or ten times the EPA RSL for compounds designated ñcò (carcinogen effects). The cumulative risk shall not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target HI of 1.0 at sites where multiple contaminants are present.

If the current and reasonably foreseeable future land use is one for which the Department has not established soil screening levels, the Permittees may propose cleanup levels to the Department based on a risk assessment and a target excess cancer risk level of 10^{-5} for carcinogenic substances or an HI of 1.0, based on current and reasonably foreseeable future land use (e.g., residential, recreational, industrial, construction worker).

8.4.4 Soil Cleanup Levels for Polychlorinated Biphenyls

The soil cleanup level for PCBs is either a default concentration of 1 milligram per kilogram (mg/kg) for total PCBs or a risk-based PCB concentration level established through performing a health risk assessment using a target excess cancer risk level of 10^{-5} for carcinogenic substances or an HI of 1.0. (NMED Risk-based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites (as updated)).

8.4.5 Surface Water Cleanup Levels

The Permittees shall comply with the surface water quality standards outlined in the Clean Water Act (33 U.S.C. §§ 1251 to 1387), the New Mexico WQCC Regulations (20.6.2 NMAC), and the State of New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC).

8.5 ECOLOGICAL RISK EVALUATION

Screening for ecological risk shall be conducted using U.S. EPAôs ECO-SSLs with the Department approval. The Permittees shall derive a screening level using the methodology in the Departmentôs Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment (as updated). Ecological risk at each site shall be evaluated in a manner consistent with the Departmentôs Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment (as updated) and, if appropriate, Assessing Ecological Risks Posed by Radionuclides: Screening-Level Radioecological Risk Assessment (as updated). Provided that any changes to the document are approved in advanced by the Department, procedures in the document Predictive Ecological Risk Assessment Methodology, Environmental Restoration Project, Sandia National Laboratories, NM, developed by Sandia National Laboratories/New Mexico may be used instead of the ecological screening levels cited in the guidance above. If no scientifically valid toxicological studies exist for a particular receptor and/or contaminant, the contaminant and receptor combination shall be addressed using qualitative methods.

8.6 VARIANCE FROM CLEAN-UP LEVELS

The Permittees may seek a variance from a particular cleanup level in accordance with this Permit Section (8.6).

8.6.1 Water Quality Standards

For a cleanup level based on a water quality standard set by the WQCC, the Permittees may seek approval of an alternative abatement standard in accordance with the process specified in the WQCC Regulations, 20.6.2.4103.E and F NMAC.

8.6.2 Other Cleanup Levels

For all other cleanup levels, the Permittees may seek approval of a variance from a cleanup level by submitting to the Department a written request for a determination that attainment of the cleanup level is impracticable. The request must include a demonstration that attaining the

cleanup level is technically or physically impossible or otherwise impractical using potential corrective action remedies. The request shall include, at a minimum, the following:

1. A discussion of the effectiveness of potential corrective action remedies;
2. A discussion of whether the proposed variance would result in a present or future hazard to public health or the environment;
3. Proposed alternate cleanup levels that are practical, based on potential corrective action remedies and a site-specific risk assessment;
4. All supporting documentation and analyses; and
5. Any other information requested by the Department.

If the Department approves the Permitteesô impracticability demonstration, it will notify the Permittees in writing, and such notice will describe the specific action to be taken by the Permittees.

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a request under this Permit Section (8.6.2), in accordance with Permit Section 1.17.2.2.

8.7 PERMIT MODIFICATION FOR CORRECTIVE ACTION COMPLETE

The Permittees may submit to the Department a request for a Class 3 permit modification to change the status of a SWMU or AOC from ñcorrective action requiredò to ñcorrective action complete.ò The permit modification will move the SWMU or AOC from Attachment K (Listing of SMWUs and AOCs), Table K-1 (SWMUs and AOCs Requiring Corrective Action) to Attachment K, Table K-2 (Corrective Action Complete with Controls) or Attachment K, Table K-3 (Corrective Action Complete without Controls) pursuant to the terms of this Permit.

The Departmentôs determination that corrective action is complete for a SWMU or AOC placed on either the Corrective Action Complete with Controls list or the Corrective Action Complete without Controls list will be subject to the Departmentôs reservation of rights for new information or unknown conditions. In the event the Department seeks to require additional work at any SWMU or AOC contained on either of the two lists, the Department will initiate a permit modification to remove the SWMU or AOC from the corrective action complete lists.

8.7.1 Long-term Monitoring and Maintenance of SWMUs and AOCs

The Permittees shall submit a Long-term Monitoring and Maintenance Plan as part of the permit modification request, as described in Permit Section 8.7, to change the status of a SWMU or AOC from corrective action required (i.e., listed in Attachment K, Table K-1) to corrective action complete with controls (i.e., listed in Attachment K, Table K-3). The Plan shall describe the combination of ongoing measures required to ensure protection of human health and the environment, such as maintenance of physical or institutional controls, monitoring of environmental media, or other measures. Upon approval, such plans shall be included in Attachment M (Long-term Monitoring and Maintenance Plans).

8.8 CORRECTIVE ACTION PROCEDURES

The Permittees shall conduct corrective action at sites where releases of hazardous waste or hazardous constituents have occurred. If corrective action is necessary to protect human health or the environment, the Department will direct the Permittees to complete one or more of the requirements included in this Permit Section (8.8). The conditions listed below apply to all corrective action conducted under this Permit unless otherwise specified in Permit Part 6 (Closure Requirements).

8.8.1 Release Assessment

8.8.1.1 Release Assessment Report

If required by the Department, the Permittees shall submit a Release Assessment Report for newly discovered releases from any Permitted unit. Any revisions to the Release Assessment Report required by the Department shall be submitted within 90 calendar days of receipt of the Department's comments on the Release Assessment Report.

The Release Assessment Report shall, at a minimum, include the following information:

1. Location of unit(s) on a topographic map of appropriate scale, as required under 40 CFR § 270.14(b)(19);
2. Designation of type and function of unit(s);
3. General dimensions, capacities and structural description of unit(s) (supply any available plans/drawings);
4. Dates that the unit(s) was operated;
5. All available site history information;
6. Specifications of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous waste or hazardous constituents in the wastes; and
7. All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include ground water data, soil analyses, air, and surface water data).

8.8.1.2 Requirement to Proceed

The Department will review the Release Assessment Report to determine whether any further investigative action is required. The Department will notify the Permittees of the need for confirmatory sampling, if necessary, or notify the Permittees that an Investigation Work Plan is required in accordance with the requirements in Permit Section 8.8.5.1. The Department will notify the Permittees of any corrective action complete decision.

8.8.2 Interim Measures

8.8.2.1 Department-Initiated Interim Measures

Upon written notification by the Department, the Permittees shall prepare and submit an Interim Measures (IM) Work Plan where the Department determines that interim measures are necessary to minimize or prevent the migration of hazardous waste or hazardous constituents and limit actual or potential human and environmental exposure to hazardous waste or hazardous constituents while long term corrective action remedies are evaluated and implemented. The Permittees shall submit its IM Work Plan to the Department within 90 calendar days of the Departmentôs notification, unless another time period is specified by the Department. Such interim measures may be conducted concurrently with any required corrective action. The Permittees shall prepare and submit IM Work Plans in accordance with the work plan format included in Permit Section 8.12 (Reporting Requirements).

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a submittal made under this Permit Section (8.8.2.1), in accordance with Permit Section 1.17.2.2.

8.8.2.2 Permittee-Initiated Interim Measures

The Permittees may initiate interim measures at a unit by notifying the Department, in writing, at least 30 calendar days prior to beginning the Interim Measures. The Department will approve the Permittees-initiated IM, conditionally approve the IM, or require submittal of an IM Work Plan for the Department approval prior to implementation of the IM.

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a submittal made under this Permit Section (8.8.2.2), in accordance with Permit Section 1.17.2.2.

8.8.3 Emergency Interim Measures

The Permittees may determine, during implementation of site investigation activities, that emergency interim measures are necessary to address an immediate threat of harm to human health or the environment. The Permittees shall notify the Department within one business day of discovery of the facts giving rise to the threat, and shall propose emergency interim measures to address the threat. If the Department approves the emergency interim measures in writing, the Permittees may implement the proposed emergency interim measures without submitting an IM Work Plan. If circumstances arise resulting in an immediate threat to human health or the environment such that initiation of emergency interim measures are necessary prior to obtaining written approval from the Department, the Permittees shall notify the Department within one business day of taking the emergency interim measure. The notification shall contain a description of the emergency situation, the types and quantities of contaminants involved, the emergency interim measures taken, and contact information for the emergency coordinator handling the situation. The notification shall also include a written statement justifying the need to take the emergency action without prior written approval from the Department. This requirement shall not be construed to conflict with 40 CFR §§ 264.1(g)(8) or 270.61.

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a submittal made under this Permit Section (8.8.3), in accordance with Permit Section 1.17.2.2.

8.8.4 IM Work Plan Requirements

The IM Work Plan shall ensure that the interim measures are designed to mitigate any current or potential threat(s) to human health or the environment and is consistent with, and integrated into, any final corrective measures at the Facility. The IM Work Plan shall include the interim measures objectives, procedures for implementation (including any designs, plans, or specifications), and schedules for implementation.

8.8.4.1 Interim Measures Implementation

8.8.4.1.i Implementation and Completion of Approved IM Work Plan

The Permittees shall implement interim measures required under Permit Section 8.8.2 in accordance with the Department-approved IM Work Plan. The Permittees shall complete interim measures within 180 calendar days of the start of implementation of the interim measure. The Permittees may submit a written request to the Department to extend the period for implementation of the interim measure. The request must provide justification for the extension and a proposed schedule for completion of the interim measure. The Department will notify the Permittees, in writing, of the approval or disapproval of the request within 30 calendar days of receipt of the IM implementation extension request.

8.8.4.1.ii Notification of Changes

The Permittees shall give notice to the Department as soon as possible of any planned changes, reductions or additions to the IM Work Plan required by the Department under Permit Section 8.8.2.1 or initiated by the Permittees in accordance with Permit Section 8.8.2.2.

8.8.4.1.iii Interim Measures Reports

The Permittees shall submit to the Department for review and approval, within 90 calendar days of completion of interim measures, an IM Report summarizing the results of interim measure implementation. The IM Report shall contain, at a minimum, the following information:

1. A description of interim measures implemented;
2. Summaries of results;
3. Summaries of all problems encountered during IM investigations;
4. Summaries of accomplishments and/or effectiveness of interim measures; and,
5. Copies of all relevant laboratory/monitoring data, maps, logs, and other related information.

8.8.5 Corrective Action Investigations

8.8.5.1 Investigation Work Plan

8.8.5.1.i Investigation Work Plan Submittal

The Permittees shall submit to the Department Investigation Work Plans for permitted or interim status units where the Department determines that corrective action is necessary to investigate releases to the environment.

8.8.5.1.ii Investigation Work Plan Requirements

Investigation Work Plans shall meet the requirements specified in Permit Section 8.12 (Reporting Requirements). Investigation Work Plans shall include schedules of implementation and completion of specific actions necessary to determine the nature and extent of contamination and the potential pathways of contaminant releases to the air, soil, surface water, and ground water. The Permittees shall provide sufficient justification and associated documentation that a release is not probable or has already been characterized if a unit or a media/pathway associated with a unit (ground water, surface water, soil, subsurface gas, or air) is not included in an Investigation Work Plan. Such deletions of a unit, medium, or pathway from the work plan(s) are subject to the approval of the Department. The Permittees shall provide sufficient written justification for any omissions or deviations from the minimum requirements specified in Permit Section 8.12 (Reporting Requirements). Such omissions or deviations are subject to the approval of the Department. In addition, Investigation Work Plans shall include all investigations necessary to ensure compliance with 40 CFR § 264.101.

8.8.5.1.iii Historical Documents

The Permittees shall submit to the Department a summary of the historical information and assessment of potential contaminant releases relating to each unit in conjunction with the unit-specific Investigation Work Plan including the most complete, legible, extant (i.e., existing) copies of all associated photographic imprints, maps, figures, drawings, tables, attachments, enclosures, appendices and other relevant supporting documentation. Such summaries shall be submitted as separate documents and not as part of the site-specific Investigation Work Plans.

8.8.5.1.iv Investigation Work Plan Implementation

The Permittees shall implement Investigation Work Plans as approved by the Department. The Permittees shall notify the Department at least 15 days prior to any permit or corrective action-related field activity (e.g., drilling, sampling).

8.8.5.2 Corrective Action Investigation Reports

The Permittees shall prepare and submit to the Department Investigation Reports for the investigations conducted in accordance with Investigation Work Plans submitted under Permit Section 8.8.5.1. The Permittees shall submit the Investigation Reports to the Department for review and approval in accordance with the schedules included in its approved Investigation Work Plans.

The Investigation Reports shall include an analysis and summary of all required investigations conducted under this Permit. The summary shall describe the type and extent of contamination at each unit investigated including sources and migration pathways, identify all hazardous waste or constituents present in all media, and describe actual or potential receptors. The Investigation Report shall also describe the extent of contamination (qualitative and quantitative) in relation to background levels for the area. If the Investigation Report concludes that further work is necessary, the report shall include a schedule for submission of a work plan for the next phase of investigation.

8.8.5.2.i Cleanup Levels

The Investigation Reports shall identify the applicable cleanup levels in accordance with Permit Sections 8.4 through 8.6 for each hazardous waste or hazardous constituent found at each unit where corrective action is required. The Permittees shall propose in the Investigation Report or in a subsequent Risk Assessment or Corrective Measures Evaluation appropriate cleanup levels for those hazardous wastes or hazardous constituents without established cleanup levels based upon human and ecological risk.

8.8.5.2.ii Requirement to Proceed

Based upon the Departmentôs review of the Investigation Report, the Department will notify the

Permittees of the need for further investigative action, if necessary, and inform the Permittees, if not already notified, of the need for a Corrective Measures Evaluation. The Department will notify the Permittees if corrective action is complete. If the Department determines that further investigation is necessary, the Department will require the Permittees to submit a work plan for approval that includes a proposed schedule for additional investigation(s).

8.8.5.3 Risk Assessment

The Permittees shall attain the cleanup goals outlined in Permit Sections 8.4 through 8.6. If the Department determines that the cleanup levels included in Permit Sections 8.4 and 8.5 cannot be achieved at a site, the Department will require performance of risk analyses to establish alternative cleanup levels. Such risk analyses shall be prepared in the format included in the Permit Section 8.12 (Reporting Requirements). The Permittees shall submit to the Department for approval a Risk Assessment Report in accordance with this Permit Section (8.8.5.3) according to the schedule set forth by the Department for sites where risk analyses are conducted.

8.8.6 Corrective Measures Evaluation

8.8.6.1 General

The Department will require corrective measures at a unit if the Department determines, based on the Investigation Report and other relevant information available to the Department, that there has been a release of contaminants into the environment at the site and that corrective action is necessary to protect human health or the environment from such a release. Upon making such a determination, the Department will notify the Permittees in writing. The Department will specify a date for the submittal of the necessary reports and evaluations in the written notification.

8.8.6.2 Corrective Measures Evaluation Report

Following written notification from the Department that a corrective measures evaluation is required, the Permittees shall submit to the Department for approval a Corrective Measures Evaluation Report. The Permittees shall follow the Corrective Measures Evaluation Report format outlined in Permit Section 8.12 (Reporting Requirements). The corrective measures evaluation shall evaluate potential remedial alternatives and shall recommend a preferred remedy

that will be protective of human health and the environment and that will attain the appropriate cleanup goals. The Corrective Measures Evaluation Report shall, at a minimum, comply with Permit Section 8.12 (Reporting Requirements) and include the following:

1. A description of the location, status, and current use of the site;
2. A description of the history of site operations and the history of releases of contaminants;
3. A description of site surface conditions;
4. A description of site subsurface conditions;
5. A description of on- and off-site contamination in all affected media;
6. An identification and description of all sources of contaminants;
7. An identification and description of contaminant migration pathways;
8. An identification and description of potential receptors;
9. A description of cleanup standards or other applicable regulatory criteria;
10. An identification and description of a range of remedy alternatives;
11. Remedial alternative pilot or bench scale testing results;
12. A detailed evaluation and rating of each of the remedy alternatives, applying the criteria set forth in Permit Section.8.6.4 including costs for long-term monitoring and maintenance (Reporting Requirements);
13. An identification of a proposed preferred remedy or remedies;
14. Design criteria of the selected remedy or remedies; and
15. A proposed schedule for implementation of the preferred remedy.

8.8.6.3 Cleanup Standards

Following written notification from the Department that a corrective measures evaluation is required, the Permittees shall submit to the Department for approval a Corrective Measures Evaluation Report. The Permittees shall follow the Corrective Measures Evaluation Report format outlined in Permit Section 8.12 (Reporting Requirements). The corrective measures evaluation shall evaluate each of the remedy alternatives. The Permittees shall select corrective measures that are capable of achieving the clean-up standards and goals outlined in Permit Sections 8.4 through 8.6 (Clean-up Levels) including, as applicable, approved alternative clean-up goals established by a risk assessment.

8.8.6.4 Remedy Evaluation Criteria

8.8.6.4.i Threshold Criteria

The Permittees shall evaluate each of the remedy alternatives for the following threshold criteria. To be selected, the remedy alternative must:

1. Be protective of human health and the environment;
2. Attain media cleanup standards;

3. Control the source or sources of releases so as to reduce or eliminate, to the extent practicable, further releases of contaminants that may pose a threat to human health and the environment; and
4. Comply with applicable standards for management of wastes.

8.8.6.4.ii Remedial Alternative Evaluation Criteria

The Permittees shall evaluate each of the remedy alternatives for the factors described in this Permit Section (8.8.6.4). These factors shall be balanced in proposing a preferred alternative.

8.8.6.4.iii Long-term Reliability and Effectiveness

The remedy shall be evaluated for long-term reliability and effectiveness. This factor includes consideration of the magnitude of risks that will remain after implementation of the remedy; the extent of long-term monitoring, or other management or maintenance that will be required after implementation of the remedy; the uncertainties associated with leaving contaminants in place; and the potential for failure of the remedy. The Permittees shall give preference to a remedy that reduces risks with little long-term management, and that has proven effective under similar conditions.

8.8.6.4.iv Reduction of Toxicity, Mobility, or Volume

The remedy shall be evaluated for its reduction in the toxicity, mobility, and volume of contaminants. The Permittees shall give preference to a remedy that uses treatment to more completely and permanently reduce the toxicity, mobility, and volume of contaminants.

8.8.6.4.v Short-Term Effectiveness

The remedy shall be evaluated for its short-term effectiveness. This factor includes consideration of the short-term reduction in existing risks that the remedy would achieve; the time needed to achieve that reduction; and the short-term risks that might be posed to the community, workers, and the environment during implementation of the remedy. The Permittees shall give preference to a remedy that quickly reduces short-term risks, without creating significant additional risks.

8.8.6.4.vi Implementability

The remedy shall be evaluated for its implementability or the difficulty of implementing the remedy. This factor includes consideration of installation and construction difficulties; operation and maintenance difficulties; difficulties with cleanup technology; permitting and approvals; and the availability of necessary equipment, services, expertise, and storage and disposal capacity. The Permittees shall give preference to a remedy that can be implemented quickly and easily, and poses fewer and lesser difficulties.

8.8.6.4.vii Cost

The remedy shall be evaluated for its cost. This factor includes a consideration of both capital costs, and operation and maintenance costs. Capital costs shall include, without limitation, construction and installation costs; equipment costs; land development costs; and indirect costs including engineering costs, legal fees, permitting fees, startup and shakedown costs, and contingency allowances. Operation and maintenance costs shall include, without limitation, operating labor and materials costs; maintenance labor and materials costs; replacement costs; utilities; monitoring and reporting costs; administrative costs; indirect costs; and contingency

allowances for the entire anticipated post-closure care or long term monitoring period. All costs shall be calculated based on their net present value. Permittees shall give preference to a remedy that is less costly, but does not sacrifice protection of health and the environment.

8.8.6.5 Approval of Corrective Measures Evaluation Report

The Department will review and approve the Corrective Measures Evaluation Report in accordance with Permit Section 8.12.6. If the Department disapproves the Corrective Measures Evaluation Report, the Department will notify the Permittees in writing of the Corrective Measures Evaluation Report's deficiencies and specify a due date for submission of a revised Corrective Measures Evaluation Report. Upon receipt of such notification of disapproval, the Permittees shall submit to the Department, within the specified time, a revised Corrective Measures Evaluation Report that corrects the deficiencies. If the Department approves the Corrective Measures Evaluation Report, the Department will notify the Permittees in writing.

8.8.6.6 Relationship to Corrective Action Requirements

The Corrective Measures Evaluation shall serve as a Corrective Measures Study for the purposes of RCRA compliance. (*See* 55 Fed. Reg. 30875-77 (July 27, 1990) (proposed 40 CFR §§ 264.520 through 264.524)).

8.8.6.7 Statement of Basis

Upon approval of the Corrective Measures Evaluation Report, the Department will select a remedy or remedies for the unit. The Department may choose a different remedy from that recommended by the Permittees. The Department will issue a Statement of Basis for selection of the remedy, and will receive public comment on the remedy. The public comment period will extend for at least 45 days from the date of the public notice of the Statement of Basis. As provided in 20.4.1.901.A(5)(a)-(c) NMAC, the Department will provide an opportunity for a public hearing on the remedy, at which all interested persons will be given a reasonable chance to submit data, views or arguments orally or in writing and to examine witnesses testifying at the hearing. The comment period will automatically be extended to the close of the public hearing. The public hearing will follow the hearing requirements under section 20.4.1.901.F NMAC. The Department will select a final remedy and issue a response to public comments to all commenters, after the end of the public comment period. In selecting a remedy, the Department will follow the public participation requirements applicable to remedy selection under 40 CFR §§ 270.41 through 270.42 and 20.4.1.901 NMAC.

The administrative record for the Facility will be made available to the public for review at the Departmentôs offices in Santa Fe, New Mexico. All significant written and signed comments, including e-mailed comments, will be considered by the Department prior to approving a final remedy or remedies.

The Departmentôs decision on the final remedy or remedies shall follow the requirements under section 20.4.1.901 NMAC, Secretaryôs Decision. The Department will issue a response to public comments at the time of the Departmentôs final decision.

8.8.7 Corrective Measures Implementation

8.8.7.1 General

The Permittees shall implement the final remedy selected by the Department.

8.8.7.2 Corrective Measures Implementation Plan

Within 90 days after the Departmentôs selection of a final remedy, or as otherwise specified by the schedule contained in the approved Corrective Measure Evaluation Report or as specified by a schedule required by the Department in the written approval notification, the Permittees shall submit to the Department for approval a Corrective Measures Implementation Plan outlining the design, construction, operation, maintenance, and performance monitoring for the selected remedy, and a schedule for its implementation. The implementation plan shall be submitted to the Department for review in accordance with the procedures in Permit Section 8.9. The Corrective Measures Implementation Plan shall, at a minimum, include the following elements:

1. A description of the selected final remedy;
2. A description of the cleanup goals and remediation system objectives;
3. An identification and description of the qualifications of all persons, consultants, and contractors that will be implementing the remedy;
4. Detailed engineering design drawings and systems specifications for all elements of the remedy;
5. A construction work plan;
6. An operation and maintenance plan;
7. The results of any remedy pilot tests;
8. A plan for monitoring the performance of the remedy, including sampling and laboratory analysis of all affected media;
9. A waste management plan;
10. A proposed schedule for submission to the Department of periodic progress reports; and
11. A proposed schedule for implementation of the remedy.

8.8.7.3 Health and Safety Plan

The Permittees shall conduct all activities in accordance with a site-specific or facility-wide Health and Safety Plan during all construction, operation, maintenance, and monitoring activities conducted during corrective measures implementation.

8.8.7.4 Progress Reports

The Permittees shall submit to the Department progress reports in accordance with the schedule approved in the Corrective Measures Implementation Plan. The progress reports shall, at a minimum, include the following information:

1. A description of the remedy work completed during the reporting period;
2. A summary of problems, potential problems, or delays encountered during the reporting period;
3. A description of actions taken to eliminate or mitigate the problems, potential problems, or delays;
4. A discussion of the remedy work projected for the next reporting period, including all sampling events;
5. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the reporting period; and
6. Copies of all waste disposal records generated during the reporting period.

8.8.8 Remedy Completion

8.8.8.1 Remedy Completion Report

Within 90 days after completion of remedy, the Permittees shall submit to the Department a Remedy Completion Report. The report shall, at a minimum, include the following items:

1. A summary of the work completed;
2. A statement, signed by a registered professional engineer, or subject to approval by the Department, another competent person with appropriate expertise or professional certification, that the remedy has been completed in accordance with the Department approved work plan for the remedy;
3. As-built drawings and specifications signed and stamped by a registered professional engineer if applicable;
4. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the remedy implementation, if not already submitted in a progress report;
5. Copies of all waste disposal records, if not already submitted in a progress report; and
6. A certification, signed by a responsible official of DOE/Sandia (owner/operator), stating: ñI certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to 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.ò

8.8.9 Accelerated Clean-up Process

If the Permittees identify a corrective action or measure that, if implemented voluntarily, will reduce risks to human health and the environment to levels acceptable to the Department, will

reduce cost and/or will achieve cleanup of a SWMU, AOC or other contaminated location, ahead of schedule, the Permittees may implement the corrective measure as provided in this Permit Section (8.8.9), in lieu of the process established in Permit Section 8.8. The accelerated cleanup process shall be used at sites to implement presumptive remedies (*see* 61 Fed. Reg. 19432, 19439-40)(May 1, 1996) at small-scale and relatively simple sites where groundwater contamination is not a component of the accelerated cleanup, where the remedy is considered to be the final remedy for the site, and where the field work will be accomplished within 180 days of the commencement of field activities. The proposed accelerated cleanup will be documented in an Accelerated Corrective Measure Work Plan, which shall include:

1. A description of the proposed remedial action, including details of the unit or activity that is subject to the requirements of this Permit;
2. An explanation of how the proposed cleanup action is consistent with the overall corrective action objectives and requirements of this Permit;
3. The methods and procedures for characterization and remediation sample collection and analyses; and
4. A schedule for implementation and reporting on the proposed cleanup action.

The Permittees shall notify the Department of the planned accelerated corrective measure a minimum of 30 days prior to the commencement of any accelerated field activity. The notification shall include the submittal of the Plan if not already submitted to the Department.

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a notification made under this Permit Section (8.8.9), in accordance with Permit Section 1.17.2.2.

8.8.9.1 Accelerated Corrective Measures Work Plan

The Permittees shall obtain approval of an Accelerated Corrective Measures Work Plan prior to implementation. The Permittees shall prepare the Work Plan in general accordance with the requirements of Permit Section 8.12 (Reporting Requirements). The Work Plan shall be submitted to the Department for review in accordance with the procedures in Permit Section 8.9. If the Department disapproves the Accelerated Corrective Measures Work Plan, the Department will notify the Permittees in writing of the Planôs deficiencies and specify a due date for submission of a revised Accelerated Corrective Measures Work Plan. The Permittees shall include an implementation schedule in the revised Accelerated Corrective Measures Work Plan.

8.8.9.2 Accelerated Corrective Measures Implementation

The Permittees shall implement the accelerated corrective measures in accordance with the approved Accelerated Corrective Measures Work Plan. Within 90 days of completion of the accelerated corrective measures, the Permittees shall submit to the Department for approval a Remedy Completion Report in a format approved by the Department in general accordance with Permit Section 8.12 (Reporting Requirements). If upon review, the Department identifies any deficiencies in the Remedy Completion Report, the Department will notify the Permittees in writing.

8.8.10 Well Completion Report

For each monitoring well or piezometer completed under this Permit, the Permittees shall submit to the Department a completion summary report within 90 days of completing installation which is to include a construction log and diagram, a boring log, and a development log. Installation shall be considered complete when all of the wells required under an investigation plan have been installed and their locations surveyed. The construction log and diagram and the boring log shall contain at a minimum the information required under Permit Section 8.11.

8.9 APPROVAL OF SUBMITTALS

All documents shall be subject to the review and approval procedures described in Permit Section 1.14.

8.10 METHODS AND PROCEDURES

The Permittees shall submit to the Department, for review and written approval, site-specific work plans for sites prior to the commencement of field activities where environmental investigation, corrective action, sampling or monitoring is being conducted or proposed. The site-specific work plans shall include the methods to be used to conduct all activities at each site or unit and shall be prepared in accordance with the format described in the Permit Section 8.12 (Reporting Requirements). The Permittees shall provide notification to the Department of corrective action field activities a minimum of 15 days prior to commencing the activity.

The methods used to conduct investigation, remediation, and monitoring activities shall be sufficient to fulfill the requirements of this Permit and provide accurate data for the evaluation of site conditions, the nature and extent of contamination and contaminant migration, and for remedy selection and implementation, where necessary. The methods presented in this Permit Section (8.10 et.seq.) are minimum requirements for environmental investigation and sampling, and are not intended to include all methods that may be necessary to fulfill the requirements of this Permit. In cases where alternative methods are required due to site conditions or contaminants, such methods will be specified in a site-specific work plan or other plan approved by the Department. The methods for conducting investigations, corrective actions, and monitoring at the Facility must be determined based on the conditions and contaminants that exist at each site or unit.

8.10.1 Standard Operating Procedures

The Permittees shall provide a description of investigation, sampling or analytical methods and procedures in documents submitted to the Department that includes sufficient detail for the Department to evaluate the expected quality of the data that would be acquired using the methods and procedures. Facility standard operating procedures (SOPs) shall not be substituted for such descriptions, but may be used to augment the descriptions and must be provided to the Department upon request. If any requirement or procedure in SOP is found by the Department to be unacceptable for reasons including, but not limited to, the requirement or procedure will or could prevent the acquisition of representative and reliable sampling results, the requirement or procedure shall be replaced by the Permittees with a different requirement or procedure that is acceptable to the Department.

8.10.2 Investigation, Sampling, and Analysis Methods

8.10.2.1 Introduction and Purpose

This Permit Section (8.10.2) provides minimum requirements for field investigations, sample collection, handling and screening procedures, field and laboratory sample analysis, and quality assurance procedures for samples of the medium being investigated or tested at the Facility.

The purpose of this Permit Section is to: 1) provide minimum requirements for drilling and sample collection in exploratory borings and other excavations; 2) provide minimum requirements for sampling of the target media; 3) provide minimum requirements for monitoring of groundwater and vadose zone conditions; and 4) identify minimum required screening, analytical, and quality assurance procedures that shall be implemented during field sampling activities and laboratory analyses.

The quality assurance procedures referenced in the previous paragraph include: 1) the Facility investigation data quality objectives; 2) the requirements for QA/QC to be followed during field investigations and by the analytical laboratories; and 3) the methodology for the review and evaluation of the field and laboratory QA/QC results and documentation.

8.10.2.2 Field Exploration Activities

Exploratory borings shall be advanced at locations specified in the Department approved site-specific work plans. The Department may require additional exploratory borings to fulfill the requirements of this Permit. Any additional boring locations, if required, will be determined or approved by the Department. The depths and locations of all exploratory and monitoring well borings shall be specified in the site-specific work plans submitted to the Department for approval prior to the start of the respective field activities.

8.10.2.3 Sub-Surface Features/Utility Geophysical Surveys

If required in an approved work plan, the Permittees shall conduct surveys to locate underground utilities, pipelines structures, drums, debris, and other buried features, including buried waste, in the shallow subsurface prior to the start of field exploration activities. The methods used to conduct the surveys, such as magnetometer, ground penetrating radar, resistivity, or other methods, shall be selected based on the characteristics of the site and the possible or suspected underground structures. The results of the surveys shall be included in the investigation reports submitted to the Department.

If required in an approved work plan, the Permittees shall conduct geophysical logging of boreholes using techniques such as acoustic televiewer, spinner flow, acoustic velocity/full wave form acoustic, density/porosity, gamma, neutron, single point resistance or electric (long/short normal or inductance) methods.

8.10.2.4 Drilling and Soil, Rock, and Sediment Sampling

8.10.2.4.i Drilling

Exploratory and monitoring well borings shall be drilled using the most effective, proven, and practicable method for recovery of undisturbed samples and potential contaminants. The

Department shall approve the drilling methods selected for advancement of each boring prior to the start of field activities. Based on the drilling conditions, the borings shall be advanced using one of the following methods:

1. Hollow-stem auger;
2. Air rotary;
3. Mud rotary;
4. Percussion hammer;
5. Sonic;
6. Dual wall air rotary;
7. Direct Push Technology (DPT);
8. Cryogenic; and
9. Cable tool.

Hollow-stem auger or DPT drilling methods are preferred if vapor-phase or VOC contamination is known or suspected to be present. The type of drilling fluid used, if necessary, shall be approved by the Department prior to the start of drilling activities or prior to use at any site.

All drilling equipment shall be in good working condition and capable of performing the assigned task. Drilling rigs and equipment shall be operated by properly trained, experienced, and responsible crews. The Permittees are responsible for ensuring that contaminants from another site or facility are not introduced into the site under investigation due to malfunctioning equipment or poor site maintenance. The drilling equipment shall be properly decontaminated before drilling each boring.

Exploratory borings shall be advanced to unit- and location-specific depths specified or approved by the Department. The Permittees shall propose drilling depths in the site-specific work plans submitted for each subject area.

The Permittees shall notify the Department as early as practicable if conditions arise or are encountered that do not allow the advancement of borings to the depths specified by the Department or proposed in an approved work plan so that alternative actions may be discussed. Precautions shall be taken to prevent the migration of contaminants between geologic, hydrologic, or other identifiable zones during drilling and well installation activities. Contaminant zones shall be isolated from other zones encountered in the borings.

The drilling and sampling shall be accomplished under the direction of a qualified engineer or geologist who shall maintain a detailed log of the materials and conditions encountered in each boring. Both sample information and visual observations of the cuttings and core samples shall be recorded on the boring log. Known site features and/or site survey grid markers shall be used as references to locate each boring prior to surveying the location as described in Permit Section 8.10.2.5. The boring locations shall be measured to the nearest foot, and locations shall be recorded on a scaled site map upon completion of each boring.

Trenching and other exploratory excavation methods shall follow the applicable general procedures outlined in this Permit Section. The particular methods proposed for use by the Permittees for exploratory excavation and sampling at any specific unit shall be included in the

site-specific investigation work plan submitted to the Department. The Department will include any changes or additional requirements for conducting exploratory excavation and sampling activities at the subject unit in its response to the Permittees after review of the investigation work plans.

Borings not completed as groundwater or vapor monitoring wells shall be properly abandoned in accordance with the methods listed in Permit Section 8.11.5 or other method approved by the Department. Borings completed as groundwater monitoring wells shall be constructed in accordance with the requirements described in Permit Section 8.11.3.2 (Well Construction Techniques).

8.10.2.4.ii Soil and Rock Sampling

Relatively undisturbed discrete soil and rock samples shall be obtained, where possible, during the advancement of each boring for the purpose of logging, field screening, and analytical testing. Generally, the samples shall be collected at the following intervals and depths:

1. At 5-ft intervals, 10-ft intervals, continuously, or as approved by the Department;
2. At the depth immediately below the base of the disposal unit or facility structure;
3. At the maximum depth of each boring;
4. At the depths of contacts or first encounter, observed during drilling, with geologic units of different lithology, changes in structural or textural characteristics, or zones of relatively higher or lower permeability;
5. Of soil or rock types relatively more likely to sorb or retain contaminants than surrounding lithology;
6. At the depth of the first encounter, during drilling, with shallow or intermediate saturated zones;
7. At intervals suspected of being source or contaminated zones;
8. At the top of the regional aquifer; and
9. At other intervals approved or required by the Department.

The sampling interval for the borings may be modified, or samples may be obtained from a specific depth, based on field observations. A decontaminated split-barrel sampler lined with brass sleeves, a coring device, or other method approved by the Department shall be used to obtain samples during the drilling of each boring.

The following procedures should be followed if a split barrel sampler is used. Upon recovery of the sample, one or more brass sleeves shall be removed from the split barrel sampler and the open ends of the sleeves covered with Teflon tape or foil and sealed with plastic caps fastened to the sleeves with tape for shipment to the analytical laboratory. If brass sleeves are not used, a portion of the sample shall be placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. The remaining portions of the sample shall be used for logging and field screening, as described in Permit Sections 8.10.2.4.v and 8.10.2.4.vi, respectively.

Discrete samples shall be collected for field screening and laboratory analyses. Homogenization of discrete samples collected for analyses other than for VOC and SVOC analyses shall be performed by the analytical laboratory, if necessary. The Permittees may submit site-specific,

alternative methods for homogenization of samples in the field to the Department for review and written approval.

Samples to be submitted for laboratory analyses shall be selected based on: 1) the results of the field screening or mobile laboratory analyses; 2) the position of the sample relative to groundwater, suspected releases, or site structures; 3) the sample location relative to former or altered site features or structures; 4) suspected migration pathways and the stratigraphy encountered in the boring; and 5) the specific objectives and requirements of this Permit and the approved site-specific work plan. The proposed number of samples and analytical parameters shall be included as part of the site-specific work plan submitted to the Department for approval prior to the start of field investigation activities at each unit. The work plans shall allow for flexibility in modifying the project-specific tasks based on information obtained during the course of the investigation. Modifications to site-specific work plan tasks must be pre-approved in writing by the Department.

8.10.2.4.iii Sediment Sampling

Sediment samples shall be collected in the same manner as described in Permit Section 8.10.2.4.ii for soil and rock sampling where borings are drilled to explore alluvial subsurface conditions. The sampling device shall be a decontaminated, hand-held stainless steel coring device, Shelby tube, thin-wall sampler, or other device approved by the Department where sediment sampling is conducted without the use of the drilling methods described in Permit Section 8.10.2.4.i. The samples shall be transferred to pre-cleaned laboratory prepared containers for submittal to the laboratory. Samples obtained for volatiles analysis shall be collected using Shelby tubes, thin-wall samplers, or other device approved by the Department. The ends of the samplers shall be lined with Teflon tape or aluminum foil and sealed with plastic caps fastened to the sleeves with tape for shipment to the analytical laboratory.

The physical characteristics of the sediment (such as mineralogy, ASTM soil classification, AGI (American Geological Institute) rock classification, moisture content, texture, color, presence of stains or odors, and/or field screening results), depth where each sample was obtained, method of sample collection, and other observations shall be recorded in the field log.

8.10.2.4.iv Logging of Soil/Rock and Sediment Samples

Samples obtained from all exploratory borings and excavations shall be visually inspected and the soil or rock type classified in general accordance with ASTM D2487 (Unified Soil Classification System) and D2488, or AGI Methods for soil and rock classification. Detailed logs of each boring shall be completed in the field by a qualified engineer or geologist. Additional information, such as the presence of water-bearing zones and any unusual or noticeable conditions encountered during drilling shall be recorded on the logs. Field boring logs, test pit logs, and field well construction diagrams shall be converted to the format acceptable for use in final reports submitted to the Department. If requested, draft boring logs, test pit logs, and well construction diagrams shall be submitted to the Department for review within 30 days after the completion of each boring or monitoring well.

8.10.2.4.v Soil, Rock, and Sediment Sample Field Screening

Samples obtained from borings shall be screened in the field for evidence of the potential presence of contaminants. Field screening results shall be recorded on the exploratory boring and excavation logs. Field screening results are used as a general guideline to determine the

nature and extent of possible contamination. In addition, screening results shall be used to aid in the selection of soil, rock, sediment, and vapor-phase samples for laboratory analysis. The Department recognizes that field screening alone will not detect the possible presence or full nature and extent of all contaminants that may be encountered at the site.

The primary screening methods to be used shall include: 1) visual examination; 2) headspace vapor screening for VOCs; and 3) metals screening using X-ray fluorescence (XRF). Additional screening for site- or release-specific characteristics such as pH, High Explosives (HE), Total Petroleum Hydrocarbons (TPH), nitrates, or for other specific compounds using field test kits shall be conducted where appropriate.

Headspace vapor screening shall target VOCs and shall be conducted by placing a soil or rock sample in a plastic sample bag or a foil-sealed container allowing space for ambient air. The container shall be sealed and then shaken gently to expose the soil or rock to the air trapped in the container. The sealed container shall be allowed to rest for a minimum of five minutes while vapors equilibrate. Vapors present within the sample bag headspace will then be measured by inserting the probe of the instrument in a small opening in the bag or through the foil. The maximum value and the ambient air temperature shall be recorded on the field boring or test pit log for each sample. The monitoring instruments shall be calibrated each day to the manufacturerôs standard for instrument operation. A photo-ionization detector (PID) equipped with a 10.6 or higher electron volt (eV) lamp, combustible gas indicator, or other instrument approved by the Department shall be used for VOC field screening. The limitations, precision, and calibration procedures of the instrument to be used for VOC field screening shall be included in the site-specific investigation work plan prepared for each unit.

XRF may be used to screen soil, rock, or sediment samples for the presence of metals. XRF screening requires proper sample preparation and proper instrument calibration. Sample preparation and instrument calibration procedures shall be documented in the field logs. The methods and procedures for sample preparation and instrument calibration shall be approved by the Department prior to the start of field activities. Field XRF screening results for selected metals may be used in lieu of laboratory analyses upon written approval by the Department; however, the results shall, at a minimum, be confirmed by laboratory analyses at a frequency of 20 percent (1 sample per every 5 analyzed by XRF analysis).

Field screening results are site- and boring-specific and the results vary with instrument type, media screened, weather conditions, moisture content, soil or rock type, and type of contaminant. The Permittees shall record on the field logs all conditions capable of influencing the results of field screening. The Permittees shall submit to the Department conditions potentially influencing field screening results as part of the site-specific investigation, remediation, or monitoring reports.

At a minimum, the Permittees shall submit the samples with the greatest apparent degree of contamination, based on field observations and field screening, for laboratory analysis. The Permittees shall also use the location of the sample relative to groundwater, stratigraphic units or contacts, and the proximity to significant site or subsurface features or structures as a guideline for sample selection. In addition, the Permittees shall submit the samples with no or little apparent contamination, based on field screening, for laboratory analysis if the intention is to confirm that the base (or other depth interval) of a boring or other sample location is not contaminated.

8.10.2.4.vi Soil, Rock, and Sediment Sample Types

The Permittees shall collect soil, rock, and sediment samples at the frequencies outlined in the site-specific investigation, corrective action, or monitoring work plans for each unit, or other site submitted by the Permittees for review and written approval by the Department. The samples collected shall be representative of the media and site conditions being investigated or monitored. The Permittees shall collect QA/QC samples to monitor the validity of the soil, rock, and sediment sample collection procedures. Field duplicates will be collected at a rate of ten percent. The Permittees shall collect equipment blanks from all sampling apparatus at a frequency of ten percent of environmental samples if disposable sampling equipment is not used. The Permittees shall collect field blanks at a frequency of one per day for each medium (with the exception of air samples) at each unit, or other site. The resulting data will provide information on the variability associated with sample collection, handling, and laboratory analysis operations. The blanks and duplicates shall be submitted for laboratory analyses associated with the project-specific contaminants, data quality concerns, and media being sampled.

8.10.2.5 Sample Point and Structure Location Surveying

The horizontal and vertical coordinates of the top of each monitoring well casing and the ground surface at each monitoring well location shall be determined by a registered New Mexico professional land surveyor in accordance with the State Plane Coordinate System (§§ 47-1-49 through 56 NMSA 1978)). The surveys shall be conducted in accordance with Sections 500.1 through 500.12 of the Regulations and Rules of the Board of Registration for Professional Engineers and Surveyors Minimum Standards for Surveying in New Mexico. Horizontal positions shall be measured to the nearest 0.1-ft, and vertical elevations shall be measured to the nearest 0.01-ft. The Permittees shall prepare site map(s), certified by a registered New Mexico professional land surveyor, presenting all surveyed locations and elevations including relevant site features and structures for submittal with well installation reports to the Department.

Site attributes (e.g., soil sample locations, sediment sample locations, springs, outfalls, pertinent structures, monitoring stations, as well as staked out sampling grids), shall be located by using a professional/mapping grade global positioning system (GPS), or another Department-approved surveying system, or by using a registered New Mexico Registered Land Surveyor using the methods described in the paragraph above. If using GPS, horizontal locations shall be measured to sub-meter accuracy. The Permittees shall provide the Department a statement of accuracy for survey data upon request.

8.10.2.6 Subsurface Vapor-Phase Monitoring and Sampling

Samples of subsurface vapors shall be collected from vapor monitoring points from both discrete zones, selected based on investigation and field screening results, and as total well subsurface vapor samples where required by the Department. Subsurface vapor samples shall be collected using methods approved by the Department that will produce reliable and representative results from the zones subject to investigation or monitoring.

During subsurface drilling explorations at sites where there is a potential for vapor-phase contamination to be present, soil gas samples shall be obtained at the Department-approved intervals for field screening and/or laboratory analyses. Soil-vapor sampling techniques during

borehole drilling must be proposed in the work plan and approved by the Department. The data shall be logged and also used for determining the samples to be sent to an analytical laboratory.

The Permittees shall, as specified in the work plan and approved by the Department, collect vapor samples for field measurement of some or all of the following during subsurface vapor monitoring activities:

1. Percent oxygen;
2. Organic vapors (using a photo-ionization detector with an 10.6 or higher eV (electron volt) lamp, a combustible vapor indicator or other method approved by the Department);
3. Percent carbon dioxide;
4. Static subsurface pressure; and
5. Other parameters (such as carbon monoxide and hydrogen sulfide) as required by the Department.

The Permittees also shall collect vapor samples for laboratory analysis of the following as required:

1. Percent moisture;
2. VOCs; and
3. Other analytes required by the Department.

Vapor samples analyzed by the laboratory for percent moisture and VOCs shall be collected using SUMMA canisters or other sample collection method approved by the Department. The samples shall be analyzed for VOC concentrations by EPA Method TO-14A, as it may be updated or by an equivalent VOC analytical method such as TO-15.

Field vapor measurements, the date and time of each measurement, and the instrument used shall be recorded on a vapor monitoring data sheet. The instruments used for field measurements shall be calibrated daily in accordance with the manufacturerôs specifications and as described in Permit Section 8.10.2.12. The methods used to obtain vapor-phase field measurements and samples shall be approved by the Department in writing prior to the start of air monitoring at each Facility site where vapor-phase monitoring is conducted.

8.10.2.7 Groundwater Monitoring

8.10.2.7.i Groundwater Levels

Groundwater level measurements shall be obtained at intervals required by the Department. Groundwater levels also shall be obtained prior to purging in preparation for a sampling event. Measurement data and the date and time of each measurement shall be recorded on a site monitoring data sheet. The depth to groundwater shall be measured to the nearest 0.01 feet. The depth to groundwater shall be recorded relative to the surveyed well casing rim or other surveyed datum.

Groundwater levels shall be measured in all wells at the facility (or the number of wells otherwise specified in a Department approved groundwater monitoring work plan) within 14 days of the commencement of the monitoring activities. The Permittees shall conduct periodic

measuring events, the schedule for which shall be provided in the groundwater monitoring work plans.

8.10.2.8 Groundwater Sampling

Groundwater samples shall initially be obtained from newly installed monitoring wells between ten and 30 days after completion of well development or during the next scheduled sampling event for that site for wells installed at a site with existing wells. Groundwater monitoring and sampling shall be conducted at an interval approved by the Department after the initial sampling event. The Permittees shall sample all saturated zones screened to allow entry of groundwater into each monitoring well during each sampling event (or as otherwise specified in the Department approved groundwater monitoring work plan). All requests for variances from the groundwater sampling schedule shall be submitted to the Department, in writing, no less than 30 days prior to the start of scheduled monitoring and sampling events.

For exploratory borings subject to this Permit, groundwater samples shall be collected from all saturated zones, where possible, within exploratory borings not intended to be completed as monitoring wells prior to abandonment of the borings.

Water samples shall be analyzed for site-specific parameters in accordance with the Department-approved groundwater monitoring work plan. The analytical list may include, but is not limited to, one or more of the following general chemistry parameters as required by the Department:

sulfate	chloride	sodium	magnesium
carbonate/bicarbonate	fluoride	manganese	calcium
potassium	sulfide	bromide	

8.10.2.8.i Well Purging

All zones in each monitoring well shall be purged by removing groundwater prior to sampling and in order to ensure that formation water is being sampled. Purge volumes shall be determined by monitoring, at a minimum, groundwater pH, specific conductance, dissolved oxygen concentrations, turbidity, redox potential, and temperature during purging of volumes and at measurement intervals approved by the Department in writing. The groundwater quality parameters shall be measured using a flow-through cell and instruments approved by the Department in writing. The volume of groundwater purged, the instruments used, and the readings obtained at each interval shall be recorded on the field monitoring log. In general, water samples may be obtained from the well after the measured parameters of the purge water have stabilized to within ten percent for three consecutive measurements. Well purging may also be conducted in accordance with the Departmentôs Position Paper ñUse of Low-Flow and other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoringò (October 30, 2001). The Permittees may submit, to the Department for approval, a written request for a variance from the described methods of well purging for individual wells no later than 90 days prior to scheduled sampling activities. The Department will respond to the request, in writing, within 60 days of receipt of the variance request.

8.10.2.8.ii Groundwater Sample Collection

Groundwater samples shall be obtained from each well after a sufficient amount of water has been removed from the well casing to ensure that the sample is representative of formation water. Groundwater samples shall be obtained using methods approved by the Department within 24 hours of the completion of well purging or an adequate volume is available to sample. Sample collection methods shall be documented in the field monitoring reports. The samples shall be transferred to the appropriate, clean, laboratory-prepared containers provided by the analytical laboratory. Sample handling and chain-of-custody procedures are described in Permit Section 8.10.2.9. Decontamination procedures shall be established for reusable water sampling equipment as described in Permit Section 8.10.2.11.

All purged groundwater and decontamination water shall be temporarily stored at satellite accumulation areas, less-than-90-day storage areas or transfer stations in labeled 55-gallon drums or other containers approved by the Department until proper characterization and disposal can be arranged. The methods for disposal of purge/decontamination water shall be approved by the Department prior to removal from the temporary storage area. Disposable materials shall be handled as described in Permit Section 8.10.2.13.

Groundwater samples intended for metals analysis shall be submitted to the laboratory as total metals samples. If required by the Department, the Permittees shall obtain groundwater samples for dissolved metals analysis to be filtered using disposable in-line filters with a 0.45 micron or other mesh size approved by the Department.

8.10.2.8.iii Surface Water Sample Collection

Surface water samples shall be collected using methods approved by the Department. Samples shall be collected in clean laboratory-prepared sampling containers. The methods and instruments used to measure field parameters shall be approved by the Department prior to conducting surface water sampling. The sampling and monitoring techniques used and the measurements obtained shall be recorded in the field monitoring reports.

8.10.2.8.iv Groundwater and Surface Water Sample Types

Groundwater samples shall be collected from each monitoring well and surface water samples shall be collected at predetermined locations. Field duplicates, field blanks, equipment rinsate blanks, reagent blanks, if necessary, and trip blanks shall be obtained for quality assurance during groundwater and surface water sampling activities. The samples shall be handled as described in Permit Section 8.10.2.9.

Field duplicate surface water and groundwater samples shall be obtained at a frequency of ten percent. At a minimum, one duplicate sample per sampling event shall always be obtained.

Field blanks shall be obtained at a frequency of at least ten percent of the number of environmental VOC samples, with at least one field blank per analytical batch of samples. Field blanks shall be generated by filling sample containers in the field with deionized water and submitting the samples, along with the groundwater or surface water samples, to the analytical laboratory for the appropriate analyses.

Equipment rinsate blanks shall be collected at a rate of ten percent of environmental samples if disposable sampling apparatus is not used. Rinsate samples shall be generated by rinsing deionized water through decontaminated sampling equipment. The rinsate sample then shall be

placed in the appropriate sample container and submitted with the groundwater or surface water samples to the analytical laboratory for the appropriate analyses.

Reagent blanks shall be obtained at a frequency of ten percent but no fewer than one per day per unit if chemical analyses requiring the use of chemical reagents are conducted in the field during water sampling activities.

Trip blanks shall accompany laboratory sample bottles and shipping and storage containers intended for VOC analyses. Trip blanks shall consist of a sample of analyte-free deionized water prepared by the laboratory and placed in an appropriate sample container. The trip blank shall be prepared by the analytical laboratory prior to the sampling event and shall be kept with the shipping containers and placed with other water samples obtained from the site each day. Trip blanks shall be analyzed for VOCs at a frequency of one for each shipping container of VOC samples.

8.10.2.9 Sample Handling

At a minimum, the following procedures shall be used at all times when collecting samples during investigation, corrective action, and monitoring activities unless otherwise specified in a Department-approved work plan:

1. Neoprene, nitrile, or other protective gloves shall be worn when collecting samples. New disposable gloves shall be used to collect each sample;
2. All samples collected of each medium for chemical analysis shall be transferred into clean sample containers supplied by the project analytical laboratory with the exception of soil, rock, and sediment samples obtained in brass sleeves, Shelby tubes, thin wall samplers, or in EncoreÊ samplers. Upon recovery of the sample collected using split barrel samplers with brass sleeves, the brass sleeves shall be removed from the split barrel sampler and the open ends of the sleeves shall be lined with Teflon tape or foil and sealed with plastic caps. The caps shall be fastened to the sleeve with tape for storage and shipment to the analytical laboratory. Samples collected in Shelby tubes or thin wall samplers shall be capped in a similar fashion. The sample depth and the top of the sample shall be clearly marked. Sample container volumes and preservation methods shall be in accordance with EPA SW-846 and established industry practices for use by accredited analytical laboratories. Sufficient sample volume shall be obtained for the laboratory to complete the method-specific QC analyses on a laboratory-batch basis; and
3. Sample labels and documentation shall be completed for each sample following procedures included in the site-specific work plans approved by the Department. Immediately after the samples are collected, they shall be stored in a cooler with ice or other appropriate storage method until they are delivered to the analytical laboratory. Standard chain-of-custody procedures, as described in Permit Section 8.10.2.14.ii, shall be followed for all samples collected. All samples shall be submitted to the laboratory soon enough to allow the laboratory to conduct the analyses within the method holding times.

Shipment procedures shall include the following:

1. Individual sample containers shall be packed to prevent breakage and transported in a sealed cooler with ice or other suitable coolant or other EPA or industry-wide accepted method.

The drainage hole at the bottom of the cooler shall be sealed and secured in case of sample container leakage.

2. Each cooler or other container shall be delivered directly to the analytical laboratory;
3. Glass bottles shall be separated in the shipping container by cushioning material to prevent breakage;
4. Plastic containers shall be protected from possible puncture during shipping using cushioning material;
5. The chain-of-custody form and sample request form shall be shipped inside the sealed storage container to be delivered to the laboratory;
6. Chain-of-custody seals shall be used to seal the sample-shipping container in conformance with EPA protocol; and
7. Signed and dated chain-of-custody seals shall be applied to each cooler prior to transport of samples from the site.

8.10.2.10 In-Situ Testing

In-situ permeability tests, remediation system pilot tests, stream flow tests, and other tests conducted to evaluate site and subsurface conditions shall be designed to accommodate specific site conditions and to achieve the test objectives. The testing methods shall be approved, in writing, by the Department prior to implementation. The tests shall be conducted in order to appropriately represent site conditions and in accordance with USGS, ASTM or other methods generally accepted by the industry. Detailed logs of all relevant site conditions and measurements shall be maintained during the testing events. If requested, a summary of the general test results, including unexpected or unusual test results and equipment failures or testing limitations shall be reported to the Department within 30 days of completion of the test. The summary shall be presented in a format acceptable to the Department and in general accordance with the report formats outlined in Permit Section 8.12 (Reporting Requirements). A report summarizing the results of each test shall be submitted to the Department within 120 days of completion of each test.

8.10.2.11 Decontamination Procedures

The objective of the decontamination procedures is to minimize the potential for cross-contamination. A designated decontamination area shall be established for decontamination of drilling equipment, reusable sampling equipment and well materials. The drilling rig shall be decontaminated prior to entering the site or unit. Drilling equipment or other exploration equipment that may come in contact with the borehole shall be decontaminated by steam cleaning, by hot-water pressure washing, or by other method approved by the Department prior to drilling each new boring.

Sampling or measurement equipment, including but not limited to, stainless steel sampling tools, split-barrel or core samplers, well developing or purging equipment, groundwater quality measurement instruments, water level measurement instruments, and reusable vapor sampling equipment shall be decontaminated in accordance with the following procedures or other applicable methods approved by the Department before each sampling attempt or measurement:

1. Brush equipment with a wire or other suitable brush, if necessary or practicable, to remove large particulate matter;
2. Rinse with potable tap water;
3. Wash with nonphosphate detergent or other detergent approved by the Department (examples include FantastikÊ , Liqui-Nox®) followed by a tap water rinse;
4. Rinse with 0.1 molar nitric acid (to remove trace metals, if necessary) followed by a tap water rinse;
5. Rinse with methanol (to remove organic compounds, if necessary) followed by a tap water rinse;
6. Rinse with potable tap water; and
7. Double rinse with deionized water.

All decontamination solutions shall be collected and stored temporarily as described in Permit Section 8.10.2.13. Decontamination procedures and the cleaning agents used shall be documented in the daily field log.

8.10.2.12 Field Equipment Calibration Procedures

Field equipment requiring calibration shall be calibrated to known standards, in accordance with the manufacturers' recommended schedules and procedures. At a minimum, calibration checks shall be conducted daily, or at other intervals approved by the Department, and the instruments shall be recalibrated, if necessary. Calibration measurements shall be recorded in the daily field logs. If field equipment becomes inoperable, its use shall be discontinued until the necessary repairs are made. In the interim, a properly calibrated replacement instrument shall be used.

8.10.2.13 Collection and Management of Investigation Derived Waste

Investigation derived waste (IDW) includes general refuse, drill cuttings, excess sample material, water (decontamination, development and purge), and disposable equipment generated during the course of investigation, corrective action, or monitoring activities. All IDW shall be properly characterized in accordance with 40 CFR Part 261 and Attachment C of this Permit, and shall be managed in accordance with all Federal, State, and local rules and regulations for storage, labeling, handling, transport, and disposal of waste. The Permittees shall include a description of anticipated management of IDW as part of the applicable work plan submitted to the Department for approval prior to an investigation or corrective action.

8.10.2.14 Documentation of Field Activities

8.10.2.14.i General

Daily field activities, including observations and field procedures, shall be recorded on appropriate forms. The original field forms shall be maintained at the Facility. Indelible ink shall be used to record all field activities. Photographic documentation of field activities shall be performed, as appropriate. The daily record of field activities shall include the following:

1. Site or unit designation;

2. Date;
3. Field investigation team members;
4. Weather conditions;
5. Daily activities and times conducted;
6. Observations;
7. Signature of personnel completing the field record.

The daily record of field activities shall also include the following, as applicable:

1. Record of samples collected with sample designations and locations specified;
2. Photographic log;
3. Field monitoring data, including health and safety monitoring if conditions arise that require modification of required work;
4. Equipment used and calibration records, if appropriate;
5. List of additional data sheets and maps completed;
6. An inventory of the waste generated and the method of storage or disposal; and
7. Names of visitors

8.10.2.14.ii Sample Custody

All samples collected for analysis shall be recorded in the field report or data sheets. Chain-of-custody forms shall be completed at the end of each sampling day, prior to the transfer of samples off site, and shall accompany the samples during shipment to the laboratory. A signed and dated custody seal shall be affixed to the lid of the shipping container. Upon receipt of the samples at the laboratory, the custody seals will be broken, the chain-of-custody form shall be signed as received by the laboratory, and the conditions of the samples shall be recorded on the form. The original chain-of-custody form shall remain with the laboratory and copies shall be returned to the relinquishing party. The Permittees shall maintain copies of all chain-of-custody forms generated as part of sampling activities. Copies of the chain-of-custody records (either paper copies or electronically scanned in PDF format) shall be included with all draft and final laboratory reports submitted to the Department.

8.10.3 Chemical Analyses

The Permittees shall submit all samples for laboratory analysis to accredited contract laboratories. The laboratories shall use the most recent EPA and industry-accepted extraction and analytical methods for chemical analyses for target analytes as the testing methods for each medium sampled. The Permittees shall use the most sensitive laboratory methods (with the lowest detection limits) available unless specific conditions preclude their use.

The Permittees shall submit a list of analytes and analytical methods to the Department, for review and written approval as part of each site-specific investigation, corrective action, or monitoring work plan. The detection limits for each method shall be less than applicable background, screening, and regulatory cleanup levels. The preferred method detection limits are a maximum of 20 percent of the cleanup, screening, or background levels. Analyses conducted

with detection limits that are greater than applicable background, screening, and regulatory cleanup levels shall be considered data quality exceptions and the reasons for the elevated detection limits shall be reported to the Department. All analytical data (non-detects, estimated concentrations, and detects) shall be included in an electronic copy of an investigation report in a format useable by the Department and with qualifiers as attached from the analytical laboratory. The summary tables shall include only detects (including estimated quantities) of the data based on the corresponding qualifiers. The Permittees shall not censor the data based on detection limits, quantitation limits, or measurement uncertainty.

8.10.3.1 Laboratory QA/QC Requirements

The following requirements for laboratory QA/QC procedures shall be considered the minimum QA/QC standards for the laboratories employed by the Permittees that provide analytical services for environmental investigation, corrective action, and monitoring activities conducted at the Facility. The Permittees shall provide the names of the contract analytical laboratories and copies of the laboratory quality assurance manuals to the Department within 90 days of awarding a contract for analytical services to any contract laboratory.

8.10.3.1.i Quality Assurance Procedures

Contract analytical laboratories shall maintain internal quality assurance programs in accordance with EPA and industry-wide accepted practices and procedures. At a minimum, the laboratories shall use a combination of standards, blanks, surrogates, duplicates, matrix spike/matrix spike duplicates (MS/MSD), blank spike/blank spike duplicates (BS/BSD), and laboratory control samples to demonstrate analytical QA/QC. The laboratories shall establish control limits for individual chemicals or groups of chemicals based on the long-term performance of the test methods. In addition, the laboratories shall establish internal QA/QC that meets EPA's laboratory certification requirements. The specific procedures to be completed are identified in the following sections.

8.10.3.1.ii Equipment Calibration Procedures and Frequency

The laboratories' equipment calibration procedures, calibration frequency, and calibration standards shall be in accordance with the EPA test methodology requirements and documented in the laboratories' quality assurance and SOP manuals. All instruments and equipment used by the laboratory shall be operated, calibrated, and maintained according to manufacturers' guidelines and recommendations. Operation, calibration, and maintenance shall be performed by personnel who have been properly trained in these procedures. A routine schedule and record of instrument calibration and maintenance shall be kept on file at the laboratory.

8.10.3.1.iii Laboratory QA/QC Samples

Analytical procedures shall be evaluated by analyzing reagent or method blanks, surrogates, MS/MSDs, BS/BSDs, and laboratory duplicates, as appropriate for each method. The laboratory QA/QC samples and frequency of analysis to be completed shall be documented in the cited EPA or DOE test methodologies. At a minimum, the laboratory shall analyze laboratory blanks, MS/MSDs, BS/BSDs, and laboratory duplicates at a frequency of one in twenty for all batch runs requiring EPA test methods and at a frequency of one in ten for non-EPA test methods. Laboratory batch QA/QC samples shall be specific to the project.

8.10.3.1.iv Laboratory Deliverables

The laboratory analytical data package submitted to the Department shall be prepared in accordance with EPA-established Level II analytical support protocol. The laboratory analytical data package kept on file at the Facility shall be prepared in accordance with EPA-established Level III or IV analytical support protocol. The following shall be provided by the contract analytical laboratories to the Permittees in the analytical laboratory reports submitted to the Permittees either electronically, magnetically or in hard (paper) copy for each project:

1. Transmittal letter, including information about the receipt of samples, the testing methodology performed, any deviations from the required procedures, any problems encountered in the analysis of the samples, any data quality exceptions, and any corrective actions taken by the laboratory relative to the quality of the data contained in the report;
2. Sample analytical results, including sampling date; date of sample extraction or preparation; date of sample analysis; dilution factors and test method identification; soil, rock, or sediment sample results in consistent units (mg/kg) or micrograms per kilogram in dry-weight basis; water sample results in consistent units (milligrams per liter or micrograms per liter (εg/L)); vapor sample results in consistent units (ppm or εg/m3); and detection limits for undetected analytes. Results shall be reported for all field samples, including field duplicates and blanks, submitted for analysis;
3. Method blank results, including detection limits for undetected analytes;
4. Surrogate recovery results and corresponding control limits for samples and method blanks (organic analyses only);
5. MS/MSD and/or BS/BSD spike concentrations, percent recoveries, relative percent differences (RPDs), and corresponding control limits;
6. Laboratory duplicate results for inorganic analyses, including relative percent differences and corresponding control limits;
7. Sample chain-of-custody documentation;
8. Holding times and conditions;
9. Conformance with required analytical protocol(s);
10. Instrument calibration;
11. Blanks;
12. Detection/quantitation limits;
13. Recoveries of surrogates;
14. Variability for duplicate analyses;
15. Completeness; and
16. Data report formats.

The following data deliverables for organic compounds shall be required from the laboratory:

1. A cover letter referencing the procedure used and discussing any analytical problems, deviations, and modifications, including signature from authority representative certifying to the quality and authenticity of data as reported;
2. Report of sample collection, extraction, and analysis dates, including sample holding conditions;
3. Tabulated results for samples in units as specified, including data qualification in conformance with EPA protocol, and definition of data descriptor codes;
4. Reconstructed ion chromatograms for gas chromatograph/mass spectrometry (GC/MS) analyses for each sample and standard calibration;
5. Selected ion chromatograms and mass spectra of detected target analytes (GC/MS) for each sample and calibration with associated library/reference spectra;
6. Gas chromatograph/electron capture device (GC/ECD) and/or gas chromatograph/flame ionization detector (GC/FID) chromatograms for each sample and standard calibration;
7. Raw data quantification reports for each sample and calibrations, including areas and retention times for analytes, surrogates, and internal standards;
8. A calibration data summary reporting calibration range used and a measure of linearity [include decafluorotriphenylphosphine (DFTPP) and p-bromofluorobenzene (BFB) spectra and compliance with tuning criteria for GC/MS];
9. Final extract volumes (and dilutions required), sample size, wet-to-dry weight ratios, and instrument practical detection/quantitation limit for each analyte;
10. Analyte concentrations with reporting units identified, including data qualification in conformance with the CLP Statement of Work (SOW) (include definition of data descriptor codes);
11. Quantification of analytes in all blank analyses, as well as identification of method blank associated with each sample;
12. Recovery assessments and a replicate sample summary, including all surrogate spike recovery data with spike levels/concentrations for each sample and all MS/MSD results (recoveries and spike amounts); and
13. Report of tentatively identified compounds with comparison of mass spectra to library/reference spectra.

The following data deliverables for inorganic compounds shall be required from the laboratory:

1. A cover letter referencing the procedure used and discussing any analytical problems, deviations, and modifications; including signature from authority representative certifying to the quality and authenticity of data as reported;
2. Report of sample collection, digestion, and analysis dates, with sample holding conditions;
3. Tabulated results for samples in units as specified, including data qualification in conformance with the CLP SOW (including definition of data descriptor codes);

4. Results of all method QA/QC checks, including inductively coupled plasma (ICP) Interference Check Sample and ICP serial dilution results;
5. Tabulation of instrument and method practical detection/quantitation limits;
6. Raw data quantification report for each sample;
7. A calibration data summary reporting calibration range used and a measure of linearity, where appropriate;
8. Final digestate volumes (and dilutions required), sample size, and wet-to-dry weight ratios;
9. Quantification of analytes in all blank analyses, as well as identification of method blank associated with each sample; and
10. Recovery assessments and a replicate sample summary, including post-digestate spike analysis; all MS data (including spike concentrations) for each sample, if accomplished; all MS results (recoveries and spike amounts); and laboratory control sample analytical results).

The Permittees shall present summary tables of these data and Level II QA/QC results to the Department in the formats described in Permit Section 8.12 (Reporting Requirements). The raw analytical data, including calibration curves, instrument calibration data, data calculation work sheets, and other laboratory support data for samples from this project, shall be compiled and kept on file at the Facility for reference. The Permittees shall make the data and all Level III or Level IV QA/QC data available to the Department upon request.

8.10.3.2 Review of Field and Laboratory QA/QC Data

The Permittees shall evaluate the sample data, field, and laboratory QA/QC results for acceptability with respect to the data quality objectives (DQOs). Each group of samples shall be compared with the DQOs and evaluated using data validation guidelines contained in EPA guidance documents, the latest version of SW-846, and industry-accepted QA/QC methods and procedures.

The Permittees shall establish processes with analytical laboratories to identify data quality exceptions and to expeditiously initiate appropriate corrective actions. The Permittees shall require the laboratories to notify them when data quality exceptions are determined. Laboratory notification shall be timely in order to allow for sample re-analysis, if possible. The Permittees shall evaluate data quality exceptions and determine whether sample re-analysis is justified or resampling is required. Corrective actions may include documentation of QC issues in an analytical laboratory report, data qualifiers, and/or sample re-analysis. In all cases, the DQOs of the investigation or compliance activity shall be met.

8.10.3.3 Blanks, Field Duplicates, Reporting Limits, and Holding Times

8.10.3.3.i Blanks

The analytical results of field blanks and field equipment rinsate blanks shall be reviewed to evaluate the adequacy of the equipment decontamination procedures and the possibility of cross-contamination caused by decontamination of sampling equipment. The analytical results of trip

blanks shall be reviewed to evaluate the possibility for contamination resulting from the laboratory-prepared sample containers or the sample transport containers. The analytical results of laboratory blanks shall be reviewed to evaluate the possibility of contamination caused by the analytical procedures. If contaminants are detected in field or laboratory blanks, the sample data shall be qualified, as appropriate.

8.10.3.3.ii Field Duplicates

Field duplicates shall consist of two samples either split from the same sample device or collected sequentially. Field duplicate samples shall be collected at a minimum frequency of 10 percent of the total number of environmental samples submitted for analysis. RPDs for field duplicates shall be calculated. The acceptable level of precision for duplicates shall be specified in the investigation work plan.

8.10.3.3.iii Method Reporting Limits

Method reporting limits for sample analyses for each medium shall be established at the lowest level practicable for the method and analyte concentrations and shall not exceed soil, groundwater, surface water, or vapor emissions background levels, cleanup standards, and screening levels. The preferred method detection limits are a maximum of 20 percent of the background, screening, or cleanup levels. Detection limits that exceed established soil, groundwater, surface water, or air emissions cleanup standards, screening levels, or background levels and are reported as ñnot detectedò shall be considered data quality exceptions and an explanation for the exceedance and its acceptability for use shall be provided.

8.10.3.3.iv Holding Times

The Permittees shall review the sampling, extraction, and analysis dates to confirm that extraction and analyses were completed within the recommended holding times, as specified by EPA protocol. Appropriate data qualifiers shall be noted if holding times were exceeded.

8.10.3.4 Representativeness and Comparability

8.10.3.4.i Representativeness

Representativeness is a qualitative parameter related to the degree to which the sample data represent the relevant specific characteristics of the media sampled. The Permittees shall implement procedures to assure representative samples are collected and analyzed, such as repeated measurements of the same parameter at the same location over several distinct sampling events. The Permittees shall note any procedures or variations that may affect the collection or analysis of representative samples and shall qualify the data.

8.10.3.4.ii Comparability

Comparability is a qualitative parameter related to whether similar sample data can be compared. To assure comparability, the Permittees shall report analytical results in appropriate units for comparison with other data (past studies, comparable sites, screening levels, and cleanup standards), and shall implement standard collection and analytical procedures. Any procedure or variation that may affect comparability shall be noted and the data shall be qualified.

8.10.3.5 Laboratory Reporting, Documentation, Data Reduction, and Corrective Action

Upon receipt of each laboratory data package, data shall be evaluated against the criteria outlined in the previous sections. Any deviation from the established criteria shall be noted and the data will be qualified. A full review and discussion of analytical data QA/QC and all data qualifiers shall be submitted as appendices or attachments to investigation and monitoring reports prepared in accordance with Permit Section 8.12 (Reporting Requirements). Data validation procedures for all samples shall include checking the following, when appropriate:

1. Holding times;
2. Detection limits;
3. Field equipment rinsate blanks;
4. Field blanks;
5. Field duplicates;
6. Trip blanks;
7. Reagent blanks;
8. Laboratory duplicates;
9. Laboratory blanks;
10. Laboratory matrix spikes;
11. Laboratory matrix spike duplicates;
12. Laboratory blank spikes;
13. Laboratory blank spike duplicates; and
14. Surrogate recoveries.

If significant quality assurance problems are encountered, appropriate corrective action shall be implemented. All corrective action shall be defensible and the corrected data shall be qualified

8.10.4 Site-Specific Human Health Risk Assessment

Should the Permittees be unable to meet the cleanup levels in Permit Section 8.4, they shall conduct a site-specific risk assessment in accordance with current and acceptable EPA, Regional EPA, and Department guidance and methodology (as updated). If the Department determines that a human health risk assessment work plan is necessary, the Permittees shall submit to the Department for its review and approval a work plan that includes, at a minimum, the site-specific exposure assumptions and any additional sampling needed to support the risk assessment. The Permittees shall prepare a Human Health Risk Assessment Report in support of corrective action, and, if necessary, for closure in accordance with Permit Part 6.

8.10.4.1 Human Health Risk Assessment Methods

A risk assessment may be required for human receptors that are potentially exposed to site-related chemicals in environmental media. The risk assessment shall contain a conceptual site

model (CSM), which shall aid in understanding and describing each site. The CSM shall address the following components:

1. Identification of suspected sources;
2. Identification of contaminants;
3. Identification of contaminant releases;
4. Identification of transport mechanisms;
5. Identification of affected media;
6. Identification of land use scenarios;
7. Identification of potential receptors under current land use scenario;
8. Identification of potential receptors under future land use scenario; and
9. Identification of potential routes of exposure.

Potential human receptors under current and/or future land use scenarios may include residential, industrial, construction, and recreational. Other special receptors may be required on a site-specific basis.

8.10.4.1.i Exposure Pathways

The identification of exposure pathways shall include a discussion of all potential pathways and justify whether the pathways are complete. Pathways that shall be considered include soil, groundwater, air, surface water, sediment, and biota. An evaluation of the potential for contaminants to migrate from soil to groundwater shall also be provided. The risk assessment shall also address exposure mechanisms for each exposure pathway, including ingestion, inhalation, dermal, and inhalation of volatile organic compounds volatilized from soil and/or groundwater.

8.10.4.1.ii Data Quality Assurance

The risk assessment shall include an evaluation of analytical data and the usability of the data in the assessment. Data validation shall be conducted in accordance with current EPA guidelines. The evaluation of data shall also include a comparison of detection limits with appropriate and current risk-based screening levels, if MDLs are inconsistent and do not achieve the requirements of Permit Section 8.10.3 (Chemical Analyses).

8.10.4.1.iii Constituents of Potential Concern

Appropriate EPA and/or the Department guidance shall be used to identify constituents of potential concern (COPCs). With the exception of chemicals attributed to field or laboratory contamination, all analytes detected in sampled media (i.e., soil, air, surface water, groundwater, biota, and/or sediment) shall be retained or eliminated as COPCs using one or more of the following processes:

1. Site attribution analysis;
2. Essential nutrients; and/or
3. Risk-based toxicity screen.

Unless sufficient evidence and special circumstances can be provided by the Permittees, all detected organics not attributable to field or laboratory contamination shall be retained and treated as site-related chemicals.

Inorganics detected in site media shall be compared to an appropriate background data set to determine if concentrations are present at levels significantly above background. The site attribution analysis may consist of a tiered approach as follows:

1. Comparison of maximum site concentrations to a background reference value (e.g., upper tolerance limit, UTL);
2. If the site maximum exceeds the background reference value, and sample size is sufficient, statistically compare the site data set to the background data set using appropriate statistical analyses (e.g., Wilcoxon Rank Sum Test). If the sampling size is not sufficient to perform statistical analysis, a comparison of the maximum site concentration to the maximum background concentrations shall be used;
3. Conduct a graphical analysis of site data and background data (e.g., histograms and/or box and whisker plots);
4. Conduct a geochemical analysis of site data to a background reference chemical; and/or
5. Evaluate essential nutrients and compare to recommended daily allowances and/or upper intake limits.

All inorganics for which the site attribution analyses indicate are present above natural background shall be retained as COPCs for the risk assessments.

8.10.4.1.iv Exposure Point Concentrations

The Permittees shall determine exposure point concentrations (EPCs) that are representative of the concentrations of chemicals in each given medium to which a receptor may be exposed. Current EPA methodology for handling non-detects and replicates in the risk assessment shall be applied. EPA recommends a 95% or greater estimate of the upper confidence limit (UCL Ó 95%) on the arithmetic mean be used as an EPC for chronic exposures. If conditions are identified where acute exposures must be evaluated, the maximum detected site concentration shall be used as the EPC.

The EPCs shall be determined using statistical analyses that are data distribution and size dependent. EPA and/or the Department accepted guidance and methodologies shall be used, such as the ProUCL software.

EPCs shall be calculated for soil, groundwater, surface water, sediment, and biota.

EPA does not recommend estimating intakes for the air inhalation pathway, but rather compares estimated volatile/particulate air concentrations adjusted for exposure frequencies, duration, and time. For inhalation of volatiles/particulates from soil, EPCs shall be determined based upon the current EPA and/or Department methodology, based upon the volatilization factor or particulate emission factor. Indoor air concentrations shall be determined using EPA and Department accepted approaches, such as the EPA-recommended Johnson and Ettinger model.

8.10.4.1.v Toxicity Assessment

The Permittees shall use the most recently available toxicity factors to calculate carcinogenic and noncarcinogenic risks/hazards based upon the currently acceptable hierarchy of sources for toxicity data.

8.10.4.1.vi Risk Characterization

The Permittees shall quantitatively estimate the potential for carcinogenic (risk) and non-carcinogenic (hazard) effects for all chemicals with toxicity data and provide a discussion of uncertainties associated with the risk assessment. Cumulative effects for risk and hazard for all media and pathways shall be determined.

For those chemicals without toxicity data, appropriate surrogate data may be applied. If surrogate toxicity data are not available, risks/hazards shall be qualitatively addressed in the uncertainties section of the report.

8.10.4.1.vii Uncertainties

The Permittees shall provide an uncertainties section that discusses all assumptions, professional judgments, and data which may result in uncertainties in the final estimates of risk and hazard. The uncertainties shall also discuss whether risks/hazards may have been under or overestimated due to the assumptions made in the assessment.

8.10.5 Site-Specific Ecological Risk Assessment Methods

If the screening level ecological risk assessment indicates unacceptable risk, then the Permittees shall conduct a site-specific ecological risk assessment. If the Department determines that an ecological risk assessment work plan is necessary, the Permittees shall submit to the Department for its review and approval a work plan that includes, at a minimum, the site-specific exposure assumptions and any additional sampling needed to support the risk assessment. In addition, the Permittees shall prepare a site-specific Ecological Risk Assessment Report in support of corrective action, and, if necessary, for closure in accordance with Permit Part 6 (Closure Requirements). The assessment shall be conducted using EPA and/or the Department approved guidance and methodologies. The ecological risk assessment shall follow the same methodologies outlined above in the human health risk assessment for determining constituent of potential ecological concern (COPEC) and data quality assurance.

8.10.6 Determination of Background

The Permittees shall use the background reference values that have been previously approved by the Department for the Facility to assess whether environmental media at a SWMU or AOC have been contaminated to levels exceeding background conditions for naturally occurring inorganic constituents (see Dinwiddie, 1997).

If the Permittees or Department determines that site-specific background values are necessary for a particular site investigation, the Permittees shall obtain an appropriate background data set. Background concentrations for groundwater shall be collected from upgradient wells. The background data set shall be representative of natural conditions unaffected by site activities and shall be statistically defensible. A sufficient number of background samples shall be collected to

determine whether one or more background populations exist for each constituent and media of concern, and to determine appropriate statistical descriptors for each identified population.

The Permittees shall determine the following summary statistics for background concentrations for each constituent and media:

1. Number of detects;
2. Total number of samples;
3. Frequency of detection;
4. Minimum detected concentration;
5. Maximum detected concentration;
6. Arithmetic mean;
7. Median;
8. Sample standard deviation;
9. 25th and 95th % of sample population; and
10. Distribution type (for example, normal; log normal; or other type, including indeterminate).

If a sample population may be adequately represented as a normal or log normal distribution, the Permittees shall also determine the upper tolerance limit (UTL) for the distribution at a confidence level of 95% and with 95% coverage.

8.10.6.1 Comparing Site Data to Background

The 95% UTL for each metal shall be used as the background reference value for use in screening assessments and determining whether metals are present in the subject media (e.g., soil, groundwater, surface water, sediment) due to site activities. The site maximum detected concentration shall be compared to the 95% UTL for each metal. If the site maximum detected concentration is greater than the background reference value, then additional site attribution analyses shall be conducted.

Site attribution analyses shall be conducted in accordance with Permit Section 8.10.4.1.iii and current EPA and/or the Department accepted guidance. The site attribution analyses shall consist of a statistical comparison of the background data set to the site data set, if sufficient samples are available, using distribution based tests such as the Wilcoxon Rank Sum Test.

If the results of the site attribution analyses indicate that the metal is present at the site above naturally occurring levels, then the Permittees shall include that metal as a site contaminant.

8.11 MONITORING WELL CONSTRUCTION REQUIREMENTS

8.11.1 Drilling Methods

Groundwater monitoring wells and piezometers must be designed and constructed in a manner which will yield high quality samples and ensure that the well will not serve as a conduit for contaminants to migrate between different stratigraphic units or aquifers. The design and

construction of groundwater monitoring wells shall comply with the guidelines established in various EPA RCRA guidance, including, but not limited to:

1. U.S. EPA, RCRA Groundwater Monitoring: Draft Technical Guidance, EPA/530-R-93-001 (November 1992);
2. U.S. EPA, RCRA Groundwater Monitoring Technical Enforcement Guidance Document, OSWER-9950.1 (September 1986); and
3. Aller, L., Bennett, T.W., Hackett, G., Petty, R.J., Lehr, J.H., Sedoris, H., Nielsen, D.M., and Denne, J.E., Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells, EPA 600/4-89/034 (1989).

A variety of methods are available for drilling monitoring wells. While the selection of the drilling procedure is usually based on the site-specific geologic conditions, the following issues shall also be considered:

1. Drilling shall be performed in a manner that minimizes impacts to the natural properties of the subsurface materials;
2. Contamination and cross-contamination of groundwater and aquifer materials during drilling shall be avoided;
3. The drilling method shall allow for the collection of representative samples of rock, unconsolidated materials, and soil;
4. The drilling method shall allow the Permittees to determine when the appropriate location for the screened interval(s) has been encountered; and
5. The drilling method shall allow for the proper placement of the filter pack and annular sealants. The borehole diameter shall be at least 4 inches larger in diameter than the nominal diameter of the well casing and screen to allow adequate space for placement of the filter pack and annular sealants.

The drilling method shall allow for the collection of representative groundwater samples. Drilling fluids (which includes air) shall be used only when minimal impact to the surrounding formation and groundwater can be ensured.

A brief description of the different drilling methods that may be appropriate for the construction of monitoring wells at the Facility follows. Many of these methods may be used alone, or in combination, to install monitoring wells at the Facility. While the selection of the specific drilling procedure will usually depend on the site-specific geologic conditions, justification for the method selected must be included in the Well Installation Work Plan or other work plan submitted to the Department prior to well installation.

8.11.1.1 Hollow-Stem Auger

The hollow-stem continuous flight auger consists of a hollow, steel shaft with a continuous, spiraled steel flight welded onto the exterior site of the stem. The stem is connected to an auger bit and, when rotated, transports cuttings to the surface. The hollow stem of the auger allows drill rods, split-spoon core barrels, Shelby tubes, and other samplers to be inserted through the center of the auger so that samples may be retrieved during the drilling operations. The hollow stem also acts to temporarily case the borehole, so that the well screen and casing (riser) may be

inserted down through the center of the augers once the desired depth is reached, minimizing the risk of possible collapse of the borehole. A bottom plug or pilot bit can be fastened onto the bottom of the augers to keep out most of the soils and/or water that have a tendency to clog the bottom of the augers during drilling. Drilling without a center plug is acceptable provided that the soil plug, formed in the bottom of the auger, is removed before sampling or installing well casings. The soil plug can be removed by washing out the plug using a side discharge rotary bit, or augering out the plug with a solid-stem auger bit sized to fit inside the hollow-stem auger. In situations where heaving sands are a problem, potable water may be poured into the augers to equalize the pressure so that the inflow of formation materials and water shall be held to a minimum when the bottom plug is removed. The hollow-stem auger method is best suited for drilling shallow overburden wells.

8.11.1.2 Air Rotary/Air Down-The-Hole Hammer/ODEX

The air rotary method consists of a drill pipe or drill stem coupled to a drill bit that rotates and cuts through soils and rock. The cuttings produced from the rotation of the drilling bit are transported to the surface by compressed air, which is forced down the borehole through the drill pipe and returns to the surface through the annular space (between the drill pipe and the borehole wall). The circulation of the compressed air not only removes the cuttings from the borehole but also helps to cool the drill bit. The use of air rotary drilling is best suited for hard-rock formations. In soft unconsolidated formations, casing is driven to keep the formation from caving. When using air rotary, the air compressor shall have an in-line filter system to filter the air coming from the compressor. The filter system shall be inspected regularly to ensure that the system is functioning properly. In addition, a cyclone velocity dissipater or similar air containment/dust-suppression system shall be used to funnel the cuttings to one location instead of allowing the cuttings to discharge uncontrolled from the borehole. Air rotary that employs the dual-tube (reverse circulation) drilling system is acceptable because the cuttings are contained within the drill stem and are discharged through a cyclone velocity dissipater to the ground surface.

The injection of air into the borehole during air rotary drilling has the potential to alter the natural properties of the subsurface. This can occur through air-stripping of the VOCs in both soil and groundwater in the vicinity of the borehole, altering the groundwater geochemical parameters (e.g., pH and redox potential), and potentially increasing biodegradation of organic compounds in the aquifer near the borehole. These factors may prevent the well from yielding groundwater samples that are representative of in-situ conditions.

In hard, abrasive, consolidated rock, a down-the-hole hammer may be more appropriate than the air rotary method. In this method, compressed air is used to actuate and operate a pneumatic hammer as well as lift the cuttings to the surface and cool the hammer bit. One drawback of the down-the-hole hammer is that oil is required in the air stream to lubricate the hammer-actuating device, and this oil could potentially contaminate the soil in the vicinity of the borehole and the aquifer.

The ODEX method is a variation of the air rotary method in which a casing-driving technique is used in combination with air rotary drilling. With the ODEX system, the drill bit extends outward and reams a pilot hole large enough for a casing assembly to slide down behind the drill bit assembly. As a result, casing is advanced simultaneously while drilling the hole.

8.11.1.3 Water Rotary and Mud Rotary

The water and mud rotary drilling methods consist of rotary drilling techniques where water or drilling mud is used as the circulating fluid. In both methods, the circulating fluid is pumped down through the drill pipe and is returned back up the borehole through the annular space. The circulating fluid stabilizes the borehole, cools the drill bit, and carries the drill cuttings up to the surface. While the water and mud rotary drilling techniques are rapid and effective drilling methods, the recognition of water-bearing zones is hampered by the addition of water into the system. Mud rotary drilling methods are discouraged if the well is to be used for monitoring of water quality.

Mud rotary drilling is similar to water rotary drilling with the exception that mud additives are added to the water to change the properties (e.g., density, viscosity, yield point, gel strength, fluid-loss-control effectiveness, and lubricity) of the circulating fluid. Drilling muds provide greater borehole stabilization than water alone. There are several types of mud presently available, including bentonite, barium sulfate, organic polymers, cellulose polymers, and polyacrylamides. While drilling muds enhance the stability of the borehole and allow for drilling in formations not appropriate to other methods, they can adversely affect the hydrologic properties and geochemistry of the aquifer. For example, drilling fluid invasion and the buildup of borehole filter cake may reduce the effective porosity of the aquifer in the vicinity of the borehole. In addition, bentonite drilling muds may affect the pH of groundwater and organic polymer drilling muds have been observed to facilitate bacterial growth, which reduces the reliability of sampling results. If polymer emulsions are to be used in the drilling program at the Facility, polymer dispersion agents shall be used at the completion of the drilling program to remove the polymers from the boreholes. For example, if EZ Mud® is used as a drilling additive, a dispersant (e.g., BARAFOS® or five percent sodium hypochlorite) shall be used to disperse and chemically break down the polymer prior to developing and sampling the well. If drilling fluids are used as part of well installation, the Permittees must demonstrate that all data acquired from the well is representative of existing subsurface conditions using methods approved by the Department. The Department may require additional sampling and testing periodically to ensure that the data collected is not affected by residual drilling fluids.

8.11.1.4 Dual-Wall Reverse Circulation

The dual-wall reverse circulation drilling method utilizes a double-wall drill pipe and has the reverse circulation of other conventional rotary drilling methods. The circulating fluid (water or air) is pumped down the borehole between the outer and inner drill pipe, and returns up the inner drill pipe. Cuttings are lifted to the surface through the inner drill pipe. The inner drill pipe rotates the bit, and the outer drill pipe acts as a casing and stabilizes the borehole. Typically, a tri-cone bit is used when drilling through unconsolidated formations and a down-the-hole hammer is used in hard rock.

The dual-wall reverse circulation rotary method is one of the better methods available for obtaining representative and continuous formation samples while drilling. If a roller cone bit is used, the formation that is being drilled is located only a few inches ahead of the double-wall pipe. As a result, the cuttings observed at the surface represent no more than one foot of the formation at any point in time.

When drilling with air, an in-line filter shall be used to remove oil or other impurities from the airstream. However, if a down-the-hole hammer is used, it must be used with caution since it requires oil in the airstream to lubricate the hammer. This could possibly introduce contaminants to the borehole and aquifer.

8.11.1.5 Resonant Sonic

Resonant sonic drilling is a method that uses a sonic drill head to produce high-frequency, high-force vibrations in a steel drill pipe. The vibrations in the pipe create a cutting action at the bit face, which allows a continuous core of the formation to move into a core barrel. The method requires no drilling fluid, drills very fast (up to one ft/sec in certain formations), drills at any angle through all formations (rock, clay, sand, boulders, permafrost, glacial till), and yields virtually no cuttings in the drilling process. While there are numerous advantages to this process, the primary disadvantage is the cost of the method. This drilling method has been proven and used at various facilities.

8.11.1.6 Cryogenic

Cryogenic drilling is a technique that uses standard air rotary drilling methods, but employs cold nitrogen gas as the circulating fluid instead of compressed air. The use of nitrogen gas as the circulation fluid freezes the borehole wall while drilling, which stabilizes unconsolidated sediments and prevents potential cross-contamination of different water-bearing zones. In addition, the method produces fewer cuttings than liquid based drilling methods, requires minimal equipment modifications to existing drill rigs, and does not add contaminants to the borehole during the drilling process due to the benign nature of nitrogen gas. The method is especially applicable for drilling through alternating hard (competent) and soft (unconsolidated) formations. This drilling method has been tested by the DOE and proposed for future use at various DOE facilities.

8.11.2 Well Construction/Completion Methods

8.11.2.1 Well Construction Materials

Well construction materials shall be selected based on the goals and objectives of the proposed monitoring program and the geologic conditions at the site. When selecting well construction materials, the primary concern shall be selecting materials that will not contribute foreign constituents or remove contaminants from the groundwater. Other factors to be considered include the tensile strength, compressive strength, and collapse strength of the materials; length of time the monitoring well will be in service; and the materialôs resistance to chemical and microbiological corrosion.

Well screen and casing materials acceptable for the construction of RCRA monitoring wells include stainless steel (304 or 316), rigid PVC (meeting American National Standards Institute/National Sanitation Foundation Standard 14), and fluoropolymer materials (polytetrafluoroethylene, fluorinated ethylene propylene, and polyvinylidene). In addition, there are other materials available for the construction of monitoring wells including acrylonitrile butadiene styrene (ABS), fiberglass-reinforced plastic (FRP), black iron, carbon steel, and galvanized steel, but these materials are not recommended for use in long term monitoring wells

due to their low resistance to chemical attack and potential contribution of contamination to the groundwater. However, these materials may be used in the construction of monitoring wells where they will not be in contact with the groundwater that will be sampled (e.g., carbon steel pipe used as surface casing).

8.11.2.2 Well Construction Techniques

8.11.2.2.i Single-Cased Wells

The borehole shall be bored, drilled, or augered as close to vertical as possible, and checked with a plumb bob, level, or appropriate downhole logging tool. Slanted boreholes shall not be acceptable unless specified in the design. The borehole shall be of sufficient diameter so that well construction can proceed without major difficulties. To assure an adequate size, a minimum two-inch annular space is required between the casing and the borehole wall (or the hollow-stem auger wall). The two-inch annular space around the casing will allow the filter pack, bentonite seal, and annular grout to be placed at an acceptable thickness. Also, the two-inch annular space will allow up to a 1.5-inch outer diameter tremie pipe to be used for placing the filter pack, bentonite seal, and grout at the specified intervals.

It may be necessary to over-drill the borehole so that any soils that have not been removed (or that have fallen into the borehole during augering or drill stem retrieval) will fall to the bottom of the borehole below the depth where the filter pack and well screen are to be placed. Normally, three to five ft is sufficient for over-drilling shallow wells. Deep wells may require deeper over-drilling. The borehole can also be over-drilled to allow for an extra space for a well sump to be installed. If the borehole is over-drilled deeper than desired, it can be backfilled to the designated depth with bentonite pellets or the filter pack.

The well casings (riser assembly) should be secured to the well screen by flush-jointed threads or other appropriate connections and placed into the borehole and plumbed by the use of centralizers, a plumb bob, or a level. No petroleum-based lubricating oils or grease shall be used on casing threads. Teflon tape can be used to wrap the threads to ensure a tight fit and minimize leakage. No glue of any type shall be used to secure casing joints. Teflon ñOò rings can also be used to ~~insure~~ ensure a tight fit and minimize leakage. ñOò rings made of materials other than Teflon are not acceptable if the well will be sampled for organic compound analyses. Before the well screen and casings are placed at the bottom of the borehole, at least six inches of filter material shall be placed at the bottom to serve as a firm footing. The string of well screen and casing should then be placed into the borehole and plumbed. If centralizers are used, they shall be placed below the well screens and above the bentonite annular seals so that the placement of the filter pack, overlying bentonite seal, and annular grout will not be hindered. Centralizers placed in the wrong locations can cause bridging during material placement. If installing the well screen and casings through hollow-stem augers, the augers shall be slowly extracted as the filter pack, bentonite seal, and grout are placed in the well. The gradual extraction of the augers will allow the materials being placed in the augers to flow out of the bottom of the augers into the borehole. If the augers are not gradually extracted, the materials will accumulate at the bottom of the augers causing potential bridging problems. After the string of well screen and casing is plumb, the filter material shall be placed around the well screen up to the designated depth. After the filter pack has been installed, the bentonite seal shall be placed directly on top of the filter pack up to the designated depth or a minimum of two ft above the filter pack,

whichever is greater. After the bentonite seal has hydrated for the specified time, the annular grout shall be pumped by the tremie method into the annular space around the casings (riser assembly) up to within two feet of the ground surface or below the frost line, whichever is greater. The grout shall be allowed to cure for a minimum of 24 hours before the surface pad and protective casing are installed. After the surface pad and protective casing are installed, bumper guards (guideposts) shall be installed (if necessary).

8.11.2.2.ii Double-Cased Wells

Double-cased wells should be constructed when there is reason to believe that interconnection of two aquifers by well construction may cause cross contamination, or when flowing sands make it impossible to install a monitoring well using conventional methods. A pilot borehole should be advanced through the overburden and the contaminated zone into a clay, confining layer, or bedrock. An outer casing (surface or pilot casing) shall be placed into the borehole and sealed with grout. The borehole and outer casing should extend into tight clay a minimum of two ft or into competent bedrock a minimum of one foot. The total depth into the clay or bedrock will vary depending upon the plasticity of the clay and the extent of weathering and fracturing of the bedrock. The size of the outer casing shall be of sufficient inside diameter to contain the inner casing and the two-inch annular space. In addition, the borehole shall be of sufficient size to contain the outer casing and the two-inch minimum outer annular space, if applicable.

The outer casing shall be grouted by the tremie method from the bottom of the borehole to within two ft of the ground surface. The grout shall be pumped into the annular space between the outer casing and the borehole wall. This can be accomplished by either placing the tremie pipe in the annular space and pumping the grout from the bottom of the borehole to the surface, or placing a grout shoe or plug inside the casing at the bottom of the borehole and pumping the grout through the bottom grout plug and up the annular space on the outside of the casing. The grout shall consist of Type I Portland cement and bentonite or other approved grout to provide a rigid seal. A minimum of 24 hours shall be allowed for the grout plug (seal) to cure before attempting to drill through it. When drilling through the seal, care shall be taken to avoid cracking, shattering, and washing out of the seal. If caving conditions exist so that the outer casing cannot be sufficiently sealed by grouting, the outer casing shall be driven into place and a grout seal placed in the bottom of the casing.

8.11.2.2.iii Bedrock Wells

The installation of monitoring wells into bedrock can be accomplished in two ways. The first method is to drill or bore a pilot borehole through the soil overburden into the bedrock. An outer casing is installed into the borehole by setting it into the bedrock, and grouting it into place. After the grout has set, the borehole can be advanced through the grout seal into the bedrock. The preferred method of advancing the borehole into the bedrock is rock coring. Rock coring makes a smooth, round hole through the seal and into the bedrock without cracking or shattering the seal. Roller cone bits are used in soft bedrock, but extreme caution should be taken when using a roller cone bit to advance through the grout seal in the bottom of the borehole because excessive water and bit pressure can cause cracking, eroding (washing), and/or shattering of the seal. Low volume air hammers may be used to advance the borehole, but they have a tendency to shatter the seal because of the hammering action. If the structural integrity of the grout seal is in question, a pressure test can be utilized to check for leaks. If the seal leaks, the seal is not acceptable. When the drilling is complete, the finished well will consist of an open borehole

from the ground surface to the bottom of the well. The major limitation of open borehole bedrock wells is that the entire bedrock interval serves as the monitoring zone.

The second method is to install the outer surface casing and drill the borehole into bedrock, and then install an inner casing and well screen with the filter pack, bentonite seal, and annular grout. The well is completed with a surface protective casing and concrete pad. This well installation method gives the flexibility of isolating the monitoring zone(s) and minimizing inter-aquifer flow. In addition, it gives structural integrity to the well, especially in unstable areas (e.g., steeply dipping shales) where the bedrock has a tendency to shift or move when disturbed.

8.11.2.3 Well Screen and Filter Pack Design

Well screens and filter packs shall be designed to accurately sample the aquifer zone that the well is intended to sample, minimize the passage of formation materials (turbidity) into the well, and ensure sufficient structural integrity to prevent the collapse of the intake structure. The selection of the well screen length depends upon the objective of the well. Monitoring well screens shall be kept to the minimum length appropriate for intercepting a contaminant plume. The screen slot size shall be selected to retain from 90 to 100 percent of the filter pack material in artificially filter packed wells, and from 50 to 100 percent of the formation material in naturally packed wells. All well screens shall be factory wire-wrapped or machine slotted.

A filter pack shall be used when: 1) the natural formation is poorly sorted; 2) a long screen interval is required or the screen spans highly stratified geologic materials of widely varying grain sizes; 3) the natural formation is uniform fine sand, silt, or clay, 4) the natural formation is thin-bedded; 5) the natural formation is poorly cemented sandstone; 6) the natural formation is highly fractured or characterized by relatively large solution channels; 7) the natural formation is shale or coal that will act as a constant source of turbidity to groundwater samples; or 8) the diameter of the borehole is significantly greater than the diameter of the screen. The use of natural formation material as a filter pack is only recommended when the natural formation materials are relatively coarse-grained, permeable, and uniform in grain size.

Filter pack materials shall consist of clean, rounded to well-rounded, hard, insoluble particles of siliceous composition (industrial grade quartz sand or glass beads). The required grain-size distribution or particle sizes of the filter pack materials shall be selected based upon a sieve analysis of the aquifer materials or the formation to be monitored, or the characteristics of the aquifer materials using information acquired during previous investigations.

Where sieve analyses are used to select the appropriate filter pack particle size, the results of a sieve analysis of the formation materials are plotted on a grain-size distribution graph, and a grain-size distribution curve is generated. The 70 percent retained grain size value should be multiplied by a factor between four and six (four for fine, uniform formations and six for coarse, non-uniform formations). A second grain-size distribution curve is then drawn on the graph for this new value, ensuring that the uniformity coefficient does not exceed 2.5. The filter pack that shall be used will fall within the area defined by these two curves.

Once the filter pack size is determined, the screen slot size shall be selected to retain at least 90 percent of the filter pack material. The Permittees may propose the use of a pre-determined well screen slot size and filter pack for monitoring wells in the site-specific work plans submitted to the Department.

The filter pack shall be installed in a manner that prevents bridging and particle-size segregation. Filter pack materials shall not be poured into the annular space unless the well is shallow (e.g., less than 30 ft deep) and the filter pack material can be poured continuously into the well without stopping. At least two inches of filter pack material shall be installed between the well screen and the borehole wall, and two ft of material shall extend above the top of the well screen. A minimum of six-inches of filter pack material shall also be placed under the bottom of the well screen to provide a firm footing and an unrestricted flow under the screened area. In deep wells (e.g., greater than 200 ft deep), the filter pack may not compress when initially installed. As a result, filter packs may need to be installed as high as five ft above the screened interval in these situations. The precise volume of filter pack material required shall be calculated and recorded before placement, and the actual volume used shall be determined and recorded during well construction. Any significant discrepancy between the calculated and actual volume shall be explained. Prior to installing the filter pack annular seal, a one to two-ft layer of chemically inert fine sand shall be placed over the filter pack to prevent the intrusion of annular sealants into the filter pack.

8.11.2.4 Annular Sealant

The annular space between the well casing and the borehole must be properly sealed to prevent cross-contamination of samples and the groundwater. The materials used for annular sealants shall be chemically inert with respect to the highest anticipated concentration of chemical constituents expected in the groundwater at the Facility. In general, the permeability of the sealing material shall be one to two orders of magnitude lower than the least permeable parts of the formation in contact with the well. The precise volume of annular sealants required shall be calculated and recorded before placement, and the actual volume shall be determined and recorded during well construction. Any significant discrepancy between the calculated volume and the actual volume shall be explained.

During well construction, an annular seal shall be placed on top of the filter pack. This seal shall consist of a high solids (10-30 percent) bentonite material in the form of bentonite pellets, granular bentonite, or bentonite chips. The bentonite seal shall be placed in the annulus by pouring directly down the annulus. If the bentonite materials are poured directly down the annulus a tagging device shall be used to ensure that the seal is emplaced at the proper depth and the bentonite has not bridged higher in the well casing. The bentonite seal shall be placed above the filter pack a minimum of two ft vertical thickness. The bentonite seal shall be allowed to completely hydrate in conformance with the manufacturerôs specifications prior to installing the overlying annular grout seal. The time required for the bentonite seal to completely hydrate will differ with the materials used and the specific conditions encountered, but is generally a minimum of four to 24 hours.

A grout seal shall be installed on top of the filter pack annular seal. The grout seal may consist of a high solids (30 percent) bentonite grout, a neat cement grout, a cement/bentonite grout, or other suitable seal material that is approved by the Department. The grout shall be pumped under pressure (not gravity fed) into the annular space by the tremie pipe method, from the top of the filter pack annular seal to within a few feet of the ground surface. The tremie pipe shall be equipped with a side discharge port (or bottom discharge for grouting at depths greater than 100 feet) to minimize damage to the filter pack or filter pack annular bentonite seal during grout placement. The grout seal shall be allowed to cure for a minimum of 24 hours before the

concrete surface pad is installed. All grouts shall be prepared in accordance with the manufacturerôs specifications. High solids (30 percent) bentonite grouts shall have a minimum density of 10 pounds per gallon (as measured by a mud balance) to ensure proper setup. Cement grouts shall be mixed using six and one-half to seven gallons of water per 94-pound bag of Type I Portland cement. Bentonite (five to ten percent) may be added to delay the setting time and reduce the shrinkage of the grout.

8.11.3 Well Development

All monitoring wells shall be developed to create an effective filter pack around the well screen, correct damage to the formation caused by drilling, remove fine particles from the formation near the borehole, and assist in restoring the natural water quality of the aquifer in the vicinity of the well. Development stresses the formation around the screen, as well as the filter pack, so that mobile fines, silts, and clays are pulled into the well and removed. Development is also used to remove any foreign materials (e.g., water, drilling mud) that may have been introduced into the borehole during the drilling and well installation activities, and to aid in the equilibration that will occur between the filter pack, well casing, and the formation water. The development of a well is extremely important to ensuring the collection of representative groundwater samples.

Newly installed monitoring wells shall not be developed for at least 48 hours after the annular seal and backfill are installed. A new monitoring well shall be developed until the column of water in the well is free of visible sediment, and the pH, temperature, turbidity, and specific conductivity have stabilized. In most cases, the above requirements can be satisfied. However, in some cases, the pH, temperature, and specific conductivity may stabilize but the water remains turbid. In this case, the well may still contain well construction materials, such as drilling mud in the form of a mud cake or formation soils that have not been washed out of the borehole. Thick drilling mud cannot be flushed out of a borehole with one or two well volumes of flushing. Instead, continuous flushing over a period of several days may be necessary to complete the well development. If the well is pumped dry, the water level shall be allowed to sufficiently recover before the next development period is initiated. The common methods used for developing wells include:

1. Pumping and over-pumping;
2. Backwashing;
3. Surging (with a surge block);
4. Bailing;
5. Jetting; and
6. Airlift pumping.

These development procedures can be used, either individually or in combination, to achieve the most effective well development. However, the most favorable well development methods include pumping, over-pumping, bailing, surging, or a combination of these methods. Well development methods and equipment that alter the chemical composition of the groundwater shall not be used. Development methods that involve adding water or other fluids to the well or borehole, or that use air to accomplish well development should be avoided, if possible. Approval shall be obtained from the Department prior to introducing air, water, or other fluids

into the well for the purpose of well development. If water is introduced to a borehole during well drilling and completion, then the same or greater volume of water shall be removed from the well during development. In addition, the volume of water withdrawn from a well during development shall be recorded, and the Permittees shall use their best efforts to avoid pumping wells dry during development activities. Well or piezometer development must be completed within 30 days of installation of the well or piezometer or immediately after all wells proposed in an investigation work plan are installed.

8.11.4 Surface Completion

Monitoring wells may be completed either as flush-mounted wells, or as above-ground completions. A surface seal shall be installed over the grout seal and extended vertically up the well annulus to the land surface. The lower end of the surface seal shall extend a minimum of 1 foot below the frost line to prevent damage from frost heaving. The composition of the surface seal shall be neat cement or concrete. In above-ground completions, a three-foot wide, four-inch thick concrete surface pad shall be installed around the well at the same time the protective casing is installed. The surface pad shall be sloped so that drainage will flow away from the protective casing and off the pad. In addition, a minimum of one inch of the finished pad shall be below grade or ground elevation to prevent washing and undermining by soil erosion.

A locking protective casing shall be installed around the well casing (riser) to prevent damage or unauthorized entry. The protective casing shall be anchored in the concrete surface pad below the frost line and extend several inches above the well riser stickup. A weep hole may be drilled into the protective casing just above the top of the concrete surface pad to prevent water from accumulating and freezing inside the protective casing around the well riser. A cap shall be placed on the well riser to prevent tampering or the entry of foreign materials, and a lock shall be installed on the protective casing to provide security. If the wells are located in an area that receives traffic, a minimum of three bumper guards consisting of steel pipes three to four inches in diameter and a minimum of five-foot length should be installed. The bumper guards should be installed to a minimum depth of two feet below the ground surface in a concrete footing and extend a minimum of three feet above ground surface. The pipes should be filled with concrete to provide additional strength. The pipes should be painted a bright color to reduce the possibility of vehicular damage.

If flush-mounted completions are required (e.g., in active roadway areas), a protective structure such as a utility vault or meter box should be installed around the well casing. In addition, measures should be taken to prevent the accumulation of surface water in the protective structure and around the well intake. These measures should include outfitting the protective structure with a steel lid or manhole cover that has a rubber seal or gasket, and ensuring that the bond between the cement surface seal and the protective structure is watertight.

8.11.5 Well Abandonment

All well abandonment must be conducted in accordance with 19.27.4 NMAC. Wells are usually abandoned when they are no longer required in the monitoring network or when they are damaged beyond repair. The goal of well abandonment is to seal the borehole in such a manner that the well cannot act as a conduit for migration of contaminants from the ground surface to the aquifer or between aquifers. To properly abandon a well, the preferred method is to completely

remove the well casing and screen from the borehole, clean out the borehole, and backfill with a cement or bentonite grout, neat cement, or concrete. The well abandonment procedure must also comply with current EPA well abandonment guidance.

If conditions allow, for wells with small diameter casing, abandonment shall be accomplished by overdrilling the well with a large diameter hollow-stem auger. After the well has been overdrilled, the well casing and grout can be lifted out of the ground with a drill rig, and the remaining filter pack can be drilled out. The open borehole can then be pressure grouted (via the tremie pipe method) from the bottom of the borehole to the ground surface. After the grout has cured, the top two feet of the borehole shall be filled with concrete to ensure a secure surface seal.

Several other well abandonment procedures are available for wells with larger diameter screens and casings. One method is to force a drill stem with a tapered wedge assembly or a solid-stem auger into the well casing and pull the casing out of the ground. However, if the casing breaks or the well cannot be pulled from the ground, the well will have to be grouted in place. To abandon a well in place, a tremie pipe shall be placed at the lowest point in the well (at the bottom of the screen or in the well sump). The entire well is then pressure grouted from the bottom of the well upward. The pressurized grout will be forced out through the well screen into the filter pack and up the inside of the well casing sealing off all breaks and holes in the casing. Once the well is grouted, the casing is cut off even with the ground surface and covered with concrete.

If a PVC well cannot be abandoned due to internal casing damage (e.g., the tremie pipe cannot be extended to the bottom of the screen), it may be necessary to drill out the casing with a roller cone or drag bit using the wet rotary drilling method, or grind out the casing using a solid-stem auger equipped with a carbide tooth bit. Once the casing is removed, the open borehole can be cleaned out and pressure grouted from the bottom of the borehole upward.

8.11.6 Documentation

All information on the design, construction, and development of each monitoring well shall be recorded and presented on a boring log, a well construction log, and well construction diagram. The well construction log and well construction diagram shall include the following information:

1. Well name/number;
2. Date/time of well construction;
3. Borehole diameter and well casing diameter;
4. Well depth;
5. Casing length;
6. Casing materials;
7. Casing and screen joint type;
8. Screened interval(s);
9. Screen materials;
10. Screen slot size and design;
11. Filter pack material and size;

12. Filter pack volume (calculated and actual);
13. Filter pack placement method;
14. Filter pack interval(s);
15. Annular sealant composition;
16. Annular sealant placement method;
17. Annular sealant volume (calculated and actual);
18. Annular sealant interval(s);
19. Surface sealant composition;
20. Surface seal placement method;
21. Surface sealant volume (calculated and actual);
22. Surface sealant interval;
23. Surface seal and well apron design and construction;
24. Well development procedure and turbidity measurements;
25. Well development purge volume(s) and stabilization parameter measurements;
26. Type and design and construction of protective casing;
27. Well cap and lock;
28. Ground surface elevation;
29. Survey reference point elevation on well casing;
30. Top of monitoring well casing elevation; and
31. Top of protective steel casing elevation.

8.12 REPORTING REQUIREMENTS

8.12.1 General

The purpose of this Permit Section is to provide the reporting requirements and report formats for corrective action activities at all SWMUs, AOCs, and permitted units required under this Permit. This Permit Section is not intended to provide reporting requirements for every potential corrective action conducted at the Facility; therefore, the formats for all types of reports are not presented below. The described formats include the general reporting requirements and formats for site-specific investigation work plans, investigation reports, periodic monitoring reports, risk assessment reports, and corrective measures evaluations. The Permittees shall generally consider the reports to be the equivalents of RCRA Facility Investigation (RFI) work plans, RFI reports, periodic monitoring reports, risk assessments, Corrective Measures Study (CMS) plans, and CMS reports, for the purposes of RCRA compliance. The Permittees shall include detailed, site-specific requirements in all SWMU, AOC, permitted unit and facility-wide investigation work plans, investigation reports, monitoring reports, and corrective measures evaluations. All plans and reports shall be prepared considering any technical and regulatory input received from the

Department. All work plans, reports and other documents shall be submitted to the Department as required in Permit Section 1.14.

The reporting requirements listed in this attachment do not include all sections that may be necessary to complete each type of report listed and may include sections that are not relevant for a specific site action. The Permittees or the Department may determine that additional sections may be needed to address additional site-specific issues or information collected during corrective action or monitoring activities not listed below. All reports submitted by the Permittees shall follow the general approach and limitations for data presentation described in this Permit Part.

8.12.2 Investigation Work Plan

The Permittees shall prepare work plans for site investigations or corrective action activities at the Facility using the general outline below. The minimum requirements for describing proposed activities within each section are included. All research, locations, depths and methods of exploration, field procedures, analytical results, data collection methods, and schedules shall be included in each work plan. In general, interpretation of data acquired during previous investigations shall be presented only in the background sections of the work plans. The other text sections of the work plans shall be reserved for presentation of anticipated site-specific activities and procedures relevant to the project. The general work plan outline is described below.

8.12.2.1 Title Page

The title page shall include the type of document; Facility name; Area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the names and titles of the responsible DOE and Sandia representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

8.12.2.2 Executive Summary (Abstract)

The executive summary or abstract shall provide a brief summary of the purpose and scope of the investigation to be conducted at the subject site. The Facility, SWMU or AOC name, permitted unit reference, site name, any other unit name, location, and Area designation shall be included in the executive summary.

8.12.2.3 Table of Contents

The table of contents shall list all text sections, tables, figures, and appendices or attachments included in the work plan. The corresponding page numbers for the titles of each section of the work plan shall be included in the table of contents.

8.12.2.4 Introduction

The introduction shall include the Facility name, area designation, unit location, and unit status (e.g., closed, corrective action). General information on the current site usage and status shall be

included in this section. A brief description of the purpose of the investigation and the type of site investigation to be conducted shall be provided in this section.

8.12.2.5 Background

The background section shall describe relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of pertinent subsurface features such as pipelines, underground tanks, utility lines, and other subsurface structures shall be included in the background summary and labeled on the figure, unless none exist.

This section shall identify potential receptors, including groundwater, and include a brief summary of the type and characteristics of all waste and all contaminants managed or released at the site, the known and possible sources of contamination, the history of releases or discharges of contamination, and the known extent of contamination. This section shall include brief summaries of results of previous investigations, if conducted, including references to pertinent figures, data summary tables, and text in previous reports. At a minimum, detections of contaminants encountered during previous investigations shall be presented in table format, with an accompanying figure showing sample locations. References to previous reports shall include page, table, and figure numbers for referenced information. Summary data tables and site plans showing relevant investigation locations shall be included in the Tables and Figures sections of the document, respectively.

8.12.2.6 Site Conditions

8.12.2.6.i Surface Conditions

A section on surface conditions shall provide a description of current site topography, features and structures including a description of topographic drainages, man-made drainages, vegetation, erosional features, and basins. It shall also include a detailed description of current site usage and any current operations at the site. In addition, descriptions of features located in surrounding sites that may have an impact on the subject site regarding sediment transport, surface water run-off, or contaminant fate and transport shall be included in this section.

8.12.2.6.ii Subsurface Conditions

A section on subsurface conditions shall provide a description of the site conditions observed during previous subsurface investigations, including relevant soil horizons, stratigraphy, presence of groundwater, and other relevant information. A site plan showing the locations of all borings and excavations advanced during previous investigations shall be included in the Figures section of the work plan. A brief description of the anticipated stratigraphic units that may be encountered during the investigation may be included in this subsection if no previous investigations have been conducted at the site.

8.12.2.7 Scope of Activities

A section on the scope of activities shall briefly describe a list of all anticipated activities to be performed during the investigation including background information research, health and safety

requirements that may affect or limit the completion of tasks, drilling, test pit or other excavations, well construction, field data collection, survey data collection, chemical analytical testing, aquifer testing, remediation system pilot tests, and IDW storage and disposal.

8.12.2.8 Investigation Methods

A section on investigation methods shall provide a description of all anticipated locations and methods for conducting the activities to be performed during the investigation. This section shall include research methods, health and safety practices that may affect the completion of tasks, drilling methods, test pit or other excavation methods, sampling intervals and methods, well construction methods, field data collection methods, geophysical and land survey methods, field screening methods, chemical analytical testing, materials testing, aquifer testing, pilot tests, and other proposed investigation and testing methods. This information may also be summarized in table format, if appropriate.

8.12.2.9 Monitoring and Sampling Program

A section on monitoring and sampling shall provide a description of the groundwater, ambient air, subsurface vapor, remediation system, engineering controls, and other monitoring and sampling programs currently being implemented at the site.

8.12.2.10 Schedule

A section shall set forth the anticipated schedule for completion of field investigation, pilot testing, and monitoring and sampling activities. In addition, this section shall set forth a schedule for submittal of reports and data to the Department including a schedule for submitting all status reports and preliminary data.

8.12.2.11 Tables

The following summary tables may be included in the investigation work plans, if previous investigations have been conducted at the site:

1. Summaries of regulatory criteria, background, and applicable cleanup levels (may be included in the analytical data tables instead of as separate tables);
2. Summaries of historical field survey location data;
3. Summaries of historical field screening and field parameter measurements of soil, rock, sediments, groundwater, surface water, and air quality data;
4. Summaries of historical soil, rock, or sediment laboratory analytical data shall include the analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data;
5. Summaries of historical groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths, the screened intervals in each well, and the dates and times measurements were taken;

6. Summaries of historical groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data;
7. Summary of historical surface water laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data;
8. Summary of historical air sample screening and chemical analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data; and
9. Summary of historical pilot or other test data, if applicable, including units of measurement and types of instruments used to obtain measurements.

Data presented in the tables shall include information on dates of data collection, analytical methods, detection limits, and significant data quality exceptions. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

8.12.2.12 Figures

The following figures shall be included with each investigation work plan for each site, including presentation of data where previous investigations have been conducted. All figures must include an accurate bar scale and a north arrow. An explanation shall be included on each figure for all abbreviations, symbols, acronyms, and qualifiers. All maps shall contain a date of preparation.

1. A vicinity map showing topography and the general location of the site relative to surrounding features and properties;
2. A site plan that presents pertinent site features and structures, underground utilities, well locations, and remediation system locations and details. Off-site well locations and other relevant features shall be included on the site plan, if appropriate. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features;
3. Figures showing historical and proposed soil boring or excavation locations and sampling locations;
4. Figures presenting historical soil sample field screening and laboratory analytical data if applicable;
5. Figures presenting the locations of all existing and proposed borings and vapor monitoring well locations;
6. Figures showing all existing and proposed wells and piezometers, presenting historical groundwater elevation data, and indicating groundwater flow directions;
7. Figures presenting historical groundwater laboratory analytical data, if applicable. The chemical analytical data corresponding to each sampling location can be presented in tabular form on the figure or as an isoconcentration map;

8. Figures presenting historical and proposed surface water sample locations and field measurement data, if applicable;
9. Figures presenting historical surface water laboratory analytical data, if applicable;
10. Figures showing historical and proposed air or vapor sampling locations and presenting historical air quality data, if applicable;
11. Figures presenting historical pilot and other testing locations and data, where applicable, including site plans and graphic data presentation; and
12. Figures presenting geologic cross-sections, based on outcrop and borehole data acquired during previous investigations, if applicable.

8.12.2.13 Appendices

A description of IDW management shall be included as an appendix to the investigation work plan. The results of historical investigations required in this Permit shall be submitted with the investigation work plan as a separate document. Additional appendices may be necessary to present additional data or documentation not listed above.

8.12.3 Investigation Report

The Permittees shall prepare investigation reports at the Facility using the general outline below. The Investigation Report shall be the reporting mechanism for presenting the results of completed Investigation Work Plans. This Permit Section (8.12.3) describes the minimum requirements for reporting on site investigations. All data collected during each site investigation event in the reporting period shall be included in the reports. In general, interpretation of data shall be presented only in the background, conclusions and recommendations sections of the reports. The other text sections of the reports shall be reserved for presentation of facts and data without interpretation or qualifications. The general report outline is provided below.

8.12.3.1 Title Page

The title page shall include the type of document; Facility name; Area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the names and titles of the responsible DOE and Sandia representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

8.12.3.2 Executive Summary (Abstract)

The executive summary or abstract shall provide a brief summary of the purpose, scope, and results of the investigation; site names; location; and area designation. In addition, this section shall include a brief summary of conclusions included in the report based on the investigation data collected and recommendations for future investigation, monitoring, remedial action or site closure.

8.12.3.3 Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the report. The corresponding page numbers for the titles of each section of the report shall be included in the table of contents.

8.12.3.4 Introduction

The introduction section shall include the Facility name, area designation, unit location, and unit status (e.g., closed, corrective action). General information on the site usage and status shall be included in this section. A brief description of the purpose of the investigation, the type of site investigation conducted, and the type of results presented in the report also shall be provided in this section.

8.12.3.5 Background

The background section shall describe relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of any subsurface features such as pipelines, underground tanks, utility lines, and other subsurface structures shall be included in the background summary and labeled on the figure, as appropriate. In addition, this section shall include a brief summary of the possible sources of contamination, the history of releases or discharges of contamination, the known extent of contamination, and a general summary of the results of previous investigations including references to previous reports. The references to previous reports shall include page, table, and figure numbers for referenced information. A site plan, showing relevant investigation locations, and summary data tables shall be included in the Figures and Tables sections of the document, respectively.

8.12.3.6 Scope of Activities

A section on the scope of activities shall briefly describe all activities performed during the investigation event including background information research, implemented health and safety measures that affected or limited the completion of tasks, drilling, test pit or other excavation methods, well construction methods, field data collection, survey data collection, chemical analytical testing, aquifer testing, remediation system pilot tests, and IDW storage or disposal.

8.12.3.7 Field Investigation Results

A section shall provide a summary of the procedures used and the results of all field investigation activities conducted at the site including the dates that investigation activities were conducted, the type and purpose of field investigation activities performed, field screening measurements, logging and sampling results, pilot test results, construction details, and conditions observed. Field observations or conditions that altered the planned work or may have influenced the results of sampling, testing, and logging shall be reported in this section. The following sections shall be included.

8.12.3.8 Site Conditions

8.12.3.8.i Surface Conditions

A section on surface conditions shall provide a description of current site topography, features and structures including a description of topographic drainages, man-made drainages, vegetation, erosional features, and basins. It shall also include a detailed description of current site usage and any current operations at the site. In addition, descriptions of features located in surrounding sites that may have an impact on the subject site regarding sediment transport, surface water run-off, or contaminant fate and transport shall be included in this section.

8.12.3.8.ii General Subsurface Conditions

A section on subsurface conditions shall provide a description of the general site conditions observed during the subsurface investigations, including relevant soil horizons, stratigraphy, presence of groundwater, and other relevant information. A site plan showing the locations of all borings and excavations advanced during the investigation and, as applicable, previous investigations shall be included in the Figures section of the work plan. A brief description of the stratigraphic units that were observed during the investigation shall be included in this subsection if no previous investigations have been conducted at the site.

8.12.3.9 Exploratory Drilling or Excavation Investigations

A section shall describe the locations, methods, and depths of subsurface explorations. The description shall include the types of equipment used, the logging procedures, the soil or rock classification system used to describe the observed materials, exploration equipment decontamination procedures, and conditions encountered that may have affected or limited the investigation.

A description of the site conditions observed during subsurface investigation activities shall be included in this section, including soil horizon and stratigraphic information. Site plans showing the locations of all borings and excavations shall be included in the Figures Section of the report. Boring and test pit logs for all exploratory borings and test pits shall be presented in an appendix or attachment to the report.

8.12.3.10 Exploratory and Monitoring Well Boring Geophysical Logging

A section shall describe the methods, dates of measurement, depth intervals measured, and the results of geophysical logging. The relative merits and limitations of each geophysical logging method employed shall be discussed, along with any field conditions or instrument malfunctions that occurred that may have affected the results of the geophysical logging.

8.12.3.11 Subsurface Conditions

A section on subsurface conditions shall describe known subsurface lithology and structures, based on observations made during the current and previous subsurface investigations, including interpretation of geophysical logs and as-built drawings of man-made structures. A description of any known locations of pipelines and utility lines and observed geologic structures shall also be included in this section. A site plan showing boring and excavation locations and the locations of the siteôs above- and below-ground structures shall be included in the Figures

Section of the report. In addition, cross-sections shall be constructed, if appropriate, to provide additional visual presentation of site or regional subsurface conditions.

8.12.3.12 Monitoring Well Construction and Boring or Excavation Abandonment

A section shall describe the methods and details of monitoring well construction and the methods used to abandon or backfill exploratory borings and excavations. The description shall include the dates of well construction, boring abandonment, or excavation backfilling. In addition, well construction diagrams shall be included in an appendix or attachment with the associated boring logs for monitoring well borings. The Permittees may submit well abandonment reports as an appendix to the investigation report.

8.12.3.13 Groundwater Conditions

A section shall describe groundwater conditions observed beneath the subject site and relate local groundwater conditions to regional groundwater conditions. A description of the depths to water, aquifer thickness, and groundwater flow directions shall be included in this section for perched and regional groundwater, as appropriate to the investigation. Figures showing well locations, surrounding area, and groundwater elevations and flow directions for each hydrologic zone shall be included in the Figures Section of the report.

8.12.3.14 Surface Water Conditions

A section shall describe surface water conditions and include a description of surface water run-off, drainage, surface water sediment transport, and contaminant transport in surface water as suspended load and as a dissolved phase in surface water via natural and man-made drainages, if applicable. A description of contaminant fate and transport shall be included, if appropriate.

8.12.3.15 Surface Air and Subsurface Vapor Conditions

A section shall describe surface air and subsurface vapor monitoring and sampling methods used during the site investigation. It shall also describe observations made during the site investigation regarding subsurface flow pathways and the subsurface air-flow regime.

8.12.3.16 Materials Testing Results

A section shall discuss the materials testing results, such as core permeability testing, grain size analysis, or other materials testing results. Sample collection methods, locations, and depths shall also be included. Corresponding summary tables shall be included in the Tables Section of the report.

8.12.3.17 Pilot Testing Results

A section shall discuss the results of any pilot tests. Pilot tests are typically conducted after initial subsurface investigations are completed and the need for additional investigation or remediation has been evaluated. Pilot tests, including aquifer tests and remediation system pilot tests, shall be addressed through separate work plans and pilot test reports. The format for pilot test work plans and reports shall be approved by the Department prior to submittal.

8.12.3.18 Regulatory Criteria

A section shall set forth the cleanup standards, risk-based screening levels, and risk-based cleanup goals for each pertinent medium at the subject site. The appropriate cleanup levels for each site shall be included if site-specific levels have been established at separate Facility sites or units. A table summarizing the applicable cleanup standards or levels or inclusion of applicable cleanup standards or levels in the data tables shall be included as part of the document. The risk assessment, if conducted, shall be presented in a separate document or in an appendix to this report. If cleanup or screening levels calculated in the Department-approved risk evaluation are employed, the risk evaluation document shall be referenced and shall include pertinent page numbers for referenced information.

8.12.3.19 Site Contamination

A section shall provide a description of sampling intervals and methods for detection of surface and subsurface contamination in soils, rock, sediments, groundwater, and surface water, and as vapor-phase contamination. Only factual information shall be included in this section. Interpretation of the data shall be reserved for the summary and conclusions sections of the report. Tables summarizing all sampling, testing, and screening results for detected contaminants shall be prepared in a format approved by the Department. The tables shall be presented in the Tables Section of the report.

8.12.3.19.i Soil, Rock, and Sediment Sampling

A section shall describe the sampling of soil, rock, and sediment. It shall include the dates, locations and methods of sample collection; sampling intervals; sample logging methods; screening sample selection methods; and laboratory sample selection methods including the collection depths for samples submitted for laboratory analyses. A site plan showing the sample locations shall be included in the Figures Section of the report.

8.12.3.19.ii Soil, Rock, and Sediment Sample Field Screening Results

A section shall describe the field screening methods used during the investigation and the field screening results. Field screening results also shall be presented in summary tables in the Tables Section of the document. The limitations of field screening instrumentation and any conditions that influenced the results of field screening shall be discussed in this section.

8.12.3.19.iii Soil, Rock, and Sediment Sampling Analytical Results

A section shall summarize the results of laboratory analysis for soil, rock, and sediment samples. It shall also describe the analytical methods used and provide a comparison of the analytical results to background levels, cleanup standards, or established cleanup levels for the site. The laboratory results also shall be presented in summary tables in the Tables Section of the document. Field conditions and sample collection methods that could potentially affect the analytical results shall be described in this section. If appropriate, soil analytical data shall be presented with sample locations on a site plan and included in the Figures Section of the report.

8.12.3.19.iv Groundwater Sampling

A section on groundwater sampling shall describe the dates, locations, depths, and methods of sample collection; methods for sample logging; and methods for screening and laboratory sample

selection. A map showing all sites and surrounding area well locations shall be included in the Figures Section of the report.

8.12.3.19.v Groundwater General Chemistry

A section on the general groundwater chemistry shall describe the results of measurement of field purging parameters and field analytical measurements. Field parameter measurements and field analytical results also shall be presented in summary tables in the Tables Section of the document. The limitations of field measurement instrumentation and any conditions that may have influenced the results of field screening shall be discussed in this section. As determined by the Permittees and the Department, relevant water chemistry concentrations shall be presented as data tables or as isoconcetration contours on a map included in the Figures Section of the report.

8.12.3.19.vi Groundwater Chemical Analytical Results

A section shall summarize the results of groundwater chemical analyses. It shall describe the groundwater chemical analytical methods and analytical results. It shall also provide a comparison of the data to cleanup standards or established cleanup levels for the site. The rationale or purpose for altering or modifying the groundwater sampling program outlined in the site investigation work plan shall also be provided in this section. Field conditions shall be described in this section that may have affected the analytical results during sample collection. Tables summarizing the groundwater laboratory, field, and field sample QA/QC chemical analytical data; applicable cleanup levels; and modifications to the groundwater sampling program shall be provided in the Tables Section of the report. Relevant contaminant concentrations shall be presented as individual analyte concentrations, data tables, or as isoconcentration contours on a map included in the Figures Section of the report.

8.12.3.19.vii Surface Water Sampling

A section shall describe the surface water sampling and shall include the dates, times, locations, depths, and methods of sample collection. It shall also describe methods for sample logging, sample-screening methods, and laboratory sample selection methods. A map showing all surface-water sampling locations shall be included in the Figures Section of the report.

8.12.3.19.viii Surface Water General Chemistry

A section on the surface water general chemistry shall describe the results of measurement of field parameters and field analytical measurements. Field parameter measurements and field analytical results also shall be presented in summary tables in the Tables Section of the document. The limitations of field measurement instrumentation and any conditions that influenced the results of field screening shall be discussed in this Section. Relevant water chemistry concentrations shall be presented as data tables on a map included in the Figures Section of the report.

8.12.3.19.ix Surface Water Chemical Analytical Results

A section shall summarize the results of surface water chemical analyses. It shall describe the analytical methods and analytical results, and provide a comparison of the data to the cleanup standards or established background or cleanup levels for the site. The rationale or purpose for altering or modifying the surface-water sampling program outlined in the site investigation work plan also shall be provided in this section. Field conditions that may have affected the analytical

results during sample collection shall be described in this section. Tables summarizing the surface water laboratory, field, and analytical field sample QA/QC analytical data; applicable cleanup levels; and modifications to the surface-water sampling program shall be provided in the Tables Section of the report. Relevant contaminant concentrations shall be presented as individual analyte concentrations or as data tables on a map included in the Figures Section of the report.

8.12.3.19.x Air and Subsurface Vapor Sampling

A section shall describe the air and subsurface vapor sampling. It shall describe the dates, locations, depths or elevations above ground surface, methods of sample collection, methods for sample logging, and methods for laboratory sample selection. A map showing all air sampling locations shall be provided in the Figures Section of the report.

8.12.3.19.xi Air and Subsurface Vapor Field Screening Results

A section shall describe the air and subsurface vapor field screening results. It shall describe the field screening methods used for ambient air and subsurface vapors during the investigation. Field screening results shall also be presented in summary tables in the Tables Section of the report. The locations of ambient air and subsurface vapor screening sample collection shall be presented on a site plan included in the Figures Section of the report. The limitations of field screening instrumentation and any conditions that influenced the results of field screening shall be discussed in this Section.

8.12.3.19.xii Air and Subsurface Vapor Laboratory Analytical Results

A section shall describe the results of air and subsurface vapor laboratory analysis. It shall describe the air sampling laboratory analytical methods and analytical results, and provide a comparison of the data to emissions standards or established cleanup or emissions levels for the site. The rationale or purpose for altering or modifying the air monitoring or sampling program outlined in the site investigation work plan also shall be provided in this section. Field conditions that may have affected the analytical results during sample collection shall be described in this section. Tables summarizing the air sample laboratory, field, and analytical field sample QA/QC data; applicable cleanup levels or emissions standards; and modifications to the air sampling program shall be provided in the Tables Section of the report. Relevant contaminant concentrations shall be presented as individual analyte concentrations, data tables, or as isoconcentration contours on a map included in the Figures Section of the report.

8.12.3.20 Conclusions

A section shall provide a brief summary of the investigation activities and a discussion of the conclusions of the investigation conducted at the site. In addition, this section shall provide a comparison of the results to applicable cleanup or screening levels, and to relevant historical investigation results and analytical data. Potential receptors, including groundwater, shall be identified and discussed. An explanation shall be provided with regard to data gaps. A risk assessment may be included as an appendix to the investigation report; however, the risk assessment shall be presented in the Risk Assessment format described in Permit Section 8.12.5. References to the risk assessment shall be presented only in the summary and conclusions sections of the Investigation Report.

8.12.3.21 Recommendations

A section shall discuss the need for further investigation, corrective measures, risk assessment and monitoring, or recommendations for corrective action completed, based on the conclusions provided in the Conclusions section. It shall include explanations regarding additional sampling, monitoring, and site closure. A corresponding schedule for further action regarding the site shall also be provided. No action recommendations shall include the anticipated schedule for submittal of a petition for a permit modification.

8.12.3.22 Tables

A section shall provide the following summary tables as applicable:

1. Tables summarizing regulatory criteria, background levels, and applicable cleanup levels (this information may be included in the analytical data tables instead of as separate tables);
2. Tables summarizing field survey location data. Separate tables shall be prepared for well locations and individual medium sampling locations except where the locations are the same for more than 1 medium;
3. Tables summarizing field screening and field parameter measurements of soil, rock, sediments, groundwater, surface water, and air quality data;
4. A table summarizing soil, rock, and/or sediment laboratory analytical data. It shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;
5. A table summarizing the groundwater elevations and depths to groundwater. The table shall include the monitoring well depths and the screened intervals in each well;
6. A table summarizing the groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;
7. A table summarizing the surface water laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;
8. A table summarizing the air sample screening and laboratory analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;
9. Tables summarizing the pilot test data, if applicable, including units of measurement and types of instruments used to obtain measurements; and
10. A table summarizing any materials test data.

With prior approval from the Department, the Permittees may combine one or more of the tables. Data presented in the tables shall include the current data, dates of data collection, analytical methods, detection limits, and significant data quality exceptions. The summary analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

8.12.3.23 Figures

A section shall provide the following figures as applicable:

1. A vicinity map showing topography and the general location of the subject site relative to surrounding features and properties;
2. A site plan that presents any pertinent site features and structures, underground utilities, well locations, and remediation system location(s) and details. Off-site well locations and other relevant features shall be included on the site plan. Additional site plans may be required to present the locations of relevant off-site well locations, structures and features;
3. Figures showing boring or excavation locations and sampling locations;
4. Figures presenting soil sample field screening and laboratory analytical data;
5. Figures displaying the locations of all newly installed and existing wells and borings;
6. Figures presenting monitoring well and piezometer locations, groundwater elevation data, and groundwater flow directions;
7. Figures presenting groundwater laboratory analytical data, including any past data requested by the Department. The laboratory analytical data corresponding to each sampling location may be presented in table form on the figure or as an isoconcentration map;
8. Figures presenting surface water sample locations and field measurement data including any past data requested by the Department;
9. Figures presenting surface water laboratory analytical data including any past data requested by the Department. The laboratory analytical data corresponding to each sampling location may be presented in table form on the figure;
10. Figures showing air sampling locations and presenting air quality. The field screening or laboratory analytical data corresponding to each sampling location may be presented in table form on the figure or as an isoconcentration map;
11. Figures presenting geologic cross-sections based on outcrop and borehole data; and
12. Figures presenting pilot test locations and data, where applicable, including site plans or graphic data presentation.

All figures shall include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers. All maps shall have a date.

8.12.3.24 Appendices

Each investigation report shall include the following appendices. Additional appendices may be necessary to present data or documentation not listed below.

8.12.3.24.i Field Methods

An appendix shall provide detailed descriptions of the methods used to acquire field measurements of each medium that was surveyed or tested during the investigation. This

appendix shall include exploratory drilling or excavation methods, the methods and types of instruments used to obtain field screening, field analytical or field parameter measurements, instrument calibration procedures, sampling methods for each medium investigated, decontamination procedures, sample handling procedures, documentation procedures, and a description of field conditions that affected procedural or sample testing results. Methods of measuring and sampling during pilot tests shall be reported in this appendix, if applicable. Geophysical logging methods shall be discussed in a separate section of this appendix. Investigation derived waste (IDW) storage and disposal methods shall also be discussed in this appendix. Copies of IDW disposal documentation shall be provided in a separate appendix.

8.12.3.24.ii Boring/Test Pit Logs and Well Construction Diagrams

An appendix shall provide boring logs, test pit logs, or other excavation logs, and well construction details. In addition, a key to symbols and a soil or rock classification system shall be included in this appendix. Geophysical logs shall be provided in a separate section of this appendix.

8.12.3.24.iii Analytical Program

An appendix shall discuss the analytical methods, a summary of data quality objectives, and the data quality review procedures. A summary of data quality exceptions and their effect on the acceptability of the field and laboratory analytical data with regard to the investigation and the site status shall be included in this appendix along with references to the case narratives provided in the laboratory reports.

8.12.3.24.iv Analytical Reports

An appendix shall provide the contract laboratory final analytical data reports generated for the investigation. The reports shall include all chain-of-custody records and Level II QA/QC results provided by the laboratory. The final laboratory reports and data tables shall be provided electronically in a format approved by the Department. Paper copies (or copies electronically scanned in PDF format) of all chain-of-custody records shall be provided with the reports.

8.12.3.24.v Other Appendices

Other appendices containing additional information shall be included as required by the Department or as otherwise appropriate.

8.12.4 Periodic Monitoring Report

The Permittees shall use the following guidance for preparing periodic monitoring reports under this Permit Part. The reports shall present the reporting of periodic groundwater, surface water, vapor, and remediation system monitoring at the Facility. The following sections provide a general outline for monitoring reports, and also provide the minimum requirements for reporting for specific Facility sites, areas, and regional monitoring. All data collected during each monitoring and sampling event in the reporting period shall be included in the reports. In general, interpretation of data shall be presented only in the background, conclusions, and recommendations sections of the reports. The other text sections of the reports shall be reserved for presentation of facts and data without interpretation or qualifications.

8.12.4.1 Title Page

The title page shall include the type of document; Facility name; area designation; SWMU or AOC name, site, watershed, and any other unit name; and the submittal date. A signature block providing spaces for the names and titles of the responsible DOE and Sandia representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

8.12.4.2 Executive Summary (Abstract)

The executive summary or abstract shall provide a brief summary of the purpose, scope, and results of the monitoring conducted at the subject site during the reporting period. The area (e.g., Plume-front, Facility-wide) SWMU, AOC and site name, location, and/or area designation shall be included in the executive summary. In addition, this section shall include a brief summary of conclusions based on the monitoring data collected.

8.12.4.3 Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the report. The corresponding page numbers for the titles of each section of the report shall be included in the table of contents.

8.12.4.4 Introduction

The introduction section shall include the Facility name, area designation physical area and/or, unit location, and unit status as applicable (e.g. closed, corrective action). General information on the site usage and status shall be included in this section. A brief description of the purpose of the monitoring, type of monitoring conducted, and the type of results presented in the report also shall be provided in this section.

8.12.4.5 Scope of Activities

A section on the scope of activities shall briefly describe all activities performed during the monitoring event or reporting period including field data collection, analytical testing, remediation system monitoring, if applicable, and purge/decontamination water storage and disposal.

8.12.4.6 Regulatory Criteria

A section on regulatory criteria shall provide information regarding applicable cleanup standards, risk-based screening levels and risk-based cleanup goals for the subject site. A separate table summarizing the applicable screening levels or standards or inclusion of the applicable cleanup standards or screening levels in the data tables can be substituted for this section. The appropriate cleanup or screening levels for each site shall be included, if site-specific levels have been established at separate sites. Risk-based evaluation procedures, if used to calculate cleanup or screening levels, must either be included as an attachment or referenced. The specific document and page numbers must be included for all referenced materials.

8.12.4.7 Monitoring Results

A section shall provide a summary of the results of monitoring conducted at the site. This section shall include the dates and times that monitoring was conducted, the measured depths to groundwater, directions of groundwater flow, field air and water quality measurements, contaminant surveys, static pressures, field measurements, and a comparison to previous monitoring results. Field observations or conditions that may influence the results of monitoring shall be reported in this section. Tables summarizing vapor-monitoring parameters, groundwater elevations, depths to groundwater measurements, and other field measurements can be substituted for this section. The tables shall include all information required in Permit Section 8.12.4.11.

8.12.4.8 Analytical Data Results

A section shall discuss the results of the chemical analyses. It shall provide the dates of sampling, the analytical methods, and the analytical results. It shall also provide a comparison of the data to previous results and to background levels, cleanup standards, or established cleanup levels for the site. The rationale or purpose for altering or modifying the monitoring and sampling program shall be provided in this section. A table summarizing the laboratory analytical data, QA/QC data, applicable cleanup levels, and modifications to the sampling program can be substituted for this section. The tables shall include all information required in Permit Section 8.12.4.11.

8.12.4.9 Remediation System Monitoring

A section shall discuss the remediation system monitoring. It shall summarize the remediation systemôs capabilities and performance. It shall also provide monitoring data, treatment system discharge sampling requirements, and system influent and effluent sample analytical results. The dates of operation, system failures, and modifications made to the remediation system during the reporting period shall also be included in this section. A summary table may be substituted for this section. The tables shall include all information required in Permit Section 8.12.4.11.

8.12.4.10 Summary

A summary section shall provide a discussion and conclusions of the monitoring conducted at the site. In addition, this section shall provide a comparison of the results to applicable cleanup levels, and to relevant historical monitoring and laboratory analytical data. An explanation shall be provided with regard to data gaps. A discussion of remediation system performance, monitoring results, modifications, if applicable, and compliance with discharge requirements shall be provided in this section. Recommendations and explanations regarding future monitoring, remedial actions, or site closure, if applicable, shall also be included in this section.

8.12.4.11 Tables

A section shall provide the following summary tables for the media sampled:

1. A table summarizing the regulatory criteria (a Regulatory Criteria text section may be substituted for this table or the applicable cleanup levels may be included in the analytical data tables);

2. A table summarizing groundwater elevations and depths to groundwater data. The table shall include the monitoring well depths, the screened intervals in each well, and the dates and times of measurements;
3. A table summarizing field measurements of surface water quality data;
4. A table summarizing field measurements of vapor monitoring data (must include historical vapor monitoring data as described above);
5. A table summarizing field measurements of groundwater quality data (must include historical water quality data as described above);
6. A table summarizing vapor sample analytical data (must include historical vapor sample analytical data as described above);
7. A table summarizing surface water analytical data (must include historical surface water analytical data as described above);
8. A table summarizing groundwater analytical data (must include historical groundwater analytical data as described above); and
9. A table summarizing remediation system monitoring data, if applicable (must include historical remediation system monitoring data as described above).

With prior approval from the Department, the Permittees may combine one or more of the tables. Data presented in the tables shall include the current sampling and monitoring data plus data from the three previous monitoring events or, if data from less than three monitoring events is available, data acquired during previous investigations. Remediation system monitoring data also shall be presented. The dates of data collection shall be included in the tables. Summary tables may be substituted for portions of the text. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

8.12.4.12 Figures

The section shall include the following figures:

1. A vicinity map showing topography and the general location of the subject site relative to surrounding features or properties;
2. A site plan that presents pertinent site features and structures, well and piezometer locations, and remediation system location(s) and features. Off-site well locations and pertinent features shall be included on the site plan, if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features;
3. Figures presenting the locations of piezometer, monitoring and other well locations, groundwater elevation data, and groundwater flow directions;
4. Figures presenting groundwater analytical data for the current monitoring event. The analytical data corresponding to each sampling location may be presented as individual concentrations or in table form on the figure or as an isoconcentration map;
5. Figures presenting surface water sampling locations and analytical data for the current monitoring period if applicable;

6. Figures presenting vapor sampling locations and analytical data for the current monitoring event if applicable. The analytical data corresponding to each sampling location may be presented as individual concentrations or in table form on the figure or as an isoconcentration map; and
7. Figures presenting geologic cross-sections based on outcrop and borehole data, if applicable.

All figures shall include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers. All figures shall have a date.

8.12.4.13 Appendices

Each monitoring report shall include the following appendices. Additional appendices may be necessary to present data or documentation not listed below.

8.12.4.13.i Field Methods

An appendix shall include the methods used to acquire field measurements of groundwater elevations, vapor and water quality data, and vapor, surface water and groundwater samples. It shall include the methods and types of instruments used to measure depths to water, air or headspace parameters, flow measurements, and water quality parameters. In addition, decontamination, well purging techniques, well sampling techniques, and sample handling procedures shall be provided in this appendix. Methods of measuring and sampling remediation systems shall be reported in this appendix, if applicable. Purge and decontamination water storage and disposal methods shall also be presented in this appendix. Copies of purge and decontamination water disposal documentation shall be provided in a separate appendix, if applicable.

8.12.4.13.ii Analytical Program

An appendix shall discuss the analytical program. It shall include the analytical methods, a summary of data quality objectives, and data quality review procedures. A summary of data quality exceptions and their effect on the acceptability of the analytical data with regard to the monitoring event and the site status shall be included in this appendix along with references to case narratives provided in the laboratory reports.

8.12.4.13.iii Analytical Reports

An appendix shall provide the analytical reports and shall include the contract laboratory final chemical analytical data reports generated during this reporting period. The reports must include all chain-of-custody records and Level II QA/QC results provided by the laboratory. The laboratory final reports and data tables shall be provided electronically in a format approved by the Department. Paper copies (or electronically scanned in PDF format) of all chain-of-custody records shall be provided with the reports.

8.12.5 Risk Assessment Report

The Permittees shall prepare risk assessment reports for sites requiring corrective action at the Facility using the format listed below. This Permit Section (8.12.5) provides a general outline for risk assessments and also lists the minimum requirements for describing risk assessment

elements. In general, interpretation of data shall be presented only in the Background, Conceptual Site Model, and Conclusions and Recommendations Sections of the reports. The other text sections of the Risk Assessment report shall be reserved for presentation of sampling results from all investigations, conceptual and mathematical elements of the risk assessment, and presentations of toxicity information and screening values used in the risk assessment. The general risk assessment outline, applicable to both human health and ecological risk assessments, is provided below.

8.12.5.1 Title Page

The title page shall include the type of document; Facility name; Area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the names and titles of the responsible DOE and Sandia representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

8.12.5.2 Executive Summary (Abstract)

The executive summary or abstract section shall provide a brief summary of the purpose and scope of the risk assessment of the subject site. The executive summary shall also briefly summarize the conclusions of the risk assessment. The Facility, SWMU, AOC, and site names; location; and Area designation shall be included in the executive summary.

8.12.5.3 Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the risk assessment. The corresponding page numbers for the titles of each unit of the report shall be included in the table of contents.

8.12.5.4 Introduction

The introduction section shall include the Facility name, area designation, unit location, and unit status (e.g., closed, corrective action). General information on the current site usage and status shall be included in this section.

8.12.5.5 Background

The background section shall describe relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features.

8.12.5.6 Site Description

A section shall describe current site topography, features and structures including topographic drainages, man-made drainages, erosional features, current site uses, and other data relevant to assessing risk at the site. Depth to groundwater and direction of groundwater flow shall be included in this section. The presence and location of surface water bodies such as any springs or wetlands shall be noted in this section. Photographs of the site may be incorporated into this

section. Ecological features of the site shall be described here, including type and amount of vegetative cover, observed and expected wildlife receptors, and level of disturbance of the site. A topographical map of the site and vicinity of the site showing habitat types, boundaries of each habitat, and any surface water features shall be included in the Figures Section of the document.

8.12.5.7 Sampling Results

A section shall discuss the results of the sampling at the site. It shall include a description of the history of releases of contaminants, the known and possible sources of contamination, and the vertical and lateral extent of contamination present in each medium. This section shall include summaries of sampling results of all investigations including site plans (included in the Figures Section of the report) showing locations of detected contaminants. This section shall reference pertinent figures, data summary tables, and references in previous reports. References to previous reports shall include page, table, and figure numbers for referenced information.

Summaries of sampling data shall include for each constituent: the maximum value detected, the detection limit, and for constituents following normal or log-normal distributions with sample sizes greater than eight, the upper confidence level (UCL) of the mean calculated at a 95% confidence level. Background values used for comparison to inorganic constituents at the site shall be presented here. The table of background values should appear in the Tables Section of the document and include actual values used as well as the origin of the values (e.g. Facility-wide, UCL, upper tolerance level (UTL)). This section shall also include a discussion of how ñnon-detectò sample results were handled in the averaging of data.

8.12.5.8 Conceptual Site Model

A section shall present the conceptual site model. It shall include information on the expected fate and transport of contaminants detected at the site. This section shall provide a list of all sources of contamination at the site. Sources that are no longer considered to be ongoing but represent the point of origination for contaminants transported to other locations shall be included. The discussion of fate and transport shall address potential migration of each contaminant in each medium, potential breakdown products and their migration, and anticipated pathways of exposure for human or ecological receptors. Diagrammatic representations of the conceptual site model shall appear in the Figures Section of the document.

For human health risk assessments, the conceptual site model shall include the current and reasonably foreseeable future land use and residential land use for all risk assessments. All values for exposure parameters and the source of those values shall be included in table format and presented in the Tables Section of the document.

Conceptual site models presented for ecological risk assessments shall identify assessment endpoints and measurement receptors for the site. The discussion of the model shall explain how the measurement receptors for the site are protective of the wildlife receptors identified by the Permittees in the Site Description Section (see Permit Section 8.12.5.6).

8.12.5.9 Risk Screening Levels

A section shall present the actual screening values used for each contaminant for comparison to all human health and ecological risk screening levels. The Departmentôs SSLs for residential

and industrial soil shall be used to screen soil for human health using EPAôs Risk Assessment Guidance for Superfund (RAGS), Volume I, Part A, 1989 as updated. For those contaminants not appearing on the Departmentôs SSL table, the EPA Region 6 soil screening value adjusted to meet the Departmentôs risk goal of 10^{-5} for total risk for carcinogens shall be used to screen the site for human health risks. Screening for ecological risk shall be conducted using U.S. EPAôs ECO-SSLs, or derive a screening level using the methodology in the Departmentôs Guidance for Assessing Ecological Risks Posed by Chemicals: Screeningï Level Ecological Risk Assessment. (Version 2.0)(July 2008). If no valid toxicological studies exist for a particular receptor or contaminant, the contaminant/receptor combination shall be addressed using qualitative methods. If a Department-approved site-specific risk scenario is used for the human health risk assessment, this section shall include all toxicity information and exposure assessment equations used for the site-specific scenario as well as the sources for that information. Other regulatory levels applicable to screening the site, such as drinking water Maximum Contaminant Levels (MCLs), shall also be included in this section.

8.12.5.10 Risk Assessment Results

A section shall present all risk values, hazard quotients (HQ), and HIs for human health based on current and reasonably foreseeable future land use. Where the current or reasonably foreseeable future land use is not residential, risk values, HQs, and HIs for a residential land use scenario shall also be calculated and reported. The residential scenario shall be used for comparison purposes only, unless the land use becomes residential. This section shall also present the HQ and HI for each contaminant for each ecological receptor.

8.12.5.10.i Uncertainty analysis

A section shall include discussion of qualitative, semi-quantitative, and quantitative uncertainty in the risk assessment and estimate the potential impact of the various uncertainties.

8.12.5.11 Conclusions and Recommendations

A section shall include the interpretation of the results of the risk assessment and any recommendations for future disposition of the site. This section may include additional information and considerations that the Permittees believe are relevant to the analysis of the site.

8.12.5.12 Tables

A section shall provide the following summary tables, as appropriate:

1. A table presenting background values used for comparison to inorganic constituents at the site. The table shall include actual values used as well as the origin of the values (Facility-wide, UCL, UTL, or maximum);
2. A table summarizing sampling data shall include, for each constituent detected above background, the maximum value detected, the detection limit, and for constituents following normal or log-normal distributions with sample sizes greater than eight, the UCL of the mean calculated at a 95% confidence level;
3. A table of all screening values used and the sources of those values;

4. A table presenting all risk values, HQs, and HIs under current and reasonably foreseeable future land use for human health;
5. If residential use is not a current or reasonably foreseeable future land use, a table presenting all risk values, HQs, and HIs under a residential land use scenario for human health shall be included for comparison purposes;
6. A table presenting the HQ and HI for each contaminant for each ecological receptor; and
7. A table presenting values for exposure parameters and the source of the values.

With prior approval from the Department, the Permittees may combine one or more of the tables. Data presented in the summary tables shall include information on detection limits and significant data quality exceptions. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

8.12.5.13 Figures

A section shall present the following figures for each site, as appropriate:

1. A vicinity map showing topography and the general location of the subject site relative to surrounding features or properties;
2. For human health risk assessments, a site plan that presents pertinent site features and structures, underground utilities, well locations, and remediation system location(s) and its details. Off-site well locations and other relevant features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features;
3. For ecological risk assessments, a topographical map of the site and vicinity of the site showing habitat types, boundaries of each habitat, and any surface water features; and
4. Conceptual site model diagrams for both human health and ecological risk assessments.

With prior approval from the Department, the Permittees may combine one or more of the figures. All figures shall include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers.

8.12.5.14 Appendices

Each risk assessment report shall include appendices containing supporting data. Appendices may include the results of statistical analyses of data sets and comparisons of data, full sets of results of all sampling investigations at the site, or other data as appropriate.

8.12.6 Corrective Measures Evaluation Report

The Permittees shall prepare corrective measures evaluations for sites requiring corrective measures using the format listed below. This Permit Section (8.12.6) provides a general outline for corrective measures evaluations and also lists the minimum requirements for describing corrective measures when preparing these documents. All investigation summaries, site condition descriptions, corrective action goals, corrective action options, remedial options selection criteria, and schedules shall be included in the corrective measures evaluations. In

general, interpretation of historical investigation data and discussions of prior interim activities shall be presented only in the background sections of the corrective measures evaluations. At a minimum, detections of contaminants encountered during previous site investigations shall be presented in the corrective measures evaluations in table format with an accompanying site plan showing sample locations. The other text sections of the corrective measures evaluations shall be reserved for presentation of corrective action-related information regarding anticipated or potential site-specific corrective action options and methods relevant to the project. The general corrective measures evaluation outline is provided below.

8.12.6.1 Title Page

The title page shall include:

1. The type of document;
2. Facility name;
3. Area designation;
4. SWMU or AOC name, site, and any other unit name; and
5. The submittal date.

A signature block providing spaces for the names and titles of the responsible DOE and Sandia representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

8.12.6.2 Executive Summary (Abstract)

This executive summary or abstract shall provide a brief summary of the purpose and scope of the corrective measures evaluation to be conducted at the subject site. The executive summary or abstract shall also briefly summarize the conclusions of the evaluation. The SWMU, AOC, and site names, location, and Area designation shall be included in the executive summary.

8.12.6.3 Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the corrective measures evaluation. The corresponding page numbers for the titles of each section of the report shall be included in the table of contents.

8.12.6.4 Introduction

The Introduction Section shall include the Facility name, Area designation, site location, and site status (e.g. closed, corrective action). General information on the current site usage and status shall be included in this Section. A brief description of the purpose of the corrective measures evaluation and the corrective action objectives for the project also shall be provided in this Section.

8.12.6.5 Background

The Background Section shall describe the relevant background information. This Section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the

locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of any subsurface features such as pipelines, underground tanks, utility lines, and other subsurface structures shall be included in this Section and labeled on the site plan, as appropriate.

This Section shall include contaminant and waste characteristics, a brief summary of the history of contaminant releases, known and possible sources of contamination, and the vertical and lateral extent of contamination present in each medium. This Section shall include brief summaries of results of previous investigations, including references to pertinent figures, data summary tables, and text in previous reports. References to previous reports shall include page, table, and figure numbers for referenced information. Summary tables and site plans showing relevant investigation locations shall be referenced and included in the Tables and Figures Sections of the document, respectively.

8.12.6.6 Site Conditions

8.12.6.6.i Surface Conditions

A section on surface conditions shall describe current and historic site topography, features, and structures, including a description of topographic drainages, man-made drainages, vegetation, and erosional features. It shall also include a description of current uses of the site and any current operations at the site. This section shall also include a description of those features that could potentially influence corrective action option selection or implementation such as archeological sites, wetlands, or other features that may affect remedial activities. In addition, descriptions of features located in surrounding sites that may have an effect on the subject site regarding sediment transport, surface water run-off or contaminant transport shall be included in this section. A site plan displaying the locations of all pertinent surface features and structures shall be included in the Figures Section of the corrective measures evaluation.

8.12.6.6.ii Subsurface Conditions

A section on subsurface conditions shall describe the site conditions observed during previous subsurface investigations. It shall include relevant soil horizon and stratigraphic information, groundwater conditions, fracture data, and subsurface vapor information. A site plan displaying the locations of all borings and excavations advanced during previous investigations shall be included in the Figures Section of the corrective measures evaluation. A brief description of the stratigraphic units anticipated to be present beneath the site may be included in this section if stratigraphic information is not available from previous investigations conducted at the site.

8.12.6.7 Potential Receptors

8.12.6.7.i Sources

A section shall provide a list of all sources of contamination at the subject site where corrective measures are to be considered or required. Sources that are no longer considered to be releasing contaminants at the site, but may be the point of origination for contaminants transported to other locations, shall be included in this section.

8.12.6.7.ii Pathways

A section shall describe potential migration pathways that could result in either acute or chronic exposures to contaminants. It shall include such pathways as utility trenches, paleochannels, surface exposures, surface drainages, stratigraphic units, fractures, structures, and other features. The migration pathways for each contaminant and each relevant medium should be tied to the potential receptors for each pathway. A discussion of contaminant characteristics relating to fate and transport of contaminants through each pathway shall also be included in this section.

8.12.6.7.iii Receptors

A section shall provide a listing and description of all anticipated potential receptors that could possibly be affected by the contamination present at the site. Potential receptors shall include human and ecological receptors, groundwater, and other features such as pathways that could divert or accelerate the transport of contamination to human receptors, ecological receptors, and groundwater.

8.12.6.8 Regulatory Criteria

A section shall set forth the applicable cleanup standards, risk-based screening levels, and risk-based cleanup goals for each pertinent medium at the subject site. The appropriate cleanup levels for each site shall be included, if site-specific levels have been established at separate sites or units. A table summarizing the applicable cleanup standards or levels, or inclusion of applicable cleanup standards or levels in the summary data tables shall be included in the Tables Section of the document. The risk assessment shall be presented in a separate document or in an appendix to this report. If cleanup or screening levels calculated in a risk evaluation are employed, the risk evaluation document shall be referenced including pertinent page numbers for referenced information.

8.12.6.9 Identification of Corrective Measures Options

A section shall identify and describe potential corrective measures for source, pathway, and receptor controls. Corrective measures options shall include the range of available options including, but not limited to, a no action alternative, institutional controls, engineering controls, in-situ and on-site remediation alternatives, complete removal, and any combination of alternatives that would potentially achieve cleanup goals.

8.12.6.10 Evaluation of Corrective Measures Options

A section shall provide an evaluation of the corrective measures options identified in Permit Section 8.12.6.9. The evaluation shall be based on the applicability, technical feasibility, effectiveness, implementability, impacts to human health and the environment, and cost of each option. A table summarizing the corrective measures alternatives and the criteria listed below shall be included in the Tables Section of the document. The general basis for evaluation of corrective measures options is defined below.

8.12.6.10.i Applicability

Applicability addresses the overall suitability for the corrective action option for containment or remediation of the contaminants in the subject medium for protection of human health and the environment.

8.12.6.10.ii Technical Practicability

Technical practicability describes the uncertainty in designing, constructing, and operating a specific remedial alternative. The description shall include an evaluation of historical applications of the remedial alternative including performance, reliability, and minimization of hazards.

8.12.6.10.iii Effectiveness

Effectiveness assesses the ability of the corrective measure to mitigate the measured or potential impact of contamination in a medium under the current and projected site conditions. The assessment also shall include the anticipated duration for the technology to attain regulatory compliance. In general, all corrective measures described above will have the ability to mitigate the impacts of contamination at the site, but not all remedial options will be equally effective at achieving the desired cleanup goals to the degree and within the same time frame as other options. Each remedy shall be evaluated for both short-term and long-term effectiveness.

8.12.6.10.iv Implementability

Implementability characterizes the degree of difficulty involved during the installation, construction, and operation of the corrective measure. Operation and maintenance of the alternative shall be addressed in this section.

8.12.6.10.v Human Health and Ecological Protectiveness

This category evaluates the short-term (remedy installation-related) and long-term (remedy operation-related) hazards to human health and the environment of implementing the corrective measure. The assessment shall include whether the technology will create a hazard or increase existing hazards and the possible methods of hazard reduction.

8.12.6.10.vi Cost

This section shall discuss the anticipated cost of implementing the corrective measure. The costs shall be divided into:

1. Capital costs associated with construction, installation, pilot testing, evaluation, permitting, and reporting of the effectiveness of the alternative; and
2. Continuing costs associated with operating, maintaining, monitoring, testing, and reporting on the use and effectiveness of the technology.

8.12.6.11 Selection of Preferred Corrective Measure

The Permittees shall propose the preferred corrective measure(s) at the site and provide a justification for the selection in this section. The proposal shall be based upon the ability of the remedial alternative to:

1. Achieve cleanup objectives in a timely manner;

2. Protect human and ecological receptors;
3. Control or eliminate the sources of contamination;
4. Control migration of released contaminants; and
5. Manage remediation waste in accordance with State and Federal regulations.

The justification shall include the supporting rationale for the remedy selection, based on the factors listed in Permit Section 8.12.6.10 and a discussion of short- and long-term objectives for the site. The benefits and possible hazards of each potential corrective measure alternative shall be included in this section.

8.12.6.12 Design Criteria to Meet Cleanup Objectives

The Permittees shall present descriptions of the preliminary design for the selected corrective measures in this section. The description shall include appropriate preliminary plans and specifications to effectively illustrate the technology and the anticipated implementation of the remedial option at the subject area. The preliminary design shall include a discussion of the design life of the alternative and provide engineering calculations for proposed remediation systems.

8.12.6.13 Schedule

A section shall set forth a proposed schedule for completion of remedy-related activities such as bench tests, pilot tests, construction, installation, remedial excavation, cap construction, installation of monitoring points, and other remedial actions. The anticipated duration of corrective action operations and the schedule for conducting monitoring and sampling activities shall also be presented. In addition, this section shall provide a schedule for submittal of reports and data to the Department, including a schedule for submitting all status reports and preliminary data.

8.12.6.14 Tables

A section shall present the following summary tables, as appropriate:

1. A table summarizing regulatory criteria, background, and/or the applicable cleanup standards;
2. A table summarizing historical field survey location data;
3. Tables summarizing historical field screening and field parameter measurements of soil, rock, sediments, groundwater, surface water, and air quality data;
4. Tables summarizing historical soil, rock, or sediment laboratory analytical data. The summary tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;
5. A table summarizing historical groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths and the screened intervals in each well;

6. Tables summarizing historical groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;
7. Tables summarizing historical surface water laboratory analytical data if applicable. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;
8. Tables summarizing historical air sample screening and analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;
9. Tables summarizing historical pilot or other test data, if applicable, including units of measurement and types of instruments used to obtain measurements;
10. A table summarizing the corrective measures alternatives and evaluation criteria; and
11. A table presenting the schedule for installation, construction, implementation and reporting of selected corrective measures.

With prior approval of the Department, the Permittees may combine one or more of the tables. Data presented in the summary tables shall include information on dates of sample collection, analytical methods, detection limits, and significant data quality exceptions. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

8.12.6.15 Figures

A section shall present the following figures for each site, as appropriate:

1. A vicinity map showing topography and the general location of the subject site relative to surrounding features or properties;
2. A unit site plan that presents pertinent site features and structures, underground utilities, well locations, and remediation system locations and details. Off-site well locations and other relevant features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features;
3. Figures showing historical soil boring or excavation locations and sampling locations.
4. Figures presenting historical soil sample field screening and laboratory analytical data, if appropriate;
5. Figures showing all existing wells including vapor monitoring wells and piezometers. The figures shall present historical groundwater elevation data and indicate groundwater flow directions;
6. Figures presenting historical groundwater laboratory analytical data including past data, if applicable. The analytical data corresponding to each sampling location may be presented as individual concentrations, in table form on the figure or as an iso-concentration map;

7. Figures presenting historical surface water sample locations and analytical data including past data, if applicable. The laboratory analytical data corresponding to each sampling location may be presented as individual concentrations or in table form on the figure;
8. Figures presenting historical air sampling locations and presenting air quality data. The field screening or laboratory analytical data corresponding to each sampling location may be presented as individual concentrations, in table form on the figure or as an iso-concentration map;
9. Figures presenting historical pilot or other test locations and data, where applicable, including site plans or graphic data presentation;
10. Figures presenting geologic cross-sections based on outcrop and borehole data, if applicable;
11. Figures presenting the locations of existing and proposed remediation systems;
12. Figures presenting existing remedial system design and construction details; and
13. Figures presenting preliminary design and construction details for preferred corrective measures.

All figures must include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers. All figures shall have a date.

8.12.6.16 Appendices

Each corrective measures evaluation shall include, as appropriate, as an appendix, the management plan for waste, including investigation derived waste, generated as a result of construction, installation, or operation of remedial systems or activities conducted. Each corrective measures evaluation shall include additional appendices presenting relevant additional data, such as pilot or other test or investigation data, remediation system design specifications, system performance data, or cost analyses as necessary.

RESOURCE CONSERVATION AND RECOVERY ACT FACILITY OPERATING PERMIT

ATTACHMENTS A THROUGH M

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issued to the

U.S. DEPARTMENT OF ENERGY/SANDIA CORPORATION

for the

SANDIA NATIONAL LABORATORIES
HAZARDOUS AND MIXED WASTE TREATMENT AND STORAGE UNITS AND POST-CLOSURE CARE OF THE CORRECTIVE ACTION MANAGEMENT UNIT

located in

BERNALILLO COUNTY, NEW MEXICO

prepared by the

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS WASTE BUREAU
2905 RODEO PARK DRIVE EAST, BUILDING 1
SANTA FE, NEW MEXICO 87505

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PERMIT ATTACHMENT A FACILITY DESCRIPTION

A.1 INTRODUCTION

This Permit Attachment contains general information pertaining to Sandia National Laboratories (SNL; the Facility) and the treatment and storage units covered by this Permit. The Facility is owned by the U.S. Department of Energy (DOE) and co-operated by Sandia Corporation and DOE.

The Facility is located on Kirtland Air Force Base (KAFB) immediately south and southeast of the Albuquerque city limits in Bernalillo County, New Mexico. The Facility occupies five Technical Areas and additional test areas as defined in Permit Section 1.6 (see Figure 1 in Permit Attachment L (*Figures*).

The Facility is a multidisciplinary laboratory engaged in research and development of weapons and alternative energy sources. The Facility is managed for the DOE by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation with work also performed for others.

The major Facility research and administration functions are located at five Technical Areas (TAs), designated I through V. TAs I, II, and IV are located north of the Tijeras Arroyo and Arroyo del Coyote (see Figure 2 in Permit Attachment L (*Figures*)). TAs III and V occupy contiguous tracts of land south of the Tijeras Arroyo and west of Arroyo del Coyote.

The individual units permitted under this Permit include: (1) the Hazardous Waste Handling Unit; (2) the Thermal Treatment Unit; (3) the Radioactive and Mixed Waste Management Unit; (4) the Auxiliary Hot Cell Unit; (5 through 9) Five Manzano Storage Bunkers; and (10) the Corrective Action Management Unit (CAMU). All the Permitted Units are shown on Figure 2 (*Unit Location Map*) in Permit Attachment L (*Figures*).

The following information contains unit descriptions, including the dimensions, materials of construction, and operational procedures and requirements. Additional information on the CAMU is presented in Permit Attachment H (*Post-Closure Care Plan*).

A.2 TA-I: HAZARDOUS WASTE HANDLING UNIT

The Hazardous Waste Handling Unit (HWHU) is located south of TA-I, north of the entrance to TA-II; and occupies 1.35 acres on Facility property between TA-I and TA-II (see Figure 2 in Permit Attachment L (*Figures*)). The HWHU is a fenced compound with several buildings and three hazardous waste management areas used for storage and packaging of hazardous and mixed wastes (see Figure 3 in Permit Attachment L (*Figures*)). Hazardous and mixed wastes are transported to off-site RCRA-permitted facilities for treatment or disposal.

A.2.1 HWHU Container Types

Waste containers that may be managed at the HWHU include but are not limited to 30 and 55-gallon steel, polyethylene, and fiber drums; fiberglass-reinforced plastic or plywood boxes; various steel boxes; metal over pack boxes; cardboard shipping containers; gas cylinders; roll-off bins; lab pack containers; various small containers; bags; and some oversized, irregularly-shaped containers or large self-contained items (e.g. a large piece of equipment containing hazardous or mixed waste in which the hazardous component of the item is located within the interior of the item, or is covered with an inert material, such as plastic sheeting, if located on the exterior of the item).

A.2.2 HWHU Designated Waste Management Areas

Appendix A.1 in Permit Attachment L (*Figures*) contains photographs of the three designated hazardous and mixed waste management areas at the HWHU. The three hazardous or mixed waste management areas are shown on Figure 4 of Permit Attachment L (*Figures*). These include:

1. The Hazardous Waste Packaging Building (Building 959),
2. The Hazardous Waste Storage Building (Building 958), and
3. Two modular storage buildings - Buildings 958B and 958C.

Two covered, bermed, open concrete-lined areas that are not used for the management of hazardous or mixed wastes are located at the HWHU; one is located in the northeast corner of the Unit, and the other is located on the west side of Building 959.

The following sections provide descriptions of the storage layout, location, and secondary containment systems of each hazardous waste management area and the bermed areas. Storage capacities are listed in Attachment J, Table J-1.1.

A.2.3 TA-I: HWHU Hazardous Waste Packaging Building 959

The Hazardous Waste Packaging Building 959 is the easternmost hazardous waste management area and is a 1,800-square-foot (ft^2) pre-cast concrete building with an eave height of 12 feet (ft) (see Figure 4 in Permit Attachment L (*Figures*)). Eight waste-holding cells with half-height concrete masonry walls and a waste packaging area are located in the building. The packaging area contains a fume hood and flexible ventilation hoses attached to a local negative-pressure ventilation system that exhausts to the exterior of the building.

All the cells and part of the packaging area have recessed floors that are constructed of reinforced concrete and are covered with metal grating. Waste containers in the cells are placed on shelves over the metal grating or directly on the metal grating. The load-bearing capacities of the metal grating and the reinforced concrete floor are 450 and 2,000 pounds per ft^2, respectively. The floor and the bottom seven inches of wall surface in each recessed area are covered with an epoxy-based chemical-resistant coating or equivalent protective coating, and shall be maintained as needed to be free from cracks and gaps. Figures 5 and 6 in Permit Attachment L (*Figures*) are the floor plans of Buildings 959 and 958, respectively.

The individual shelves are covered with removable chemical-resistant grating, and they have edges to hold the containers in place. The shelves are not designed to provide secondary containment. The recessed areas provide secondary containment. The recessed area in each holding cell is 5 feet by 4.5 feet and 7 inches deep, with a capacity of 98 gallons. The recessed floor area under the packaging area is 5 feet by 12 feet and 7 inches deep, with an actual capacity of 261 gallons. The capacity for each holding cell is limited to 71 gallons, and the capacity for the packaging area is limited to 191 gallons.

Wastes are stored in the Hazardous Waste Packaging Building. In addition, wastes are prepared for shipment to off-site treatment and disposal facilities (e.g., lab packs are prepared by placing small containers into larger containers filled with absorbent material).

Water reactive wastes are not managed in the Hazardous Waste Packaging Building, except on a temporary basis during receipt, repackaging, and staging activities which shall not exceed 3 days. Water reactive wastes shall be protected from contact with water when managed in Building 959.

A.2.4 TA-I: HWHU Hazardous Waste Storage Building 958

The Hazardous Waste Storage Building 958 is located west of the Hazardous Waste Packaging Building (see Figure 9 in Permit Attachment L (*Figures*)). The Hazardous Waste Storage Building is a 3,520-ft^2 precast concrete building with an eave height of 14 ft and contains eight separate and recessed waste storage cells for segregation of waste (see Figure 11 in Permit Attachment L (*Figures*)). 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 floor and bottom 5 inches of the walls are coated with an epoxy-based chemical-resistant coating, or equivalent protective coating, and shall be maintained as needed to be free from cracks and gaps. The load-bearing capacity of the metal grating and reinforced concrete are 450 and 2,000 pounds per ft^2, respectively. The storage cells vary in size, secondary-containment capacity, and waste-container capacity.

The recessed areas under the grating provide the secondary containment in Cells 1, 2, 3, 4, 6, 7, and 8. The volume of the entire recessed area provides the secondary containment capacity in Cell 5. For example, the recessed area in Cell 1 is 11.75 feet by 14.67 feet by 5 inches deep, with a capacity of 542 gallons.

Water reactive wastes shall not be managed in the Hazardous Waste Storage Building, except on a temporary basis during receipt, repackaging, and staging activities which shall not exceed 3 days. Water reactive wastes shall be protected from contact with water when managed in Building 958.

A.2.5 TA-I: HWHU Modular Storage Buildings 958B and 958C

The modular storage buildings are located west of Building 958 (see Figures 4 and 7 in Permit Attachment L (*Figures*)) and are used for storage of wastes such as ignitable solids and water reactives.

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 sub-floor is constructed of continuously welded 10-gauge steel, which is painted to provide additional protection against degradation of the secondary containment. The floors are vinyl ester fiberglass gratings. The load-bearing capacity of the floor for each structure is 250 pounds per square foot. The inside walls and ceiling are also painted. The sumps shall be maintained to be free from cracks and gaps. Each building rests on structural supports that elevate it and allow visual checks of the underside of the spill containment reservoir if there is evidence of deterioration on the interior surfaces noted during inspections performed according to the Inspection Plan in Permit Attachment E.

A.2.6 TA-I: HWHU Covered Open Storage Areas

A covered, open, bermed, concrete-lined area is located in the northeast corner of the HWHU. This area is not used for management of hazardous or mixed wastes.

An empty drum crusher is located within the covered area on the west side of Building 959. Only drums that meet the regulatory definition of empty will be crushed in the drum crusher. This area is not used for management of hazardous or mixed wastes.

A.2.7 TA-I: Unit Operations at the HWHU

The Permittees shall store at the HWHU only the hazardous and mixed wastes bearing U.S. EPA Hazardous Waste Numbers listed in Permit Attachment B (*Authorized Wastes*).

Containers shall be inspected for integrity when the wastes arrive at the HWHU, before they are placed in storage in either Building 959 or 958. Containers in poor condition shall not be placed in storage; the containers shall be over packed or the hazardous or mixed wastes in them shall be transferred to containers in good condition. The shelves in Building 959 shall be lined with absorbent pads under removable grating in areas where containers of liquids are stored. Containers shall be inspected regularly following the Inspection Plan contained in Permit Attachment E (*Inspection Plan*). Any liquids released from hazardous or mixed waste containers are to be contained in the absorbent pads under the removable grating on which the waste containers are placed and shall be cleaned up upon discovery.

Upon discovery of any accumulated liquids in a secondary containment system Unit personnel shall take action to evaluate and remove the liquids in accordance with Permit Section 3.6..

A.2.8 TA-I: Preventing Hazards in Unloading and Loading of Waste at the HWHU

Loading and unloading operations occur outdoors on the south side of Buildings 958 and 959 in the area immediately adjacent to a hazardous waste management area to minimize the distance that the waste must be moved. All loading and unloading areas shall be level, and the asphalt or

concrete or other pavement shall be maintained in good condition. Loading and unloading areas shall be free of overhead and other obstructions to visibility and operations.

Containers too large to hand carry shall be transported within the HMWU with drum dollies, or pallet jacks, or other appropriate equipment. Containers shall be handled in a manner to prevent shifting or falling.

A.2.9 Preventing Run-Off or Run-On (Flooding) at the HWMU

The land around the HWHU is nearly level, sloping gently towards the south and west. The perimeter of the paved areas of the HWHU is 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 steeply sloped at the edge, rising to a level at least 6 inches above the surface outside the Unit, further preventing run-on and run-off from the HWHU. Within the HWHU, 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 is not intended to provide secondary containment for hazardous waste. Figure 8 in Permit Attachment L (*Figures*) shows the drainage control features at the HWHU.

A.2.9.1 TA-I: HWHU Catchment Pond Operating Procedures

A lined pond is located on the northwest side of the HWHU. The pond is capable of holding 10,000 cubic feet of liquid and is designed to receive storm water and snowmelt run-off from the HWHU. Run-off collected in the pond shall be evaluated before discharge. If the run-off is known or likely to be contaminated with hazardous waste constituents from a spill, leak, or other release, it will be sampled. The pond shall be inspected for evidence of contamination (e.g., surface sheen) during the weekly inspection. Inspection results and any remediation shall be recorded in the Operating Record. If there is no reason to suspect the storm water is contaminated with hazardous constituents based on the Unit Operating Record and the inspection, the storm water shall be managed in accordance with the current Unit storm water discharge permit.

If sampling and analysis are required due to known or suspected contamination, a water sample shall be collected within 5 days of when the Permittees becomes aware of the known or suspected contamination. The analytical results, together with information from the Operating Record, shall be used to characterize the water in accordance with Permit Attachment C (*Waste Analysis Plan*). If the run-off present in the pond is determined to be hazardous waste, the waste water shall be removed within 5 working days of the determination. The type and quantity of waste water present in the pond, the date of the incident, and the date of removal of the waste water shall be recorded in the Operating Record.

A.2.10 HWHU Container Management Practices

Requirements regarding the management of hazardous and mixed waste storage containers, information on container handling, the condition of containers, aisle space, compatibility of

waste with containers, and storage configuration are contained in Section 2.10 of Permit Part 2, and in Part 3 of this Permit.

In Building 958, if containers are stacked, they shall be in a stable configuration that does not exceed the load-bearing capacity of the reinforced concrete or the grating.

In Building 959, containers shall be stored in the holding cells. If containers are stacked, they will be in a stable configuration that does not exceed the load- bearing capacity of the reinforced concrete or the grating.

In Buildings 958B and 958C, if containers are stacked, they will be in a stable configuration that does not exceed the load-bearing capacity of the floor.

In all buildings, containers holding hazardous or mixed waste liquids without absorbent shall not be stacked without separation or some other means to allow Unit personnel to clearly identify the source of liquid, if liquid is discovered in the secondary containment area.

A.3 TA-III: THE THERMAL TREATMENT UNIT

The Thermal Treatment Unit (TTU) is located in a fenced area on a concrete pad outside the south end of Building 6715 in Technical Area (TA)-III, and occupies 196 square feet. The location of the TTU at the Facility is indicated in Figure 9 of Permit Attachment L (*Figures*). Figure 2 of Permit Attachment L (Figures) illustrates its location in Technical Area III. Figure 10 of Permit Attachment L (*Figures*) shows the TTU waste management area. The TTU loading and unloading areas are shown on Figure 11 in Permit Attachment L (*Figures*). The area surrounding the TTU is occupied by test areas and controlled operations (industrial land use). Drainage control features (e.g., run-on/run-off, drainage barriers) are shown on Figure 12 of Permit Attachment L (*Figures*). Figure 13 in Permit Attachment L (*Figures*) shows access control features at the TTU. Appendix A.2 in Permit Attachment L (*Figures*) contains photographs of the hazardous waste management area at the TTU.

The TTU is used for treatment of reactive and ignitable hazardous waste exhibiting the hazardous characteristic of reactivity (D003) and ignitability (D001) that is generated during operations in Building 6715, and may also bear EPA Hazardous Waste Numbers D002, D011 and F003, depending on the presence of nitric acid, 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 TTU. Pentaerythritol tetranitrate (PETN) (an explosive) is sometimes included in the tests and would also be present in the wastes. SASN is categorized as a primary explosive, and each discrete crystal (when dry) has the potential to detonate. 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. (Wilden, 1986).

A.3.1 TA-III: TTU Hazardous Waste Management Area

The TTU consists of a square burn pan constructed of 0.375-inch steel, 2 feet 6 inches on a side and 6 inches deep with ancillary equipment (see Figure 14 in Permit Attachment L (*Figures*)). 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 bottom of the burn pan is elevated approximately 10 inches to 12 inches above the floor by steel beams. 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 burn pan. Moveable steel panels are attached to the lower part of two sides of the cage to control airflow as needed.

An enclosure on the east side of the cage houses three propane burners, which are remotely activated from inside Building 6715. The burners shall be positioned to heat the burn pan and ignite the wastes in the burn pan and flammable vapors above the pan. An 8-foot earthen berm and a fence surround the burn cage of the TTU.

A.3.2 TA-III: Unit Operations at the TTU

The treatment of waste at the TTU is designed to deactivate reactive and ignitable components of the waste. The wastes treated at the TTU are generated as a result of the formulation of silver acetylide/silver nitrate (SASN) slurry, its application to test articles, and cleanup activities during and after the tests. The waste may also contain the explosive pentaerythritol tetranitrate (PETN); however, PETN is rarely used in the process. The TTU was specifically built to treat SASN slurry and SASN-contaminated waste because of the hazards associated with managing this waste.

Treatment residues may contain other constituents such as ash (carbon) produced from burned solid items (e.g., paper, filters), and treatment events may release 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 present in the treatment residues when SASN is treated at the TTU.

Liquid wastes to be treated may be transferred from Building 6715 to the TTU through flexible transfer hoses utilizing a remotely operated peristaltic pump. The hoses are contained inside a metal channel to provide secondary containment. The flexible hoses and channel terminate approximately 5 feet from the burn pan and metal tubing will be used to transfer the waste the final distance into the burn pan.

Liquids or solids to be treated may also be containerized and manually loaded into the burn pan. Solid items are saturated (wetted with or submerged) in water as needed to protect personnel from explosive hazards before transfer to the burn pan.

Liquids that might accumulate at the TTU will be contained within a secondary containment system (i.e., the entire steel-lined concrete pad that drains through a filter into a catch tank) as described in Section A.3.4.

A circular tank located north of the Unit and south of Building 6715 is primarily utilized as a process tank for collecting cleaning water from test operations. Water from this tank is sampled and analyzed. If this wastewater contains unreacted SASN explosive, then the contents of the tank will be treated at the TTU; otherwise, the wastewater collected in this tank is not treated at the TTU. This process tank is a part of building 6715 test operations but not part of the treatment unit.

Because the TTU is located outside, it is difficult to prevent equipment deterioration; however, the Unit and its ancillary equipment are inspected regularly according to the inspection schedule in Permit Attachment E (*Inspection Plan*) to ensure proper operation and waste management at the TTU. If deterioration sufficient to affect the operation, safety, or effectiveness of the TTU is identified, the affected equipment will either be repaired or replaced before any treatment of hazardous waste takes place.

A.3.3 Preventing Hazards in Unloading and Loading at the TTU

Loading activities include the placement of wastes into the burn pan, and may include loading containers of treatment residue and drums of water from the catch tank onto flatbed trucks or other suitable vehicles, as applicable. Vehicles that will transport wastes shall be loaded on the paved area south or southeast of Building 6715 as shown in Figure 11 of Permit Attachment L (*Figures*). This surface shall be maintained to be level and in good condition. There shall also be sufficient room for vehicles to safely maneuver in the loading area.

Liquid wastes may be pumped to the burn pan through the Waste Transfer Tubing. Solid and liquid waste that cannot be pumped to the TTU burn pan shall first be wetted with or submerged in water, then placed manually into the burn pan for treatment.

Unloading activities include removal of treatment residue from the burn pan. Treatment residues shall be managed in accordance with Section 5.5.4 of Permit Part 5. Water from the catch tank may be pumped into 55-gallon drums or other suitable containers, characterized according to Permit Attachment C, and managed appropriately. If the water is contaminated with unreacted explosive, the water shall be treated at the TTU.

A.3.4 Operation of Containment Systems at the TTU

Liquids that might accumulate at the TTU will be contained within a secondary containment system (i.e., the entire steel-lined concrete pad that drains through a filter into a catch tank). The system 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 21 gallons of waste, representing the maximum volume of hazardous waste in the TTU burn pan at any one time. The catch tank has a containment capacity of at least 157 gallons.

Because the TTU is located outside, the steel-lined concrete pad periodically collects water from precipitation events, and the water drains through a filter into a catch tank. The Permittees shall manage the water in the tank to prevent overflow and ensure that sufficient capacity is available to accommodate precipitation.

The pad shall be inspected and cleaned as needed, and maintained in accordance with Permit Attachment E. The water shall be managed as specified in Permit Section 5.6.1. The filter shall be characterized in accordance with Permit Attachment C (*Waste Analysis Plan*) and shall be managed accordingly. If the filter is known or suspected to contain unreacted explosive, it shall be treated in the TTU.

A.4 TA-III: RADIOACTIVE AND MIXED WASTE MANAGEMENT UNIT

The Radioactive and Mixed Waste Management Unit (RMWMU) consists of several buildings within a fenced area located at the southeastern corner of Technical Area III (TA-III), west of the Chemical Waste Landfill, and occupies 135,472 square feet. The RMWMU is used for storage, treatment, and packaging of hazardous and mixed wastes generated as a result of Facility operations and corrective action activities. Hazardous and mixed wastes and treatment residues are transported to off-site permitted facilities for treatment, storage and disposal.

The location of the RMWMU at the Facility is indicated in Figure 15 of Permit Attachment L (*Figures*). Figure 2 of Permit Attachment L (*Figures*) illustrates its location in Technical Area III. Figure 16 of Permit Attachment L (Figures) illustrates the six hazardous and mixed waste management areas at the RMWMU. Appendix A.3 in Permit Attachment L (*Figures*) contains photographs of the hazardous waste management areas at the RMWMU.

Waste containers that may be managed at the RMWMU include but are not limited to 30 and 55-gallon steel, polyethylene, and fiber drums; fiberglass-reinforced plastic or plywood boxes; various steel boxes; metal over pack boxes; cardboard shipping containers; gas cylinders; roll-off bins; lab pack containers; various small containers; bags; and some oversized, irregularly-shaped containers or large self-contained items (e.g. a large piece of equipment containing hazardous or mixed waste in which the hazardous component of the item is located within the interior of the item, or is covered with an inert material, such as plastic sheeting, if located on the exterior of the item).

A.4.1 RMWMU Designated Waste Management Areas

The RMWMU has six designated hazardous and mixed waste management areas. These include Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMU fence to the north, east, and west of Building 6920).

In each waste management area (except where noted), containers holding liquid hazardous or mixed wastes shall be stored on portable spill pallets or 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. The containers of liquids (up to and

including 85-gallon overpack containers) will be stored on grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities designed for use with 55-gallon drums or other standard containers, as required by 40 CFR § 264.175(b)(1-3).

Each pallet will have sufficient capacity to hold the contents of the largest container of liquid waste stored on it. Containers shall be stored in a stable configuration; the weight shall not exceed the load-bearing capacity of the grating or the pallet.

Hazardous and mixed wastes will be stored inside one of the buildings, inside transportainers in the outdoor storage area, or outside in the outdoor storage area. Transportainers are 10- to 40-cubic-yard transportable containers, which typically have doors at one end and can be lifted onto a large flatbed truck for transportation. Wastes in the containers will be protected from precipitation by the buildings, transportainers, or other appropriate means, and by the slope of the pavement and concrete pads outside the buildings that direct storm water toward the retention pond, in accordance with 40 CFR §264.175.

The following sections provide descriptions of each structure and the waste management areas. Storage capacities are listed in Attachment J, Table J-1.1.

A.4.1.1 TA-III: Building 6920 at the RMWMU

The principal structure at the RMWMU is Building 6920. The floor plan for Building 6920 is presented on Figure 17 in Permit Attachment L (*Figures*). The waste management areas in Building 6920 include waste staging, repackaging, and storage areas, and treatment areas. Building 6920 is a single-story concrete and steel structure housing approximately 5,800 square feet of waste management area. The floors are 6-inch reinforced, sealed concrete on compacted sub-grade sloped to sumps with no outlets. Walls are 8-inch load-bearing concrete masonry unit with pre-finished metal building panels in some areas. Non-grouted cells of the 8-inch concrete masonry unit 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. Inner partitions are 8-inch reinforced concrete masonry unit.

A.4.1.1.i North Bay of Building 6920

In the RMWMU waste treatment, storage, and repackaging are performed in the north bay of Building 6920 (see Figure 17 in Permit Attachment L (*Figures*)). Treatment in the North Bay will be limited to physical treatment and macroencapsulation.

The floor in the North Bay slopes from the doorways toward one or more shallow (6-in.-deep) blind sumps, some of which are covered with grating. Containers of liquid hazardous and mixed wastes will be stored on portable spill pallets or pans. Floors, (including the sumps), and the walls in the waste management areas of Building 6920 are painted. The floors shall be maintained as needed to be free from cracks and gaps.

The RMWMU North Bay includes two enclosed areas that are equipped with a negative-pressure exhaust system. The exhaust passes through a high-efficiency particulate air (HEPA) filter train

before being released to the environment through an exhaust stack. The filters remove particulates entrained in the airflow.

A.4.1.1.ii South Bay of Building 6920

In the RMWMU, waste treatment, storage, and repackaging are performed in the South Bay of Building 6920 (see Figure 17 in Permit Attachment L (*Figures*)). Wastes are stored in the main bay and in the airlocks at either end. Treatment in the South Bay will be limited to chemical and thermal deactivation, stabilization/solidification, amalgamation, macroencapsulation, and physical treatment.

The floor in the south bay slopes from the doorways toward shallow (6-inches-deep) blind sumps covered with grating along the south wall which provides secondary containment. Containers of liquid hazardous or mixed wastes are stored over the sump in the south bay or on portable spill pallets or pans. Floors (including the sumps), and the walls in the waste management areas of Building 6920 are painted. The floors and sump shall be maintained as needed to be free from cracks and gaps.

In the RMWMU, there are four small rooms in the South Bay. A commercially available fume hood with a negative-pressure ventilation system is located in one of these rooms. A second local ventilation system is located in another of the rooms. The exhaust from both of these systems is combined and passes through a HEPA filter train before being released to the environment through the exhaust stack. The filters remove particulates entrained in the airflow of each system.

A.4.1.2 TA-III: Building 6921 at the RMWMU

Building 6921, the Waste Assay Unit, is located east of Building 6920 (see Figure 16 of Permit Attachment L (*Figures*)). The Permittees treat, repackage, and store hazardous and mixed wastes in the waste management areas. The Building 6921 floor plan is presented on Figure 18 of Permit Attachment L (*Figures*). Building 6921 is a single-story structure constructed with interior walls of 8-inch concrete masonry unit 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 inches thick concrete slab-on-grade. The floors throughout the waste management areas shall be maintained as needed to be free from cracks and gaps. The total area of the waste management areas is approximately 1,450 ft^2.

Building 6921 waste treatment area, (see Figure 18 in Permit Attachment L (*Figures*)) is equipped with a commercially available fume hood with a negative-pressure ventilation system. The ventilation airflow from the hood passes through a HEPA filter train before being released to the environment through an exhaust stack. The filters remove particulates entrained in the airflow.

Treatment in Building 6921 is limited to chemical and thermal deactivation, stabilization/solidification, amalgamation, macroencapsulation, and physical treatment.

A.4.1.3 TA-III: Buildings 6925 and 6926 at the RMWMU

Buildings 6925 and 6926 are used for storage, repackaging, and some treatment of hazardous and mixed waste at the RMWMU. Treatment shall be limited to macroencapsulation in Building 6925.

The floor plans for RMWMU Buildings 6925 and 6926 are presented on Figure 19 of Permit Attachment L (*Figures*). Building 6925 has a total storage area of approximately 4,000 ft^2. Building 6926 also has a total storage area of approximately 4,000 ft^2.Each is a prefabricated steel building erected on a reinforced concrete slab floor and foundation. The concrete floors in both buildings will be maintained as needed to be free from cracks and gaps. Steel rollup doors are located on the south wall of each building, on the east wall of Building 6925 and on the west wall of Building 6926. Personnel doors are located on the east, south, and west sides of each building.

A.4.1.4 TA-III: RMWMU Modular Storage Buildings (TP150 and TP153)

There are two modular storage buildings located west of Building 6920 used for storage of reactive and ignitable hazardous and mixed wastes (see Figure 16 of Permit Attachment L (*Figures*)).

The exterior dimensions of each modular storage building are 23-ft long, 9-ft wide, and 8.6-ft high. The structures are constructed of welded 10- and 12-gauge steel supported by structural steel. Each building has double doors with inside handle. The inside walls and ceiling of each building are painted..

Each modular storage building has a 5.5-inch deep integral spill containment reservoir constructed of welded 10-gauge steel under the entire building; the capacity is 650 gallons. The inside surfaces (bottom and sides) of each reservoir are painted to provide additional protection against degradation of the secondary containment. The sumps shall be maintained as needed to be free from cracks and gaps. Containers shall be stored on painted steel grating or equivalent over the sumps. The grating shall be maintained as needed to support the containers and elevate them above any accumulated liquid. Each building shall rest on structural supports that elevate it and allow visual checks of the underside of the spill containment reservoir if there is evidence of deterioration on the interior surfaces noted during inspections performed according to the Inspection Plan in Permit Attachment E.

A.4.1.5 TA-III: Outdoor Waste Storage Area of the RMWMU

The outdoor waste storage area consists of the asphalt-paved areas to the north, east, and west of Building 6920 and within the RMWMU fence (see Figure 16 of Permit Attachment L (*Figures*)). The outdoor waste storage area may be used for storage of containerized hazardous and mixed wastes. It has an area of approximately 48,500 ft^2. The area is curbed, and paved.

Containers of hazardous and mixed wastes may be stored inside enclosed steel transportainers. Containers that are stored outside shall meet the requirements of this Permit Attachment and Permit Parts 2 and 3.

A.4.2 TA-III: RMWMU Container Management Practices

Requirements for management of hazardous and mixed waste containers, information on container handling, the condition of containers, aisle space, compatibility of waste with containers, and storage configuration at the RMWMU are described in Permit Section 2.10 and Permit Part 3.

Containers shall be stacked in a stable configuration that does not exceed the load-bearing capacity of the floor or secondary containment system. Containers holding hazardous or mixed waste liquids without absorbent shall not be stacked without separation or some other means to allow Unit personnel to clearly identify the source of liquid, if liquid is discovered in the secondary containment area.

A.4.3 TA-III: Preventing Hazards in Loading/Unloading at the RMWMU

Loading and unloading activities take place on paved areas, typically immediately outside the buildings. 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 will be maintained in good condition and is covered to provide protection from weather. Unit personnel typically use the loading dock for loading and unloading waste from trucks.

All containers shall be handled in a manner to prevent shifting or falling. Containers too large to hand carry shall be transported using forklifts, drum dollies, pallet jacks, or other appropriate equipment.

A.4.4 TA-III: Preventing Run-On and Run-Off (or Flooding) at the RMWMU

The area around the RMWMU slopes gently toward the west. Sheet-flow run-on of surface water from surrounding areas outside the Unit will be prevented from entering the waste management areas. The elevated gravel road located outside the east fence of the Unit diverts water flowing from areas farther to the east. An 8-in. curb at the east edge of the 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 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 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-material-lined water retention pond at the southwest

corner of the Unit, and will divert storm water from roof downspouts and the paved areas in the RMWMU into the water retention pond. Normally, the water retention pond collects only storm water. It is not intended to provide secondary containment for waste.

A.4.5 TA-III: Treatment Operations at the RMWMU

Waste treatment is performed at the RMWMU for one or more of the following reasons:

1. To meet land disposal restrictions (LDRs);
2. To allow for the safe storage of the waste; and/or
3. To meet treatment, storage, or disposal facility (TSDF) requirements

Waste treatment practices currently involve various technologies at the RMWMU, and include the following methods.

1. Chemical deactivation: The Permittees may chemically deactivate wastes exhibiting the hazardous waste characteristics of ignitability, corrosivity, or reactivity in either Building 6920 or Building 6921.
2. Thermal deactivation: The Permittees may thermally deactivate wastes exhibiting the hazardous waste characteristics of ignitability or reactivity in either Building 6920 or Building 6921.
3. Stabilization: The Permittees may stabilize and solidify wastes in either Building 6920 or Building 6921.
4. Amalgamation: The Permittees may amalgamate elemental mixed mercury wastes in either Building 6920 or Building 6921.
5. Macro-encapsulation (performed in Buildings 6920, 6921, or 6925): The Permittees may macroencapsulate hazardous or mixed waste debris or other wastes subject to a variance from the treatment standards granted by the Department pursuant to 40 CFR 268.44.
6. Physical treatment: The Permittees may conduct physical treatment of hazardous or mixed wastes in either Building 6920 or Building 6921.

Treatment quantities are listed in Attachment J, Table J-1.2. All of the treatment at the RMWMU is batch treatment. Treatment will be conducted in containers unless the physical properties of the waste and the nature of the treatment process require treatment without containers (e.g., deactivation of thermal batteries and some physical treatment). Liquid wastes shall be treated in batches of 60 gallons or less.

Waste treatment may generate secondary waste streams (treatment residues). Treatment residues may undergo additional on-site treatment only by the methods described in this Section (A.4.5) to meet LDRs or may be sent to an appropriate off-site facility for additional treatment prior to disposal. The waste treatment processes described in this section are intended to address hazardous characteristics in hazardous and mixed wastes, including:

1. Wastes that are solid and exhibit the hazardous characteristics of ignitability or reactivity that may be chemically deactivated to eliminate the characteristic.
2. Debris, and wastes containing hazardous waste toxicity characteristic metals (excluding elemental and high mercury subcategories), that may be macroencapsulated to reduce or

eliminate the leaching potential of the waste or hazardous constituent(s).

3. Wastes that are solid and with hazardous constituents that may be physically separated from larger items and the size of individual pieces reduced.
4. Pressurized containers that may be punctured or opened to release their contents.
5. Liquid waste exhibiting the characteristics of ignitability, corrosivity, and/or reactivity that may be chemically or thermally deactivated to remove the hazardous characteristic(s).
6. Liquid waste and particulates containing toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) that may be stabilized and/or solidified to reduce or eliminate the leaching potential.
7. Reactive wastes (including explosive wastes) that may be treated using thermal deactivation techniques.
8. Elemental mercury that may undergo amalgamation to reduce or eliminate the leaching potential.

Each of the waste treatment technologies or processes listed above is described in the following sections.

A.4.5.1 Chemical Deactivation

Chemical Deactivation will be performed in containers in the treatment areas only in Buildings 6920 and 6921. Whenever possible, treatment will take place within the fume hoods that are present in each building, as appropriate to protect human health and the environment. Containers vary in size depending on the quantity of waste to be treated, and include laboratory glassware, 5-gallon buckets, and 55-gallon drums.

Chemical deactivation refers to a number of chemical processes that can eliminate the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity. Chemical deactivation can be accomplished by several technologies, such as neutralization or chemical oxidation. The intent of this section is to identify and describe specific methods or treatment trains which may be used at the RMWMU to deactivate ignitable, corrosive, and reactive hazardous and mixed waste. Deactivation may or may not result in the final waste form, depending on the process, and may be used as the first method in a series of treatment steps.

Deactivation processes will be conducted under carefully controlled conditions so that hazardous and mixed waste with the characteristic of reactivity is allowed to react in a slow, nonviolent manner. Deactivation of reactive wastes shall be conducted in small batches such that process control can be easily maintained. 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 will be added 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.

Water-soluble oxidizers in particulate form will be slowly dissolved in water to deactivate them as the first step in the treatment process. The resulting solution may undergo further treatment

(e.g., neutralization and stabilization). Water-soluble concentrated liquid oxidizers such as hydrogen peroxide will be diluted with water in a controlled manner to make them safer to handle before deactivation with an appropriate chemical agent such as iron filings.

The reactive material in thermal batteries may be deactivated through introduction of an electrical current that induces a chemical reaction in the material, deactivating it and generating heat. Batteries are treated one at a time in this manner; this process is not conducted in containers due to the need to dissipate the heat generated during the chemical reaction.

Chemical deactivation to remove the characteristic of corrosivity is the process of removing excess acidity or alkalinity from an aqueous liquid waste. Other uses may include pH (Potential Hydrogen - a measure of the acidity or basicity of an aqueous solution) adjustment to facilitate subsequent treatment; such pre-treatment 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 in a mixing vessel or directly in the waste container. Common deactivating reagents include, but are not limited to, sodium hydroxide, for acid wastes; and phosphoric acid for alkaline wastes. The selection of reagents is dependent on the quantity of reagent required, cost, availability, and the potential byproduct(s). These deactivation processes are conducted under carefully controlled conditions in which the reagent is added to the waste slowly and mixed thoroughly. This allows the reaction to proceed in a nonviolent manner and allows the energy to be dissipated effectively. Ice may be used if needed to cool the mixture during the reaction. In the case of reactions that are expected to be strongly exothermic, wastes will be treated in small batches in containers (similar to the deactivation of reactive wastes) such that process control can be easier to maintain.

A.4.5.2 Thermal Deactivation

The Permittees shall perform thermal deactivation of reactive wastes, including batteries, explosives and explosive components in a Sandia National Laboratories-designed and tested portable deactivation device that meets the regulatory definition of a container. The device is a thick-walled stainless steel vacuum apparatus equipped with an internal heated covered tray and sensors to measure temperature and pressure. The device was designed to contain a detonation of 25 grams TNT-equivalents of reactive hazardous or mixed waste. The inside diameter of the cylinder is 8 inches, and it is 18 inches long. The thermal deactivation device is portable and may be used in any of the treatment areas in Building 6920 or 6921. It is shown in Figure 20 in Permit Attachment L (*Figures*).

Reactive waste is placed on the covered tray, inserted into the cold unit, the unit is sealed and filled with an inert atmosphere (e.g., nitrogen), and the temperature of the tray is slowly raised until reaching a temperature at which the reactive waste being treated decomposes. The Permittees will use waste characterization data and/or published chemical information (e.g., “DOE Explosives Safety Manual” [DOE, 2002] or other chemical or engineering handbook) as appropriate to determine the required temperature to decompose the reactive waste. The

temperature will be maintained for two hours or longer as appropriate, to complete the decomposition of the waste. The unit will be cooled and decomposition gases will be vented to a fume hood with a high-efficiency particulate air filtration system.

A.4.5.3 Stabilization and Solidification

The Permittees will perform stabilization in containers in the treatment areas only in Buildings 6920 and 6921 at the RMWMU. Whenever possible, treatment will take place within the fume hoods that are present in each building to protect human health and the environment. Stabilization is the process of binding hazardous 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 often suitable for stabilization and/or solidification include liquids, sludge, 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 quantities. Once waste and binder have been thoroughly mixed in a container, the mass is allowed to cure and/or set. Smaller batches may be mixed by hand in smaller containers (e.g., 5-gallon pails, and tubs and trays of various sizes) and allowed to cure.

Development of appropriate formulas is waste specific. Stabilization agents for toxic metals may include Portland cement, pozzolans, thermoplastics, organic polymers, and clays. Other waste forms may require proprietary reagents that are available for specific applications. Additional reagents may be added to reduce constituent leachability, reduce cure or set time, and increase strength.

Waste characteristics that are important to the success of the stabilization and/or solidification process for liquids may include volume percent of water, oil, solvents, or other organics, pH and hazardous constituents. Waste characterization data shall be used to determine whether waste is amenable to stabilization, any necessary pretreatment requirements, and the appropriate binding agent.

Once the stabilization or solidification method is selected, the binding agent is identified based on chemical compatibility with the waste form and hazardous constituents present. Pretreatment may be required to assure compatibility between the waste, the binding agent, and the containers (e.g., neutralization of liquid wastes to an acceptable pH range of 5.0 to 11.0). Once the proper binding agents 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. Stabilization is performed by combining predetermined quantities of binding agents with the waste and mixing the combination thoroughly, as appropriate. The resulting mixture is staged to allow an appropriate cure time.

A.4.5.4 Amalgamation

The Permittees shall perform amalgamation of small quantities (about 2 ounces) of elemental mercury in small (e.g., laboratory) containers in the treatment areas only in Buildings 6920 and 6921 at the RMWMU. The amalgamation process for liquid elemental mercury involves mixing mercury waste with a powdered base metal. The amalgamation process is intended to immobilize 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 is typically used as a base metal, 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 are treated at the RMWMU, hand mixing the mercury and base metal using a mortar and pestle or mechanical mixing shall be used to create an amalgam with uniform properties.

A.4.5.5 Macro-Encapsulation

The Permittees will perform macroencapsulation in containers only in Buildings 6920, 6921, and 6925 at the RMWMU. Macro-encapsulation is the process of completely encasing waste within a polymer coating or concrete, or within a jacket of inert inorganic materials. The primary use of macroencapsulation is to immobilize wastes such as debris-type solids containing hazardous constituents by completely surrounding the waste with a leach-resistant coating.

The Permittees will perform macroencapsulation using one of three processes:

1. Encasing the waste in concrete, within a larger container that serves as a mold.
2. Coating the waste with polymer agents within a mold. Polymers 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 will be carefully maintained to assure that adequate coating occurs.
3. For example, the Permittees perform macroencapsulation with a chemically inert resin (typically polyethylene), using 30-gallon containers (metal baskets). Each basket containing the solid waste items is placed in a 50-gallon mold (similar in size and shape to a 55-gallon drum). The basket is designed to fit into the mold with one to two inches of clearance on all sides, the top, and the bottom. The mold containing the basket and waste items is then filled with melted resin that is heated using a commercially available extrusion unit. Each basket is used only once because it becomes encapsulated within the inert resin and is part of the final waste form. After the resin cools and solidifies, the mold is removed, the waste form is turned over and more polyethylene is added to form final caps on the ends. The completed waste form is a cylinder slightly smaller than a 55-gallon drum.

4. Placing the waste, along with inert void-filling materials as appropriate, inside a commercially available container made of inert or non-corroding materials such as polyethylene or stainless steel and sealing the container to encapsulate the waste. This method is not used to treat D008 radioactive lead solids.
5. Placing the waste in a container may consist of an outer shell with a liner of inert or non-corroding material such as polyethylene resin or stainless steel. After the wastes and inert void-filling materials as applicable, are placed in the container, the resin is heated to seal the container and lid (e.g. using a resistance-heated wire system embedded in the container lid). Non-corroding materials such as stainless steel are also available as containers and liners; the stainless steel is welded closed to seal the container and encapsulate the wastes. The Permittees use containers of various sizes, depending on the volume and dimensions of waste items to be macroencapsulated.

A.4.5.6 Physical Treatment

The Permittees will perform physical treatment (volume reduction) of hazardous or mixed waste only in Buildings 6920 and 6921. Such treatment includes:

1. Reducing waste volume by using commercially available tools (e.g., hammers, screwdrivers, wrenches, pliers, saws, drills, cutters, etc.) to separate items with hazardous constituents from larger items or from each other, including removal of coating and filler materials.
2. Removing coating and filler materials (e.g. resins) by dissolution in containers (e.g., trays or pails) in order to facilitate separation of items with hazardous waste constituents from each other or from other items. Whenever possible, dissolution will take place within the fume hood(s) that are present in each building.
3. Reducing the size of waste items by using tools (e.g. mallets, cutters, etc.) to crush or cut items into smaller pieces.
4. Puncturing aerosol cans within a container to allow recovery of the contents. The liquid contents of the aerosol cans are collected in the container, and any gaseous propellants are filtered through a carbon filter attached to the container.
5. Releasing pressurized contents of containers other than aerosol cans (e.g., gas cylinders). Organic gaseous contents are filtered through a carbon or other appropriate filter. All contents will be vented to a chemical fume hood with a high-efficiency particulate air filtration system.

A.4.6 Treatment Effectiveness

Treatment effectiveness will be verified through evaluation of the treated waste in accordance with Permit Attachment C (*Waste Analysis Plan*).

The Permittees will evaluate treatment effectiveness by appropriate methods for each batch of waste treated. In many cases (e.g. stabilization), the Permittees treat small samples of a batch of waste using a single agent in various proportions or using various agents to determine which is most effective. That process is then used in treating the rest of the waste, and the data

demonstrating that the treatment is effective for the samples may be used to demonstrate effectiveness for the rest of the waste, when appropriate.

A.4.6.1 Chemical Deactivation

The Permittees will also verify treatment effectiveness using one or more of the following methods, as appropriate:

1. Visual check for completeness of chemical reaction for solid items of waste that were treated to remove the characteristic of reactivity (e.g., color change or structural change).
2. Visual check or ignitability test for liquid wastes that were treated to remove the characteristic of ignitability.
3. Document check to determine whether treated waste is an oxidizer as defined in 40 CFR § 261.21(a)(4).
4. Visual check for liquid wastes that were treated to remove the characteristic of reactivity.
5. Fingerprint chemical check for the presence of sulfides and cyanides if their presence caused the waste to be reactive.
6. Fingerprint check for pH of liquid wastes that were treated to remove the characteristic of corrosivity.
7. Knowledge of process to determine whether chemical reaction(s) were completed. Such knowledge of process shall be based on stoichiometry or the measurement of other properties (e.g., temperature or time). The Permittees shall attempt to use the applicable methods listed above before using knowledge of process as the sole means of verifying treatment effectiveness.

A.4.6.2 Thermal Deactivation

The Permittees will also verify treatment effectiveness through proper operation of the unit (maintaining specified decomposition temperature for specified length of time). In some cases, personnel may visually check for evidence of chemical reaction (e.g., color change or structural change) in a waste solid.

A.4.6.3 Stabilization and Solidification

The Permittees will also verify treatment effectiveness using one or more of the following methods, as appropriate:

1. Visual check for the presence of free liquids.
2. Paint filter test to determine whether free liquids are present if the treated waste is amorphous and may contain some liquids.
3. Laboratory analysis of samples of the treated waste using the TCLP for hazardous waste toxicity characteristic metals. If the stabilization is intended to meet the treatment standards in 40 CFR § 268.40, the analysis will include underlying hazardous constituents as described in Permit Attachment C (*Waste Analysis Plan*).

A.4.6.4 Amalgamation

Treatment is effective by using the specified method as discussed in Permit Attachment A, Section A.4.5.4.

A.4.6.5 Macro-encapsulation

The Permittees will verify treatment effectiveness by visually checking each macroencapsulated item to verify that it is completely encased in the inert resin or concrete. For containers with inert liners, the Permittees shall check the seal of the liner and/or container.

A.4.6.6 Physical Treatment

The Permittees will also verify treatment effectiveness by one or more of the following methods, as appropriate:

1. Visual inspection that items with hazardous waste constituents have been completely separated from other items.
2. Visual inspection that pieces are the desired size.
3. Visual inspection that punctured aerosol cans are empty and the contents are containerized.
4. Leaving a container for a time to allow it to continue venting after visual and/or audible evidence indicates it is empty. The length of time would be determined by the size of the container, the contents, and the strength of the evidence.

A.5 TA-V: THE AUXILIARY HOT CELL UNIT

The auxiliary hot cell unit (AHCU) within the Facility is shown in Figure 21-A of Permit Attachment L (*Figures*). The location of the AHCU at TA-V is shown on Figure 21-B in Permit Attachment L (*Figures*). Appendix A.4 in Permit Attachment L (*Figures*) contains photographs of the hazardous waste management areas at the AHCU.

A.5.1 TA-V: Designated Waste Management Areas at the AHCU

The AHCU is located within the high bay of Building 6597 and comprises four designated waste management areas, which are shown on Figure 22 of Permit Attachment L (*Figures*). These waste management areas include:

1. The Auxiliary Hot Cell;
2. The work area near the hot cell, which includes the fume hood;
3. The storage silos; and
4. The container storage area.

Storage capacities are listed in Attachment J, Table J-1.1. Treatment quantities are listed in Table J-1.2.

A.5.1.1 TA-V: AHCU Hot Cell

The Auxiliary Hot Cell is located in the high bay area of Building 6597. Waste management activities are repackaging hazardous and mixed wastes for shipment to off-site Treatment, Storage, or Disposal Facilities (TSDFs), and treatment of hazardous and mixed wastes by reducing waste volumes using tools to separate items with hazardous waste constituents from larger items. The outside dimensions of the hot cell are 16 feet (ft) 8 inches square and 16 ft 2 inches high. Inside space dimensions are 100 square feet with a height of 13-ft 10 inches. The inside surfaces are lined with stainless steel. An 18-inch thick concrete foundation mat supports the hot cell. The hot cell walls are constructed of inner and outer pre-cast 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. The hot cell is equipped with manipulator arms that allow personnel to handle items remotely.

A.5.1.2 TA-V: AHCU Work Area and Fume Hood

The work area is located in the corner of the high bay, north and east of the hot cell and the permanent shield wall. Activities include treatment and storage. Treatment methods will be limited to deactivation, stabilization/solidification, macroencapsulation, and physical treatment. Personnel also repackage wastes for shipment to off-site TSDFs. 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 containerized mixed wastes or large mixed waste items. If the mixed waste 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 at the shield wall. 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 6-ft-wide walk-in fume hood is located in the work area northeast of the Auxiliary Hot Cell. It can accommodate two 55-gallon drums placed side by side. Unit personnel treat and repackage hazardous and mixed wastes in the fume hood. The fume hood is included in the maximum storage capacity for the overall work area.

A.5.1.3 TA-V: AHCU Storage Silos

Four 10-inch inside-diameter, 15-ft deep floor silos and two 30-inch inside-diameter, 15-ft deep floor silos are located in the work area north of the hot cell and east of the permanent shield wall. These silos have removable locking-type shield plugs. The tops of the silos are raised slightly above the floor level to reduce the possibility of water entry into the silo.

Two additional storage silos are located within the hot cell. Each silo is 10-inch inside diameter. One silo is 15-ft deep and the other is 11-ft 8-inch deep.

Each silo is constructed of concrete, and each is lined with a removable welded stainless steel sleeve. The sleeves do not provide secondary containment for the small quantities of liquid (about 2 ounces) wastes that may be stored in the silos. Secondary containment is provided by outer storage containers. The silos are used only for storage of mixed wastes that exhibit high external radiation dose rates that are hazards to personnel.

A.5.1.4 TA-V: AHCU Container Storage

Containers of hazardous and mixed wastes may be stored in the high bay, south and west of the hot cell. The floor of the storage area is painted and shall be maintained as needed to be free from cracks and gaps.

Container storage practices applicable to the AHCU, which include container types and labeling, container handling, and the condition of containers, compatibility of waste with containers, the presence of liquids in containers, and the condition of containers are presented in Part 3 of this Permit.

Waste containers that may be managed at the AHCU include but are not limited to 30 and 55-gallon steel, polyethylene, and fiber drums; fiberglass-reinforced plastic or plywood boxes; various steel boxes; metal over pack boxes; cardboard shipping containers; gas cylinders; roll-off bins; lab pack containers; various small containers; bags; and some oversized, irregularly-shaped containers or large self-contained items (e.g. large pieces of equipment containing hazardous or mixed waste in which the hazardous component of the item is located within the interior of the item, or is covered with an inert material, such as plastic sheeting, if located on the exterior of the item).

In the work area and storage areas, containers holding liquid hazardous or mixed wastes shall be stored on portable spill pallets or 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. The containers of liquids (up to and including 85-gallon overpack containers) will be stored on grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities designed for use with 55-gallon drums or other standard containers, as required by 40 CFR § 264.175(b)(1-3).

Each pallet will have sufficient capacity to hold the contents of the largest container of liquid waste stored on it. Containers shall be stored in a stable configuration; the weight shall not exceed the load-bearing capacity of the grating or the pallet.

A.5.1.5 TA-V: AHCU Container Management Practices

Requirements for management of ignitable, reactive, or incompatible wastes at the AHCU are described in Permit Section 2.10. Requirements regarding the management of hazardous and mixed waste storage containers, information on container handling, the condition of containers, aisle space, compatibility of waste with containers, and storage configuration are contained in Part 3 of this Permit.

A.5.2 TA-V: Preventing Hazards in Loading/Unloading at the AHCU

Loading and unloading activities are performed just inside the rollup door on the north side of Building 6597 and may also be performed just inside the rollup door on the south side of the high bay (see Figure 23 in Permit Attachment L (*Figures*)). The floor is level and maintained in good condition. There also is sufficient room for safely operating vehicles and equipment. All containers shall be handled in a manner to prevent shifting and falling. Containers too large to hand carry shall be transported using forklifts, drum dollies, pallet jacks, or other appropriate equipment.

A.5.3 TA-V: Preventing Run-on and Run-Off (or Flooding) at the AHCU

The land surrounding the AHCU slopes gently toward the west. Sheet-flow run-on of surface water from surrounding areas outside TA-V is prevented from entering TA-V by a diversion berm. The diversion berm lies east of TA-V and diverts storm water to the north and south.

The floor of the high bay in Building 6597 is slightly higher than the surrounding ground, and should direct storm water away from the building. The asphalt and concrete pavement around the AHCU slope toward a storm drain that directs storm water toward the west.

Drainage control features (e.g., run-on/run-off, drainage barriers) at the AHCU are shown on Figure 24 of Permit Attachment L (*Figures*).

A.5.4 TA-V: Treatment Operations at the AHCU

Treatment methods for hazardous and mixed wastes that will be treated in containers at the AHCU are:

1. Chemical deactivation of wastes exhibiting the hazardous waste characteristics of ignitability, corrosivity, or reactivity will be performed in the work area, including the fume hood and hot cell.
2. Stabilization and solidification of hazardous or mixed wastes will be performed in the work area, including the fume hood and hot cell.
3. Macro-encapsulation of hazardous or mixed waste debris or other wastes subject to a variance from the treatment standards granted by the Department according to 40 CFR 268.44 will be performed in the work area, including the fume hood, or the hot cell.
4. Physical treatment will be performed in the work area, including the fume hood, or the hot cell.

The waste treatment processes described in this section are intended to address hazardous waste characteristics in hazardous and mixed wastes, including the following:

1. Solid items of waste exhibiting the hazardous waste characteristics of ignitability or reactivity that may be chemically deactivated to eliminate the characteristic(s).
2. Debris, and wastes exhibiting toxicity characteristic metals (excluding elemental and high mercury subcategories), that may be macroencapsulated to reduce or eliminate the leaching potential of the hazardous waste constituent(s).

3. Liquid waste exhibiting the hazardous waste characteristics of ignitability, corrosivity, or reactivity that may be chemically deactivated to remove the characteristic(s).
4. Liquid wastes and particulates exhibiting toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) that may be stabilized and/or solidified to reduce or eliminate the leaching potential of the hazardous waste constituents.
5. Solid items of waste with hazardous constituents that may be physically separated from larger items and the size of individual pieces may be reduced.

The following will be managed as hazardous or mixed wastes (in accordance with LDRs).

1. Treatment residue derived from the treatment of listed hazardous or mixed wastes.
2. Treated waste containing listed hazardous or mixed wastes.
3. Treated waste, which continues to exhibit hazardous waste characteristics, or does not meet treatment standards for underlying hazardous waste constituents.

The description of each waste treatment technology or process to be applied at the AHCU, are identical to those presented in Section A.4.5 of this Attachment (i.e., Chemical Deactivation, Stabilization/Solidification, Macroencapsulation, and Physical Treatment).

A.6 MANZANO BASE: MANZANO STORAGE BUNKERS

The Manzano Bunkers (MSBs), which are owned by Department of Defense and leased to the Department of Energy, are located at the Manzano Base on Kirtland Air Force Base, approximately one mile east of the exit road leading to the entrance of TA-III and TA-V and at the end of Pennsylvania Avenue. The location of the MSBs within the Facility is shown on Figures 2 and 25 in Permit Attachment L (*Figures*).

The Manzano Storage Bunkers (MSBs) comprise five Units, each with approximately 1600 to 2400 square feet of space, and are used for storage of hazardous and mixed wastes. These are Bunkers 37034, 37045, 37055, 37057, and 38118. Figure 26 of Permit Attachment L (*Figures*) shows the general layout of the MSBs and their location at the Manzano Base and depicts the locations of the waste management areas at the MSBs. Appendix A.5 in Permit Attachment L (*Figures*) contains photographs of the hazardous waste management areas at the MSBs.

A.6.1 Manzano Base: Designated Waste Management Areas at the MSB

The walls, roof, and floor of each bunker are constructed of concrete and are covered by earthen materials. The walls and roof of each bunker are rounded. There are three types of bunkers at the Manzano Base. These include Type B (37034); Type C (37118); and Type D bunkers (37045, 37055, and 37057). The following sections provide descriptions of the specific bunker storage structures, and their locations. Storage capacities are listed in Attachment J, Table J-1.1.

A.6.2 Manzano Base: MSB Type B Bunker (37034)

The Type B bunker consists of an access tunnel leading to a main chamber that is used for storage of hazardous and mixed wastes. Figure 27 of Permit Attachment L (*Figures*) illustrates

the floor plan for the subject Type B bunker. The Type B bunker 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. The bunker is covered by at least 2 ft of earthen fill over a 6-in. thick concrete roof. The soil surface above and around the bunker is sloped for water to drain away from the bunker. Access to the waste management area of the 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.

A.6.3 Manzano Base: MSB Type C Bunker (37118)

Bunker 37118 does not have an access tunnel and consists entirely of a main chamber used for storage of hazardous and mixed wastes. Figure 28 of Permit Attachment L (*Figures*) shows the floor plan of Type C Bunker 37118. The main chamber is approximately 83 ft long, 29 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. The bunker is covered by at least 2 ft of earthen fill over a 6-in. thick concrete roof. The soil surface over and around the bunker is sloped for water to drain away from the bunker.

A.6.4 Manzano Base: MSB Type D Bunkers (37045, 37055, and 37057)

The Type D bunkers being permitted consist of an access tunnel leading to a main chamber. Only the main chamber is used for storage of hazardous and mixed wastes. Figure 29 of Permit Attachment L (*Figures*) is a typical floor plan of a Type D bunker. The 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 Type D bunker is approximately 61 ft long, 26.5 ft wide and 12.5 ft high. Access to the waste management area 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 concrete roof. The soil surface over and around each bunker is sloped so that water drains away from each bunker.

A.6.5 Manzano Base: Unit Operations at the Manzano Storage Bunkers

The Manzano Storage Bunkers are used to store any of the hazardous and mixed wastes bearing EPA's Hazardous Waste Numbers listed in Permit Attachment B (*Authorized Wastes*).

The MSB are not occupied by any SNL personnel except when managing waste or performing inspections. All personnel will sign in on a log before entering each bunker and will sign out when they leave. Personnel work in pairs and maintain contact with each other. All personnel will be trained to check that during each visit to the MSB everyone has signed out and exited the bunker before turning off the lights and closing and locking the doors.

In each Manzano Storage Bunker, containers holding liquid hazardous or mixed wastes will be 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. The pallets come in various sizes and capacities. They are designed

for use with 55-gallon drums or other standard containers, and meet the requirements of 40 CFR § 270.15(a-b) and 40 CFR § 264.175(b)(1-3). The pallets and pans are designed to be resistant and impervious to corrosives and other liquids. Containers of liquids (up to and including 85-gallon overpack containers) shall be stored on the grating. Any liquids released from the containers drain through the grating into a tub.

Each pallet has sufficient capacity to hold the contents of the largest container of liquid waste stored on it. Containers shall be stored in a stable configuration; the weight will not exceed the load-bearing capacity of the grating or the pallet.

Waste containers that may be managed at the MSB include but are not limited to 30 and 55-gallon steel, polyethylene, and fiber drums; fiberglass-reinforced plastic or plywood boxes; various steel boxes; metal over pack boxes; cardboard shipping containers; gas cylinders; roll-off bins; lab pack containers; various small containers; bags; and some oversized, irregularly-shaped containers or large self-contained items (e.g. large pieces of equipment containing hazardous or mixed waste in which the hazardous component of the item is located within the interior of the item, or is covered with an inert material, such as plastic sheeting, if located on the exterior of the item).

A.6.6 Manzano Base: MSB Container Management Practices

Other requirements for management of containers, and methods employed for storage of hazardous and mixed waste at the MSB are described in detail under Permit Section 2.10 and in Permit Part 3.

A.6.7 Manzano Base: Preventing Hazards During Loading/Unloading at the MSB

Loading and unloading activities take place on the paved areas immediately outside each of the bunker Units. The surface is sloped gently away from the door, and the pavement is maintained in good condition at each bunker. There is sufficient room for safely operating vehicles. All containers shall be handled in a manner to prevent shifting and falling. Containers too large to hand carry shall be transported using a forklift, drum dolly, hand truck, or other appropriate equipment.

A.6.8 Manzano Base: Preventing Run-on and Run-Off (or Flooding) at the MSB

Sheet-flow run-on of surface water from surrounding areas and run-off from each of the MSB bunkers is prevented from entering or leaving the waste management areas 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 each of the bunkers prevents run-on of storm water. The concrete provides a barrier to moisture. In Type B and Type C bunkers, a 6-ft drain tile is located on the exterior perimeter, so that 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 gently away from the bunker doors. Drainage control features (e.g., run-on/run-off, drainage barriers) are shown on Figure 30 in Permit Attachment L (*Figures*).

A.7 THE CORRECTIVE ACTION MANAGEMENT UNIT

The CAMU is a 3.75-acre area located in the southeast corner of TA-III at SNL as shown in Figure 2 and Figure 31 of Permit Attachment L (*Figures*). The CAMU was used for treatment, storage, and containment of RCRA Subtitle C- and Toxic Substances Control Act (TSCA)-regulated wastes that were generated during remediation work at the Chemical Waste Landfill located adjacent to and at the southeast portion of the Unit. The Unit was closed with wastes remaining in place in the containment cell. All aboveground facilities, including the Bulk Waste Staging Area, Containerized Waste Staging Area, Treatment Pad, and the Sprung™ Structures have been clean-closed. The CAMU containment cell contains approximately 31,800 cubic yards of hazardous and toxic wastes. The CAMU containment cell also contains soils having low levels of tritium (up to 20,000 picocuries per liter soil moisture). The containment cell is covered with a 5-foot-thick cover system consisting of a layer of 60-mil high-density polyethylene on top of the waste, which, in turn, is covered by bedding sand, pea gravel, filter sand, a native soil blend, and a topsoil layer.

The CAMU incorporates a less-than-90-day waste accumulation area (leachate storage area) north of the containment cell. This area is used to store leachate periodically pumped from the containment cell leachate collection and removal system (LCRS). The leachate is placed into 55-gallon drums. The leachate consists of wastewater containing low levels of hazardous constituents, polychlorinated biphenyls (PCBs), and tritium.

A.7.1 CAMU Access

Figure 32 of Permit Attachment L (*Figures*) presents the configuration of the CAMU and delineates the containment cell, which is subject to post-closure care. A contiguous four-strand, barbed-wire fence delineates this boundary. Locked gates located at the northern and southern perimeter boundaries provide access to the CAMU containment cell and leachate storage area. A complete description of the security procedures applied at the CAMU is in Section H.4 of Permit Attachment H (*Post-Closure Care Plan for the Corrective Action Management Unit*).

A.7.2 General Description of the CAMU

Prior to closure, the CAMU consisted of four waste staging areas: the bulk waste staging area; the Sprung™ structures, the containerized waste staging area, and the treated waste staging area. Operating areas also included a treatment pad with two temporary treatment systems, and a containment cell. Support areas at the CAMU included an equipment decontamination pad, storm-water retention ponds, and less-than-90-day storage areas for the containment-cell leachate collection tanks and the decontamination-pad wash water storage tanks. All hazardous waste and hazardous waste residues were removed from the waste staging areas, treatment pad, and support areas at the CAMU, and the pad and areas were closed under the New Mexico Hazardous Waste Management Regulations. The CAMU containment cell was closed with waste remaining in place. The containment cell and supporting infrastructure are subject to the post-closure requirements contained in Permit Part 7 of this Permit, and are subject to the regulations at 20.4.1.500 NMAC, incorporating 40 CFR §§ 264.117 through 264.120 and 264.552(e)(6).

A.7.3 CAMU Leachate Management

Whenever leachate is being pumped, poured, or otherwise handled, Unit personnel shall meet all applicable preparedness and prevention requirements in Permit Part 2. Unit personnel shall implement the Contingency Plan (Permit Attachment D) in response to emergencies.

The Permittees shall clean up spills promptly in accordance with Permit Section 2.12, and shall notify the Department in accordance with Permit Part 2. At least two verification samples shall be collected and analyzed to ensure complete cleanup has been achieved. Additional verification samples may be required by the Department depending on the magnitude of the spill. Quality control samples shall also be collected in accordance with the applicable requirements in Permit Part 8.

A.7.4 CAMU Leachate Collection and Removal

The LCRS sump shall be inspected on a quarterly basis for the presence of leachate in accordance with Permit Attachment E, Section E.10.4. Leachate shall be pumped into 55-gallon drums or other suitable containers, characterized according to Permit Attachment C, and managed appropriately.

A.7.5 CAMU Less-Than-90-Day Accumulation Area

Hazardous waste managed at the CAMU includes leachate generated from the LCRS and personal protective equipment (PPE) waste generated during the management and sampling of leachate. Hazardous constituents may include, but are not limited to, organic compounds, semivolatile organic compounds, and toxic and heavy metals. The leachate may also be contaminated with low levels of PCBs and tritium. The U.S. EPA Hazardous Waste Number for leachate is F039. Containers of hazardous waste managed within the CAMU less-than-90-day waste accumulation area shall be managed in accordance with applicable regulations in 20 NMAC 4.1.300, incorporating 40 CFR Part 262.34(a).

The less-than-90-day waste accumulation area consists of a rectangular area covered with aggregate. Containerized leachate shall be accumulated in 55-gallon drums or other suitable containers on spill containment pallets to prevent the accidental discharge of leachate to the ground surface. The containers shall be staged in a manner that maintains sufficient aisle space to allow the unobstructed movement of personnel and equipment to any portion of the less-than-90-day waste accumulation area. No more than 100 containers of leachate shall be accumulated in the area at any given time.

A.7.6 Description of the CAMU Containment Cell

The CAMU containment cell consists of an engineered liner and final cover systems that are designed to minimize the migration of hazardous waste and constituents into the environment. In addition to the cell liner and final cover systems, the containment cell incorporates a vadose zone monitoring system (VZMS) and a leachate collection and removal system (LCRS). Details of

the CAMU containment cell size plan, liner details and associated features are presented in Figures 33, 34, and 35 of Permit Attachment L (*Figures*).

The CAMU containment cell contains approximately 31,800 cubic yards of remediation wastes that were generated as part of corrective action activities at the chemical waste landfill (CWL), a hazardous waste landfill located adjacent to the CAMU.

A.7.6.1 Containment Cell Liner System

The containment cell liner system includes bottom liner and sidewall liner components.

A.7.6.2 Bottom Liner Components

The bottom liner components include the following in descending order:

1. Leachate Collection and Removal System
2. Geomembrane liner
3. Geosynthetic clay liner

Each of these bottom liner components is discussed in detail as follows.

A.7.6.3 The Leachate Collection and Removal System

The leachate collection and removal system **(LCRS)** is designed to collect and withdraw leachate from the cell. The LCRS includes a lined sump in the north end of the containment cell, a collection pipe in a central trench located above the geomembrane liner, a pump that removes leachate that collects in the sump, and a geocomposite drainage layer.

The central trench traverses the bottom of the containment cell from the south to the north and is sloped approximately 1 percent toward the north. The bottom of the containment cell is sloped approximately 2 percent to drain toward the central trench. The trench receives leachate from the geocomposite drainage layer. The collection pipe in the bottom of the trench is constructed of slotted 4-inch-diameter polyvinyl chloride (PVC) pipe and provides access for a portable pump to the LCRS sump. The pump delivers leachate to 55-gallon drums or other suitable containers. Additional details of the leachate collection process and system inspection/maintenance/repair are presented in Sections E.9 and H.4.3 of Permit Attachments E and H.

A.7.6.4 Geomembrane Liner

A 60-mil high-density polyethylene (HDPE) geomembrane liner lies across the entire containment cell and below the LCRS and acts as the initial barrier to minimize leachate migration from the CAMU. A second 60-mil HDPE liner is located in the LCRS sump area to provide redundant protection in this area.

A.7.6.5 Geosynthetic Clay Liner

A Geosynthetic clay liner (GCL**)** underlies the geomembrane and functions as a leachate barrier layer in the event that the overlying HDPE geomembrane fails. The GCL is located directly above the prepared wicking materials in the bottom of the cell and over the prepared side slopes. The GCL consists of non-woven, geotextile with its outer layers needle-punched through an inner layer of low-permeability sodium bentonite.

A.7.6.6 Sidewall Liner Components

The sidewall liner components include the following in descending order:

1. Protective cover sheet
2. Geomembrane
3. GCL
4. Prepared subgrade

A.7.6.7 Protective Cover Sheet

A 60-mil HDPE cover sheet lies above the LCRS trench on the north and south side slopes of the cell. The protective cover sheet is field-welded to the geomembrane liner at the edges of the LCRS trench.

A.7.6.8 Geomembrane

A 60-mil HDPE geomembrane liner comprises the uppermost layer on the sidewalls of the cell. The geomembrane provides the initial barrier to minimize leachate migration from the CAMU.

A.7.6.9 GCL

The sidewall liner GCL is identical to the bottom liner GCL described in Section A.7.8.5 of this Permit Attachment.

A.7.6.10 Prepared Subgrade

The prepared subgrade lies below and in direct contact with the GCL. The base below the subgrade was compacted and was constructed to be free of roots, debris, large voids, and rocks greater than 0.5 inch in diameter.

A.7.6.11 Final Cover System

The final cover system design incorporates a capillary barrier and vegetative cover. A HDPE liner is positioned at the base of the final cover system. In addition to the vegetative cover component, engineering controls will be applied to minimize erosion of the final cover. These include slope, surface-water runoff, and perimeter surface-water flow control. The crown of the final cover slopes to the north, south, east, and west at a 3-percent grade. Transition slopes range from 8:1 to 4:1. This design facilitates low-profile mounding and gentle slopes that enhance

resistance to erosion caused by wind and precipitation. A plan-view drawing of the completed containment cell showing the final cover configuration and associated perimeter drainage pathways is presented on Figure 36 in Permit Attachment L (*Figures)*.

The final cover system components, as shown on Figure 37 of Permit Attachment L (*Figures*), include the following in descending order:

1. Topsoil and native soil blend
2. Filter sand and pea gravel
3. Bedding sand and HDPE liner

A.7.6.12 Topsoil and Native Soil Blend Layers

The purpose of the topsoil and native soil blend layers is to provide a growing media for the vegetative cover, which consists of native plants. This enhances evapotranspiration and reduces infiltration. The 6-inch-thick topsoil layer is comprised of existing surface soil stripped from the containment cell area during CAMU construction, other surface soil from the Facility, and surface soil from off-site locations with properties similar to the soil in the vicinity of the CAMU. The uppermost portion of the topsoil layer contains a 1-inch-thick gravel mulch layer used to armor the cover surface and reduce the effects of erosion.

The 36-inch-thick native soil blend layer underlies the topsoil layer and was constructed to be free of organic matter, rubble, trash, and deleterious substances. The topsoil layer provides a suitable root bed for the vegetative cover while the underlying native soil blend layer allows for more moisture storage and facilitates further root penetration.

A.7.6.13 Filter Sand/Pea Gravel Layers

A capillary barrier, comprised of a 4-inch-thick filter sand layer and a 6-inch-thick pea gravel layer, lies beneath the native soil blend. The sand layer beneath the native soil blend promotes lateral movement of percolating water and reduces the migration of fines from the native soil blend into the underlying pea gravel layer.

A.7.6.14 Bedding Sand Layer and HDPE Liner

An 8-inch-thick bedding sand layer underlies the pea gravel layer and provides protection to the underlying HDPE liner. The HDPE liner is included in the final cover design as an additional measure of protection. The flexible HDPE membrane liner consists of a 60-mil-thick, textured HDPE produced from specially formulated polyethylene resin. The HDPE liner lies over the waste material, buttress soil, and extended slope, and is keyed into an anchor trench along the perimeter of the containment cell.

A.7.6.15 Vadose Zone Monitoring System (VZMS)

The VZMS is designed to provide real-time information on containment cell performance with respect to early detection of any leaks from the containment cell.

The VZMS consists of the following three subsystems:

1. The Primary Subliner (PSL) Monitoring Subsystem
2. The Vertical Sensor Array (VSA) Monitoring Subsystem
3. The CWL and Sanitary Sewer Line (CSS) Monitoring Subsystem

The three subsystems, shown on Figures 38 and 39 of Permit Attachment L (*Figures*), are used in an integrated fashion to detect any leakage from the containment cell, and to provide information that can be used to distinguish false detections caused by leakage from the sanitary sewer line or constituent migration from the CWL.

A.7.6.16 Primary Subliner Monitoring Subsystem

The Primary Subliner (PSL) Monitoring Subsystem is the primary monitoring subsystem of the VZMS and is designed to provide early leak-detection capability. It consists of five parallel-trending, sub-horizontal, vitrified clay pipes (VCPs) located 5 feet below the containment cell bottom liner, with horizontal spacing of 17 to 27 feet (see Figures 38 and 39 in Permit Attachment L (*Figures*)). A PVC access tube is connected to the ends of each VCP to facilitate the deployment of a neutron probe for moisture monitoring. The neutron probe is manually moved through the VCP during monitoring events. Figure 40 of Permit Attachment L (*Figures*) presents a cross-sectional view of the PSL monitoring subsystem components.

A.7.6.17 VSA Monitoring Subsystem

The VSA Monitoring Subsystem will be used to monitor both lateral and vertical soil gradient information on *in situ* soil moisture, temperature, and soil gas, as required (see Table H-1 of Permit Attachment H). It consists of 11 vertical boreholes located below the containment cell, including one beneath the LCRS sump (see Figure 38 and Figure 39 in Permit Attachment L (*Figures*)). Each borehole contains a sampling point at 5 and 15 feet below the containment cell liner, as well as the following three components: a time-domain reflectometry soil-moisture content probe, a temperature sensor, and an active soil-gas sampler. Instrumentation cabling and tubing is ducted to the surface outside of the containment cell liner perimeter. Figure 41 of Permit Attachment L (*Figures*) presents a cross-sectional view of the VSA Monitoring Subsystem components.

A.7.6.18 Chemical Waste Landfill and Sanitary Sewer Line Monitoring Subsystem

The Chemical Waste Landfill and Sanitary Sewer Line (CSS) Monitoring Subsystem is designed to detect and identify leakage of moisture and hazardous constituents from the sanitary sewer line should such leakage occur, as well as volatile organic compounds that could potentially migrate from the CWL toward the containment cell. The CSS subsystem consists of six vertical, 20-foot-deep boreholes, spaced approximately 100 feet apart in a line parallel to the sanitary sewer line (see Figures 38 and 39 in Permit Attachment L (*Figures*)). Each borehole is equipped with a well screen suitable for soil gas sampling or for deployment of a neutron probe for soil moisture monitoring. Figure 42 of Permit Attachment L (*Figures*) presents a cross-sectional view of the CSS monitoring subsystem components.

PERMIT ATTACHMENT B AUTHORIZED WASTES

B.1 INTRODUCTION

This Permit Attachment authorizes the types and quantities of wastes that the Permittees are allowed to manage, treat and/or store at the Permitted Units.

B.2 AUTHORIZED WASTES FOR THE THERMAL TREATMENT UNIT

Table B-1 below lists the wastes that the Permittees are authorized to manage and treat at the Thermal Treatment Unit (TTU) by open burning. Additional treatment requirements are presented in Permit Part 5. The maximum annual quantity of waste treated at the TTU is limited to 9,500 pounds.

TABLE B-1
Types of Hazardous Wastes Allowed for Treatment at the TTU

Solid or Hazardous Waste	EPA Hazardous Waste Number	Process Code[a]
Acetone	F003	X01
Acetonitrile	D001	X01
Nitric acid	D002	X01
Silver nitrate	D001, D011	X01
SASN	D001, D003, D011	X01
PETN	D003	X01

a X01 – open burning/open detonation

B.3 AUTHORIZED WASTES FOR TREATMENT AND/OR STORAGE AT THE HAZARDOUS WASTE HANDLING UNIT, THE RADIOACTIVE AND MIXED WASTE MANAGEMENT UNIT, THE AUXILIARY HOT CELL UNIT, AND THE MANZANO STORAGE BUNKERS

Table B-2 below lists the wastes, process codes, and estimated annual quantities that the Permittees are authorized to manage, treat and/or store at the Hazardous Waste Handling Unit (HWHU), the Radioactive and Mixed Waste Management Unit (RMWMU), the Auxiliary Hot Cell Unit (AHCU), and the five Manzano Storage Bunkers (MSB). Additional storage and treatment requirements are presented in Permit Parts 3 and 4.

If the amount of any waste code handled (i.e., managed, treated, or stored) in a calendar year exceeds the amount listed for that waste code in this Permit Attachment (B), the Permittees shall submit a report explaining the situation to the Department and, if the increase in annual quantity is expected to be repeated, shall submit a revised Part A application by April 1 of the following year and shall request a permit modification to revise this Permit Attachment to update the estimated annual quantity for the waste code.

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
1	P001	S01	100
2	P002	S01	100
3	P003	S01	100
4	P004	S01	100
5	P005	S01	100
6	P006	S01	100
7	P007	S01	100
8	P008	S01	100
9	P009	S01	100
10	P010	S01	100
11	P011	S01	100
12	P012	S01	100
13	P013	S01	100
14	P014	S01	100
15	P015	S01	100
16	P016	S01	100
17	P017	S01	100
18	P018	S01	100
19	P020	S01	100
20	P021	S01	100
21	P022	S01	100
22	P023	S01	100
23	P024	S01	100
24	P026	S01	100
25	P027	S01	100
26	P028	S01	100
27	P029	S01	100
28	P030	S01	100
29	P031	S01	100
30	P033	S01	100
31	PO34	S01	100
32	P036	S01	100
33	P037	S01	100
34	P038	S01	100
35	P039	S01	100
36	P040	S01	100
37	P041	S01	100
38	P042	S01	100
39	P043	S01	100
40	P044	S01	100
41	P045	S01	100
42	P046	S01	100
43	P047	S01	100
44	P048	S01	100
45	P049	S01	100
46	P050	S01	100
47	P051	S01	100

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
48	P054	S01	100
49	P056	S01	100
50	P057	S01	100
51	P058	S01	100
52	P059	S01	100
53	P060	S01	100
54	P062	S01	100
55	P063	S01	100
56	P064	S01	100
57	P065	S01	100
58	P066	S01	100
59	P067	S01	100
60	P068	S01	100
61	P069	S01	100
62	P070	S01	100
63	P071	S01	100
64	P072	S01	100
65	P073	S01	100
66	P074	S01	100
67	P075	S01	100
68	P076	S01	100
69	P077	S01	100
70	P078	S01	100
71	P081	S01	100
72	P082	S01	100
73	P084	S01	100
74	P085	S01	100
75	P087	S01	100
76	P088	S01	100
77	P089	S01	100
78	P092	S01	100
79	P093	S01	100
80	P094	S01	100
81	P095	S01	100
82	P096	S01	100
83	P097	S01	100
84	P098	S01, T04 - Chemical deactivation	150
85	P099	S01	100
86	P101	S01	100
87	P102	S01	100
88	P103	S01	100
89	P104	S01	100
90	P105	S01	100
91	P106	S01	100
92	P108	S01	100
93	P109	S01	100

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
94	P110	S01	100
95	P111	S01	100
96	P112	S01	100
97	P113	S01	150
98	P114	S01	100
99	P115	S01	100
100	P116	S01	100
101	P118	S01	100
102	P119	S01	100
103	P120	S01	100
104	P121	S01	100
105	P122	S01	100
106	P123	S01	100
107	P127	S01	100
108	P128	S01	100
109	P185	S01	100
110	P188	S01	100
111	P189	S01	100
112	P190	S01	100
113	P191	S01	100
114	P192	S01	100
115	P194	S01	100
116	P196	S01	100
117	P197	S01	100
118	P198	S01	100
119	P199	S01	100
120	P201	S01	100
121	P202	S01	100
122	P203	S01	100
123	P204	S01	100
124	P205	S01	100
125	U001	S01	100
126	U002	S01	500
127	U003	S01	500
128	U004	S01	100
129	U005	S01	100
130	U006	S01	100
131	U007	S01	100
132	U008	S01	100
133	U009	S01	100
134	U010	S01	100
135	U011	S01	100
136	U012	S01	100
137	U014	S01	100
138	U015	S01	100
139	U016	S01	100
140	U017	S01	100

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
141	U018	S01	100
142	U019	S01	100
143	U020	S01	100
144	U021	S01	100
145	U022	S01	100
146	U023	S01	100
147	U024	S01	100
148	U025	S01	100
149	U026	S01	100
150	U027	S01	100
151	U028	S01	5,000
152	U029	S01	100
153	U030	S01	100
154	U031	S01	500
155	U032	S01	100
156	U033	S01	100
157	U034	S01	100
158	U035	S01	100
159	U036	S01	100
160	U037	S01	500
161	U038	S01	100
162	U039	S01	100
163	U041	S01	100
164	U042	S01	100
165	U043	S01	100
166	U044	S01	1,000
167	U045	S01	100
168	U046	S01	100
169	U047	S01	100
170	U048	S01	100
171	U049	S01	100
172	U050	S01	100
173	U051	S01	100
174	U052	S01	100
175	U053	S01	100
176	U055	S01	100
177	U056	S01	500
178	U057	S01	500
179	U058	S01	100
180	U059	S01	100
181	U060	S01	100
182	U061	S01	2,000
183	U062	S01	100
184	U063	S01	100
185	U064	S01	100
186	U066	S01	100
187	U067	S01	100

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
188	U068	S01	100
189	U069	S01	100
190	U070	S01	500
191	U071	S01	100
192	U072	S01	100
193	U073	S01	100
194	U074	S01	100
195	U075	S01, T04 – Physical treatment	150
196	U076	S01	100
197	U077	S01	100
198	U078	S01	100
199	U079	S01	100
200	U080	S01	500
201	U081	S01	100
202	U082	S01	100
203	U083	S01	100
204	U084	S01	100
205	U085	S01	100
206	U086	S01	100
207	U087	S01	100
208	U088	S01	100
209	U089	S01	100
210	U090	S01	100
211	U091	S01	100
212	U092	S01	100
213	U093	S01	100
214	U094	S01	100
215	U095	S01	100
216	U096	S01	100
217	U097	S01	100
218	U098	S01	100
219	U099	S01	100
220	U101	S01	100
221	U102	S01, T04 – Stabilization/solidification	100
222	U103	S01	100
223	U105	S01, T04 - Physical treatment	100
224	U106	S01	100
225	U107	S01, T04 – Stabilization/solidification	100
226	U108	S01	100
227	U109	S01	100
228	U110	S01	100
229	U111	S01	100
230	U112	S01	500

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
231	U113	S01	100
232	U114	S01	100
233	U115	S01	100
234	U116	S01	100
235	U117	S01	500
236	U118	S01	100
237	U119	S01	100
238	U120	S01	100
239	U121	S01	100
240	U122	S01	100
241	U123	S01	100
242	U124	S01	100
243	U125	S01	150
244	U126	S01	100
245	U127	S01	100
246	U128	S01	100
247	U129	S01	100
248	U130	S01	100
249	U131	S01	100
250	U132	S01	100
251	U133	S01	500
252	U134	S01	150
253	U135	S01	100
254	U136	S01	100
255	U137	S01	100
256	U138	S01	100
257	U140	S01	500
258	U141	S01	100
259	U142	S01	100
260	U143	S01	100
261	U144	S01	150
262	U145	S01	100
263	U146	S01	100
264	U147	S01	100
265	U148	S01	100
266	U149	S01	100
267	U150	S01	100
268	U151	S01, T04 - Amalgamation, physical treatment	5,000
269	U152	S01	100
270	U153	S01	100
271	U154	S01	500
272	U155	S01	100
273	U156	S01	100
274	U157	S01	100
275	U158	S01	100

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
276	U159	S01	500
277	U160	S01	100
278	U161	S01	500
279	U162	S01	100
280	U163	S01	100
281	U164	S01	100
282	U165	S01	100
283	U166	S01	100
284	U167	S01	100
285	U168	S01	100
286	U169	S01	100
287	U170	S01	100
288	U171	S01	100
289	U172	S01	100
290	U173	S01	100
291	U174	S01	100
292	U176	S01	100
293	U177	S01	100
294	U178	S01	100
295	U179	S01	100
296	U180	S01	100
297	U181	S01	100
298	U182	S01	100
299	U183	S01	100
300	U184	S01	100
301	U185	S01	100
302	U186	S01	100
303	U187	S01	100
304	U188	S01	100
305	U189	S01	100
306	U190	S01	100
307	U191	S01	100
308	U192	S01	100
309	U193	S01	100
310	U194	S01	100
311	U196	S01	100
312	U197	S01	100
313	U200	S01	100
314	U201	S01	100
315	U202	S01	100
316	U203	S01	100
317	U204	S01	100
318	U205	S01	100
319	U206	S01	100
320	U207	S01	100
321	U208	S01	100
322	U209	S01	100

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
323	U210	S01	500
324	U211	S01	500
325	U213	S01	150
326	U214	S01	100
327	U215	S01	100
328	U216	S01	100
329	U217	S01	100
330	U218	S01	100
331	U219	S01	100
332	U220	S01	500
333	U221	S01	100
334	U222	S01	100
335	U223	S01	150
336	U225	S01	100
337	U226	S01	500
338	U227	S01	100
339	U228	S01	500
340	U234	S01, T04 - Physical treatment	100
341	U235	S01	100
342	U236	S01	100
343	U237	S01	100
344	U238	S01	100
345	U239	S01	500
346	U240	S01	100
347	U243	S01	100
348	U244	S01	100
349	U246	S01	100
350	U247	S01	100
351	U248	S01	100
352	U249	S01	100
353	U271	S01	100
354	U278	S01	100
355	U279	S01	100
356	U280	S01	100
357	U328	S01	100
358	U353	S01	100
359	U359	S01	100
360	U364	S01	100
361	U367	S01	100
362	U372	S01	100
363	U373	S01	100
364	U387	S01	100
365	U389	S01	100
366	U394	S01	100
367	U395	S01	100
368	U404	S01	100

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
369	U409	S01	100
370	U410	S01	100
371	U411	S01	100
372	F001	S01, T04 – Macro-encapsulation, physical treatment	200,000
373	F002	S01, T04 – Macro-encapsulation, physical treatment	250,000
374	F003	S01, T04 - Macro-encapsulation, physical treatment	275,000
375	F004	S01, T04 – Macro-encapsulation, physical treatment	7,500
376	F005	S01, T04, – Macro-encapsulation, physical treatment	275,000
377	F006	S01	2,000
378	F007	S01	2,000
379	F008	S01	2,000
380	F009	S01	100
381	F010	S01	100
382	F011	S01	100
383	F012	S01	100
384	F027	S01	100
385	F039	S01	50,000
386	D001	S01, T04 - Thermal deactivation, chemical deactivation, physical treatment	75,000
387	D002	S01, T04 - Chemical deactivation, physical treatment	75,000
388	D003	S01, T04 - Thermal deactivation, chemical deactivation, physical treatment	100,000
389	D004	S01, T04 Stabilization/solidification, macroencapsulation, physical treatment	100,000
390	D005	S01, T04 - Chemical deactivation, stabilization/solidification, macroencapsulation, physical treatment	100,000

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
391	D006	S01, T04 – Stabilization/solidification, macroencapsulation, physical treatment	100,000
392	D007	S01, T04 Stabilization/solidification, macroencapsulation, physical treatment	200,000
393	D008	S01, T04 – Stabilization/solidification, macroencapsulation, physical treatment	250,000
394	D009	S01, T04 Stabilization/solidification, macroencapsulation, amalgamation, physical treatment	100,000
395	D010	S01, T04 Stabilization/solidification, macroencapsulation, physical treatment	50,000
396	D011	S01, T04 Stabilization/solidification, macroencapsulation, physical treatment	100,000
397	D012	S01	100
398	D013	S01	100
399	D014	S01	100
400	D015	S01	100
401	D016	S01	100
402	D017	S01	100
403	D018	S01, T04 - Physical treatment, macro-encapsulation	5,000
404	D019	S01, T04 - Physical treatment, macro-encapsulation	2,000
405	D020	S01, T04 - Physical treatment, macro-encapsulation	2,000
406	D021	S01, T04 - Physical treatment, macro-encapsulation	2,000
407	D022	S01, T04 - Physical treatment, macro-encapsulation	5,000

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
408	D023	S01, T04 - Physical treatment, macro-encapsulation	2,000
409	D024	S01, T04 Physical treatment, macro-encapsulation	2,000
410	D025	S01, T04 Physical treatment, macro-encapsulation	2,000
411	D026	S01, T04 Physical treatment, macro-encapsulation	2,000
412	D027	S01, T04 Physical treatment, macro-encapsulation	5,000
413	D028	S01, T04 Physical treatment, macro-encapsulation	5,000
414	D029	S01, T04 Physical treatment, macro-encapsulation	2,000
415	D030	S01, T04 Physical treatment, macro-encapsulation	2,000
416	D031	S01, T04 Physical treatment, macro-encapsulation	2,000
417	D032	S01, T04 Physical treatment, macro-encapsulation	15,000
418	D033	S01, T04 Physical treatment, macro-encapsulation	5,000
419	D034	S01, T04 Physical treatment, macro-encapsulation	5,000
420	D035	S01, T04 Physical treatment, macro-encapsulation	5,000
421	D036	S01, T04 Physical treatment, macro-encapsulation	5,000
422	D037	S01, T04 Physical treatment, macro-encapsulation	2,000
423	D038	S01, T04 Physical treatment, macro-encapsulation	5,000

TABLE B-2
Types of Hazardous and Mixed Wastes Authorized for Treatment and/or Storage at the HWHU, RMWMU, AHCU, and the MSB

Line Number	EPA Hazardous Waste No.	Process Code[a]	Annual Quantity of Wastes (kg)
424	D039	S01, T04 Physical treatment, macro-encapsulation	15,000
425	D040	S01, T04 Physical treatment, macro-encapsulation	25,000
426	D041	S01, T04 Physical treatment, macro-encapsulation	2,000
427	D042	S01, T04 Physical treatment, macro-encapsulation	5,000
428	D043	S01, T04 Physical treatment, macro-encapsulation	5,000

a. S01 – storage in containers
T04 – other treatment, method indicated

NOTE 1 (applicable to Lines 1-428): Waste types and volumes are highly variable due to the large number of one-time activities and the nature of the research and development activities at the Facility. For clarity, each waste number is listed only once. Individual wastes may have more than one number.

NOTE 2 (applicable to lines 1-428): The estimated annual quantity of waste with a particular waste number includes the full quantity of each waste with that number, even if the waste also has other applicable numbers. For example, 10 kg of waste F001 F002 and 10 kg of waste F002 would be listed on this form as 10 kg of F001 and 20 kg of F002.

NOTE 3 (applicable to lines 1-428): The treatment methods listed for each hazardous waste number are the methods that are appropriate for that waste number. Wastes with multiple numbers may undergo one or more types of treatment at the Permitted Units for some or all of the characteristics and/or constituents. For example, wastes containing explosives and metals (e.g., barium, chromium, and lead) with numbers D001, D003, D005, D007, and D008 are treated on site to deactivate the explosive and render them non-ignitable. The quantities of these wastes are included in the quantities shown for D001, D003, D005, D007, and D008. Thermal deactivation is listed as a process for D001 and D003 because on-site treatment at the RMWMU and AHCU addresses these hazardous waste constituents and characteristics. Thermal deactivation is not listed as a process for D005, D007, or D008 because these hazardous waste constituents and characteristics are not treated when the waste is subjected to thermal deactivation.

PERMIT ATTACHMENT C WASTE ANALYSIS PLAN

C.1 INTRODUCTION

This waste analysis plan (WAP) contains requirements and procedures for the characterization of the chemical and physical nature of hazardous and mixed wastes generated, stored or treated at the Permitted Units. These include the Hazardous Waste Handling Unit, the Thermal Treatment Unit, the Radioactive and Mixed Waste Management Unit, the Auxiliary Hot Cell Unit, and the Manzano Storage Bunkers, and the Corrective Action Management Unit (CAMU), which are described in Permit Attachment A (*Facility Description*).

C.2 WASTE TYPES GENERATED AT THE FACILITY

Table C-1 summarizes general information on hazardous and mixed waste types generated at the Facility. The following sections contain general descriptions of the waste types, the major associated waste-generating processes and/or activities, and the general 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 that share key features (e.g., type of waste-generating process, waste form, basis for general characterization).

Hazardous and mixed waste types may be of uniform composition (i.e., homogeneous) or of dissimilar and diverse composition (i.e., heterogeneous). Table C-1 includes brief waste type descriptions, the associated waste-generating process or activity, and the characterization basis for hazardous and mixed waste designation. Table C-1 also addresses the variability of each waste type by listing the potential EPA Hazardous Waste Numbers and potential hazardous and mixed waste constituents and/or characteristics associated with each waste type. Each type of waste may include one or more wastes.

TABLE C-1
Types of Wastes Generated at the Facility

Waste Type Description	Principal Waste Generating Activities	Basis for Hazardous or Mixed Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics in the Waste
Laboratory Chemical Waste	Weapon systems and components design, development, fabrication, and testing and material research	Acceptable Knowledge and Sampling and Analysis, as appropriate	D001 D002 D003 D004-D043 All P- and U- EPA Hazardous Waste Numbers	Ignitability Corrosivity Reactivity Toxicity Discarded commercial chemical products and off-specification species
Contaminated Used Oil	Weapon systems and components design, development, fabrication, and testing, material research, pulsed-power research, reactor safety research, and off-site generated waste	Acceptable Knowledge and Sampling and Analysis, as appropriate, Fingerprint Analysis[a]	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity Spent solvents
Process Wastes	Weapon systems and components design, development, fabrication, and testing, material research, ER Project activities, and off-site generated waste	Acceptable Knowledge and Sampling and Analysis, as appropriate, Fingerprint Analysis	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity Spent solvents
Explosive Waste	Weapon systems and components design, development, fabrication, and testing	Acceptable Knowledge and Sampling and Analysis, as appropriate	D001 D002 D003 D004-D011 F001-F005	Ignitability Corrosivity Reactivity Toxicity Spent solvents
Batteries	Weapon systems and components design, development, and testing	Acceptable Knowledge and Sampling and Analysis, as	D001 D002	Ignitability Corrosivity

TABLE C-1
Types of Wastes Generated at the Facility

Waste Type Description	Principal Waste Generating Activities	Basis for Hazardous or Mixed Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics in the Waste
		appropriate	D003 D005 D006 D007 D008 D009 D011	Reactivity Barium Cadmium Chromium Lead Mercury Silver
Elemental Lead	Pulsed-power research, reactor safety research, ER[b] Project and D&D[c] activities, and off-site generated waste	Acceptable Knowledge and Sampling and Analysis, as appropriate Fingerprint Analysis	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 and Sampling and Analysis, as appropriate.	D001 D002 D003 D004-D043	Ignitability Corrosivity Reactivity Toxicity
Contaminated Soil	ER Project and D&D activities	Acceptable Knowledge and Sampling and Analysis, as appropriate Fingerprint Analysis	D001 D003 D004-D043 F001-F005 F039	Ignitability Reactivity Toxicity 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	Acceptable Knowledge and Sampling and Analysis, as needed Fingerprint Analysis	D001 D003 D004-D043 F001-F005 F039	Ignitability Reactivity Toxicity Spent solvents Leachate

TABLE C-1
Types of Wastes Generated at the Facility

Waste Type Description	Principal Waste Generating Activities	Basis for Hazardous or Mixed Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics in the Waste
Leachate and Decontamination, Purge, and Treatment Waters	ER Project, post-closure care, and D&D activities	Acceptable Knowledge and Sampling and Analysis, as appropriate	D002 D004-D043 F001-F005 F039	Corrosivity Toxicity Spent solvents CAMU Leachate
Treated Waste and Treatment Residues	Support activities (radiation protection and waste management)	Acceptable Knowledge and Sampling and Analysis, as needed	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity Spent -solvents
Containment System Liquids	Support activities (waste management)	Acceptable Knowledge and Sampling and Analysis, as needed	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity Spent solvents

a "Fingerprint analysis" refers to checks and field methods designed to quickly identify chemical properties (e.g., pH, density, chlorine content, etc). Laboratory analysis may be required to fully and properly characterize a waste.
b ER = Environmental Restoration
c D&D =Decontamination and Decommissioning

C.2.1 Laboratory Chemical Waste

Laboratory chemical waste includes unused and used commercial chemical products or manufacturing chemical intermediates (in solid, liquid, or contained gas forms) declared to be waste, such as reagents, metal powders, oxidizers, reactive metals, elemental mercury, elemental sodium, spent or discarded solvents and other materials. Material Safety Data Sheets (MSDSs) or other product documentation may be available for these wastes. The Permittees initial generators generally produce this type of waste during various research, development and testing operations. Some of these laboratory chemical wastes also exhibit the hazardous waste characteristics of ignitability, corrosivity, reactivity, and/or toxicity.

C.2.2 Contaminated Used Oil

Used oils from vacuum pumps and other machinery may be contaminated with listed hazardous and mixed wastes or may exhibit hazardous waste characteristics of ignitability or toxicity. Specific constituents depend on the processes that generated the contaminated used oil.

C.2.3 Process Wastes

Process wastes, which can be liquid or solid chemicals, solutions, mixtures, waste waters, or manufactured items, are generated as a result of various activities, including experiments and routine operational processes. Typical process hazardous and mixed wastes include, but are not limited to, acidic solutions, alkaline solutions, oxidizers, and wastewaters. These wastes exhibit hazardous waste characteristics (e.g., ignitability, corrosivity, reactivity, toxicity) or are listed waste from nonspecific sources (e.g., spent solvents).

C.2.4 Explosive (Reactive) Waste

An explosive material is defined as a chemical compound or mixture containing any oxidizing and combustible substances, or other ingredients in such proportions, quantities, or packing that ignition by fire, friction, concussion, percussion or detonation of any part thereof causes decomposition with the production of a considerable quantity of heat and gas. Explosive wastes and explosive-contaminated wastes exhibit the hazardous waste characteristic of reactivity if they are capable of detonation or explosive reaction when subjected to a strong initiating source or if heated under confinement. Examples of explosive (reactive) wastes include components and test units that contain an explosive or explosive fragments, powders, and residues. Some of these wastes also exhibit hazardous waste characteristics of ignitability and/or toxicity and may contain spent solvents.

Explosive wastes and explosive-contaminated wastes are generated at the Facility primarily from research and development, fabrication, testing, and Environmental Restoration (ER) Project activities. Explosive waste generally consists of discrete pieces of a solid explosive substance, whereas explosive-contaminated waste typically consists of solid or liquid wastes that have been contaminated with an explosive substance. A specific type of explosive waste is managed at the TTU and is described in greater detail below in Section C.3.4.1.

C.2.5 Batteries

Batteries, in solid or liquid form, or both, are used in numerous Facility activities, and waste batteries may exhibit the hazardous waste characteristics of reactivity, corrosivity, or toxicity (due to the presence of metals such as cadmium, mercury, and lead). Information about the battery content, hazards, and EPA Hazardous Waste Numbers is determined using manufacturer's data. For example, thermal batteries (specialized single-use batteries) contain metals and may exhibit the hazardous waste characteristics of reactivity and toxicity. Lithium batteries exhibit the characteristic of reactivity, while mercury batteries, silver batteries, and nickel-cadmium batteries exhibit the characteristic of toxicity.

C.2.6 Elemental Lead

Elemental lead items that cannot be reused (e.g., for radiation shielding or containment) or are in a form that is unsuitable for recycling may be declared waste. These wastes exhibit the hazardous waste characteristic of toxicity.

C.2.7 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 Decontamination and Decommissioning (D&D) activities. Typical unknown hazardous and mixed 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 40 CFR § 268.2). These wastes exhibit the hazardous waste characteristics of ignitability, corrosivity, reactivity, and/or toxicity.

C.2.8 Contaminated Soil

This waste type includes soil from ER Project activities, or other cleanup and excavation operations. Soil may be contaminated with or contain listed waste(s) or exhibit one or more hazardous waste characteristics (i.e., reactivity, ignitability, and/or toxicity).

C.2.9 Debris

This waste type includes waste generated during cleaning operations, D&D operations, ER Project activities, emergency response, waste management, and protection of personnel. These wastes are solid, usually heterogeneous, compactable and non-compactable materials that meet the regulatory definition of hazardous debris. Compactable materials include, but are not limited to, items such as personal protective equipment, rags, wipes, swipes, paper, and filters. Non-compactable materials include, but are not limited to equipment, components, electronic hardware, experimental remnants, cables, tools, machining parts, building materials, and glassware. Debris may be contaminated with or contain listed waste(s) or exhibit one or more hazardous waste characteristics (i.e., reactivity, corrosivity, ignitability, and/or toxicity).

C.2.10 Leachate and Decontamination, Purge, and Treatment Waters

This waste type includes CAMU leachate, and decontamination, purge, and treatment water (i.e., wastewater) from ER Project, D&D activities, and waste management. Decontamination, purge, or treatment waters may be listed wastes (e.g., CAMU leachate); be contaminated with or contain listed waste(s); or may exhibit a hazardous waste characteristic (i.e., corrosivity and/or toxicity).

C.2.11 Treated Waste and Treatment Residues

Treated waste and treatment residues, which form secondary waste types (i.e., solids, liquids, or contained gases), are generated by treatment operations at Permitted Units. The wastes may be stored on-site at a Permitted Unit and in accordance with this Permit pending determination of success in meeting treatment goals, subsequent treatment, and/or transportation to appropriate off-site Treatment, Storage, and Disposal Facilities (TSDFs).

C.2.12 Containment System Liquids

This waste type includes liquids that accumulate in containment system structures (e.g., spill pallets, trenches, catch tank). Containment system liquids may be contaminated with or contain listed hazardous and mixed waste(s) or exhibit one or more hazardous waste characteristics (i.e., reactivity, corrosivity, ignitability, or toxicity).

C.3 WASTE CHARACTERIZATION PROCEDURES

The approach to waste characterization is based on process knowledge and sampling and analysis data, as appropriate. The following sections describe the characterization procedures that shall apply to hazardous and mixed wastes managed at the Permitted Units.

C.3.1 Waste Characterization Process

The Permittees shall, in accordance with this WAP and the requirements of this Permit, determine what characterization is required. Waste information is submitted using a disposal request (DR) or equivalent form. Waste Characterization shall include identifying physical form, accurately assigning EPA Hazardous Waste Numbers, determining treatment requirements for wastes to be treated at the Permitted Units, and obtaining all information needed for safely handling, storing, and transporting, or otherwise managing the waste.

Waste characterization information includes: the quantity, physical form of the waste (e.g., solid, liquid, gas, wastewater), origin (e.g., research and testing, ER Project, unused commercial chemical product, activity that generated the waste), waste characteristics (e.g., ignitability, corrosivity), hazardous constituents (including reactive or explosive constituents) that are contained in the waste, concentrations and proportions of constituents as needed, and other information as needed or applicable (e.g., materials in contact with the waste such as paper or plastic, and the presence of free liquids in containers).

The Permittees shall review the disposal request forms and associated documentation (e.g., waste process documentation, technical information about the waste, and analytical results) for adequacy, completeness, data reliability, and acceptability.

The Permittees shall consider each waste individually. Each waste is one of the general types listed in Table C-1 and described in Section C.2 of this Permit Attachment. The Permittees shall use waste type identification in part to determine whether and what kind of additional information is needed to adequately and properly characterize waste. Types of additional information are discussed in Section C.2 of this Permit Attachment. If analytical data are needed to supplement the available information, they shall be obtained through sampling and analysis. A general summary of the characterization methods and parameters and the rationale for characterization are found in Table C-2 of this Permit Attachment.

If the Permittees determine that documentation is incomplete or inadequate for waste characterization, or find or suspect changes in the waste-generating process, they shall obtain the necessary information to properly complete waste characterization.

Using the waste characterization information, the Permittees shall make a hazardous waste determination in accordance with 40 CFR Part 262.11. Before accepting the waste at the appropriate Permitted Unit, the Permittees shall visually check to verify that the waste container(s) matches the information on the disposal request form. If the Permittees detect discrepancies between the shipping documentation and the waste at pickup, the Permittees shall amend the documentation with the correct information. Upon receipt of the waste at a Permitted Unit, the characterization documentation shall become part of the Operating Record. Data from additional waste characterization activities also shall be made part of the Operating Record.

C.3.2 Characterization of Unknown Wastes

Occasionally, wastes of an unknown nature are encountered. For example, unknown wastes may be generated as a result of a container label becoming detached or illegible. Most unknown wastes are contained in small containers (less than 1 gallon or 1 pound) and are related to research or testing projects. These wastes shall be managed on a case-by-case basis. The 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 another method utilized to help tentatively characterize the waste. The visual investigation includes the assessment of the unknown waste for various properties, such as:

1. Physical state,
2. Color,
3. Age,
4. Storage and container conditions,
5. Changes in substance,
6. Phase separations,
7. Quantity of waste,
8. Any labeling, and

9. Type of operations in the nearby area.

The waste and its proper management shall be identified through this investigation, as appropriate. If identification is made, a disposal request shall be prepared and the waste shall be characterized as described above in Section C.3.1 of this Permit Attachment. If the unknown waste cannot be identified, a HazCat™ or comparable test shall be performed to determine the hazard class. Once the hazard class is determined and the waste is known to be safe to transport, the information shall be recorded on the disposal request form. Additional waste characterization shall be conducted to whatever extent is necessary to ensure full, accurate, and proper characterization of the waste as described in Section C.3.1.

C.3.3 Characterization of Blended Wastes

Waste may be blended on a limited basis. Liquid hazardous or mixed wastes and non-hazardous wastes may be blended together in a single container. These blending activities shall be limited to compatible wastes, such as oils or process wastes. The Permittees may also combine compatible liquids drained from aerosol cans (e.g., commercial chemical products or characteristic liquids) into a single container.

The Permittees will document the following information for containers with blended wastes:

1. The approximate amounts of each waste type in the mixture;
2. List of hazardous waste characteristics, and underlying hazardous constituents (UHCs) as defined in 40 CFR 268.2(i) in each waste in the mixture; and
3. Whether the wastes in the mixture include listed hazardous wastes such as spent solvents.

The Permittees shall consider the above information when they characterize the waste using the process described in Section C.5 and shall assign the applicable EPA Hazardous Waste Numbers and determine proper management of the waste, including treatment and disposal. The Permittees shall not blend wastes in violation of 40 CFR § 268.3.

TABLE C-2
General Characterization Methods, Parameters, and Rationale

Waste Type Description	Characterization Method	Parameter	Rationale
Laboratory Chemical Waste	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Presence of liquids Flash point (for liquids), DOT hazard class (for solids) Stability, DOT hazard class pH (for liquids) Hazardous waste metals Hazardous waste VOCs Hazardous waste SVOCs	Determine whether waste meets listing criteria Determine waste form Determine presence of free liquids Determine ignitability, reactivity, and corrosivity characteristics Determine waste compatibility information Determine toxicity characteristic
Contaminated Used Oil	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Flash point Hazardous waste metals Hazardous waste VOCs Hazardous waste SVOCs	Determine whether waste meets listing criteria Determine waste form Determine presence of free liquids Determine ignitability characteristic Determine waste compatibility information Determine toxicity characteristic

TABLE C-2
General Characterization Methods, Parameters, and Rationale

Waste Type Description	Characterization Method	Parameter	Rationale
Process Wastes	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Presence of liquids Flash point (for liquids), DOT hazard class (for solids) Stability, DOT hazard class pH (for liquids) Hazardous waste metals Hazardous waste VOCs Hazardous waste SVOCs	Determine whether waste meets listing criteria Determine waste form Determine presence of free liquids Determine ignitability, corrosivity, and reactivity characteristics Determine waste compatibility information Determine toxicity characteristic
Explosive Waste	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Presence of liquids Flash point (for liquids), DOT hazard class (for solids) Stability, DOT hazard class Hazardous waste metals Hazardous waste VOCs Hazardous waste SVOCs	Determine whether waste meets listing criteria Determine waste form Determine presence of free liquids Determine ignitability and reactivity characteristics Determine waste compatibility information Determine toxicity characteristic
Batteries	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Presence of liquids Flash point (for liquids), DOT hazard class (for	Determine waste form Determine presence of free liquids Determine ignitability, corrosivity, and reactivity characteristics Determine waste compatibility information

TABLE C-2
General Characterization Methods, Parameters, and Rationale

Waste Type Description	Characterization Method	Parameter	Rationale
		solids) pH (for liquids) Stability, DOT hazard class Hazardous waste metals	Determine toxicity characteristic
Elemental Lead	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Hazardous waste metals	Determine waste form Determine toxicity characteristic
Unknown Liquids and Solids	Physical Examination, Acceptable Knowledge, and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Presence of liquids Flash point (for liquids), DOT hazard class (for solids) Stability, DOT hazard class pH (for liquids) Hazardous waste metals Hazardous waste VOCs Hazardous waste SVOCs	Determine waste form Determine presence of free liquids Determine ignitability, reactivity, and corrosivity characteristics Determine waste compatibility information Determine toxicity characteristic
Contaminated Soil	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Presence of liquids DOT hazard class (for solids) Stability, DOT hazard class Hazardous waste metals	Determine whether waste meets listing criteria Determine waste form Determine presence of free liquids Determine ignitability, and reactivity characteristics Determine waste compatibility information Determine toxicity characteristic

TABLE C-2
General Characterization Methods, Parameters, and Rationale

Waste Type Description	Characterization Method	Parameter	Rationale
		Hazardous waste VOCs Hazardous waste SVOCs	
Debris	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Presence of liquids DOT hazard class (for solids) Stability, DOT hazard class Hazardous waste metals Hazardous waste VOCs Hazardous waste SVOCs	Determine whether waste meets listing criteria Determine waste form Determine presence of free liquids Determine ignitability, and reactivity characteristics Determine waste compatibility information Determine toxicity characteristic
Leachate and Decontamination Purge, and Treatment Waters	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics Flash point pH Stability, DOT hazard class Hazardous waste metals Hazardous waste VOCs Hazardous waste SVOCs	Determine whether waste meets listing criteria Determine waste form Determine ignitability, reactivity, and corrosivity characteristics Determine waste compatibility information Determine toxicity characteristic or constituent concentrations
Treated Waste and Treatment Residues	Acceptable Knowledge and Sampling and analysis, as appropriate	See Table C-3	See Table C-3
Containment System Liquids	Acceptable Knowledge and Sampling and Analysis, as appropriate	Source of waste Available information about waste composition Physical characteristics	Determine whether waste meets listing criteria Determine waste form Determine ignitability and corrosivity characteristics

TABLE C-2
General Characterization Methods, Parameters, and Rationale

Waste Type Description	Characterization Method	Parameter	Rationale
		Flash point	Determine waste compatibility information
		pH	Determine toxicity characteristic
		Hazardous waste metals	
		Hazardous waste VOCs	
		Hazardous waste SVOCs	

Note:The first three items in the parameter column for each waste type are mandatory and constitute the minimum acceptable knowledge. The remaining parameters are optional and will be selected for each waste type as necessary, if the results of the first three parameters indicate additional information is needed.

C.3.4 Characterization of Wastes Treated at the Permitted Units

Wastes treated at Permitted Units shall be characterized according to the process described in Sections C.3.4.1 through C.3.4.5 of this Permit Attachment. Treated wastes shall be characterized to determine one or more of the following, as appropriate, for each waste:

1. Applicable treatment standards, including standards for both characteristic and listed hazardous wastes in accordance with 40 CFR Part 268, Subpart D;
2. Appropriate treatment methods to meet the standards;
3. Underlying hazardous constituents (UHCs) and their appropriate treatment standards, if applicable;
4. Compliance with applicable treatment standards;
5. Suitability for treatment by one or more methods available on-site to meet treatment standards; and
6. Suitability for treatment by one or more methods available on-site to make the waste safer and more amenable to further management on-site or off-site.

These characterization criteria are summarized in Table C-3.

C.3.4.1 Characterization of Waste to be treated at the Thermal Treatment Unit

Reactive hazardous waste to be treated at the TTU shall be characterized through the use of process knowledge:

1. Explosive (e.g., SASN) and ignitable (e.g., acetone) components of the waste are known as a result of knowledge of process and a well-defined and documented procedure for formulating SASN. Variability occurs in the relative amounts of non-explosive liquid and solid items. Some variability occurs in the relative amounts of explosives (SASN and PETN),
2. The waste constituents shall be documented in the Operating Record for any given formulation of SASN. Prior to formulating the explosive slurry, the Permittees shall screen the formulation instructions to identify any changes. If the formulation has changed, the Permittees shall evaluate the constituents to determine if the wastes generated by producing the formulation are acceptable for treatment at the TTU. Properties evaluated shall include the weight of explosives in the waste, and the non-explosive constituents in the waste.

C.3.4.2 Characterization of Wastes to be treated at the RMWMU and AHCU

Wastes to be treated at the RMWMU and AHCU shall be characterized based on acceptable knowledge and supplemented by sampling and analysis, as appropriate, before treatment takes place. For wastes that will be treated to meet treatment standards in 40 CFR 268 Subpart D that include UHCs, characterization shall include any UHCs that are reasonably expected to be present.

C.3.4.3 Characterization of Treated Wastes and Treatment Residues

Treated wastes and treatment residues shall be characterized through knowledge of process and supplemented by sampling and analysis data, as appropriate, using the process described in Section C.3.1 of this Permit Attachment. Treated wastes and treatment residues shall be characterized to determine each of the following, as applicable, for each waste:

1. Whether the treatment effectively met the treatment-specific goals;
2. Whether the treated waste or residue meets the applicable treatment standards (including requirements and standards for UHCs if applicable) associated with the treatment performed;
3. If the treated waste or residue will not undergo further treatment prior to disposal, whether the treated waste or residue meets all applicable treatment standards (including requirements and standards for UHCs if applicable);
4. The presence of hazardous waste constituents and characteristics that could have been introduced during treatment;
5. Whether the treated waste or residue requires further management as a hazardous or mixed waste; and
6. The suitability for further treatment by one or more methods available on-site to make the waste safer and more amenable to further management on- or off-site.

These characterization criteria are summarized in Table C-3. All treated waste and treatment residues shall be characterized by the process described in Section C.3.1 of this Permit Attachment. Characterization of treated wastes and treatment residues shall include consideration of both listed and characteristic wastes that were present in the untreated wastes. The Permittees shall also follow the appropriate regulatory requirements for characterizing wastes that are listed solely because they exhibit one or more of the characteristics of ignitability, reactivity, or corrosivity.

Wastes that are treated using technologies specified in 40 CFR §§ 268.40-45 are not necessarily subjected to sampling and analysis. Such treatment technologies include physical treatment, and macroencapsulation. Other treated wastes shall be subject to sampling and analysis to characterize the waste and determine the effectiveness of the treatment, as appropriate.

C.3.4.4 Characterization of Treated Waste Residues at the TTU

Treatment residues from the thermal treatment of SASN mixed with other hazardous and solid waste include products of combustion. The principal constituents are ash (carbon) produced from burned solid items (e.g., paper, filters) inert non-combustible solid items (e.g.,. metal clips and pieces that were part of the solid waste) and gases (i.e., nitrogen, water vapor, carbon dioxide, carbon monoxide, diatomic oxygen, and traces of nitrous oxides) produced by decomposition of these wastes. Elemental silver is present in the ash when SASN is treated.

The treatment residue at the TTU shall be assessed by visually observing it for the presence of any untreated waste.

Treatment residue is hazardous waste (D011) based on process knowledge. Alternatively, the Permittees may use sampling and analysis to determine the silver content of the treatment residue. The Permittees shall characterize the treatment residue as appropriate for further treatment and disposal at a permitted off-site TSDF.

C.3.4.5 Characterization of Treated Wastes and Treatment Residues Generated at the RMWMU and the AHCU

Effectiveness of treatment is determined in one or more ways that are specific to the type of treatment and the waste undergoing treatment. Evaluation of the treatment effectiveness is described in detail in Permit Part 4. Treated wastes and treatment residues generated from the treatment of hazardous and mixed wastes at the RMWMU and AHCU shall be characterized using one or more of the following methods:

1. The Permittees may use process knowledge, as appropriate, to determine whether treated waste or treatment residues exhibit characteristics of reactivity or ignitability, and the flash point test, as appropriate, for determination of ignitability.
2. Treated corrosive aqueous liquid wastes and their liquid treatment residues, if any, shall be characterized for corrosivity by measuring pH.
3. Treated reactive wastes and their treatment residues, if any, shall be characterized for the presence of sulfides and cyanides if their presence caused the waste to be reactive.
4. Treated reactive batteries and other reactive/explosive items and their treatment residues, if any, shall be characterized for reactivity through process knowledge, as appropriate. Such wastes may also exhibit the characteristic of toxicity.
5. Elemental mercury treated by amalgamation at the RMWMU may be characterized by process knowledge.
6. Treated aqueous liquids that have been solidified (including liquids that have previously been neutralized) shall be checked for the presence of free liquids.
7. Treated oils and organic liquids exhibiting the characteristics of toxicity shall be characterized through process knowledge and sampling and analysis, as appropriate.
8. Treated soils and particulates exhibiting one or more characteristics of ignitability, reactivity, and toxicity may contain UHCs. Treated wastes that were toxic shall be characterized for toxicity by sampling and analysis, as appropriate.
9. Wastes treated by physical treatment include components containing listed wastes or exhibiting hazardous characteristics. After items are separated from larger items they shall be characterized as described in Section C.3.4 of this Permit Attachment.
10. Pressurized containers treated by physical treatment shall be characterized following treatment. If the containers are empty as defined in 40 CFR § 261.7, the containers are not hazardous waste. The collected liquids shall be characterized.

Treated wastes and treatment residues that will not undergo further treatment at the RMWMU and the AHCU shall be characterized as appropriate to determine compliance with applicable treatment standards for UHCs (*See* 40 CFR § 268.2(i) and 268.40(e)).

C.4 VERIFICATION AND RE-EVALUATION FREQUENCIES

The Permittees' waste verification process shall be designed to provide assurance that wastes are adequately characterized. Personnel involved in verification activities shall be trained and qualified for the activities they perform.

The Permittees shall review whether hazardous wastes are being stored in compliance with 40 CFR Part 264, Subpart CC at least once every 12 months. Such reviews shall be documented in the Operating Record.

C.4.1 Verification of Wastes

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

1. Random selection;
2. Adequacy of waste characterization information;
3. Recommendations from personnel;
4. Incomplete or inconsistent documentation; and
5. Other waste-specific criteria.

During each calendar year, the Permittees shall verify the characterization for ten percent (10%) by volume.

C.4.2 Re-evaluation of Waste Streams

If there is any information that indicates a change in the process that generates a waste that may affect the waste, the waste shall be re-characterized no later than the next time the waste is generated from the changed process.

C.5 USE OF ACCEPTABLE KNOWLEDGE

According to the EPA guidance, acceptable knowledge is defined to include process knowledge, supplemental waste analysis data, and facility records of analysis (EPA, 1994, "*Waste Analysis at Facilities That Generate, Treat, Store, And Dispose of Hazardous Wastes*). Process knowledge is described as data developed under 40 CFR Part 264 and existing published or documented data on a specific hazardous waste or a waste generated from similar processes. Supplemental waste analysis data include concentration(s) of hazardous waste constituents and/or results of tests for hazardous waste characteristics to determine whether or how wastes are regulated under RCRA Subtitle C.

Examples that are presented in the 1994 EPA guidance as to when the application of acceptable knowledge may be appropriate include:

1. Wastes containing hazardous waste constituents from specific processes that are well documented such as F and K listed wastes; and

2. Wastes consisting of discarded commercial chemical products, reagents, or chemicals containing known physical and chemical constituents (such as, spent solvents and P and U listed wastes).
3. Health and safety risks to personnel would not justify sampling and analysis (e.g., radioactive mixed waste).
4. Physical nature of the waste does not lend itself to taking a laboratory sample.

Documentation of acceptable knowledge shall be maintained in the Operating Record. [*See* 40 CFR §§ 264.13(a)(2) and (b)(5), and 264.73(b)(3)].

C.5.1 Process Knowledge

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

1. Detailed information on a waste obtained from published or documented waste analysis data;
2. Studies conducted on hazardous or mixed waste generated by processes similar to that which generated the waste; and
3. Knowledge of the materials and operations that generated the waste and that demonstrates the potential for hazardous waste constituents in the waste.

Documentation of process knowledge for each waste shall be maintained in the Operating Record. The documentation shall be traceable to a given waste. There are many sources of documentation that can be used to substantiate process knowledge for a specific waste. Examples include but are not limited to the following:

1. Material safety data sheets (MSDSs), product labels, vendor information and manufacturer’s literature and other product package information;
2. Information from operating procedures and research projects, 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;
3. Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements);
4. Industry reports and analytical data on a similar process when there is a clear connection between the Facility’s process/experiment and the industry's similar process/experiment;
5. Previous analytical data relevant to the waste;
6. Documented visual inspections to confirm or identify the physical characteristics and packaging of a waste; and
7. ER Project site and waste characterization data.

TABLE C-3
Additional Parameters, Characterization Methods, and Rationale for Treated Wastes

Waste Type Description	Characterization Method	Parameter[a]	Rationale
Explosive waste to be treated by open burning	Knowledge of Process	All characterization information previously obtained Knowledge of treatment process	Verify that waste has same characteristics and constituents as previous wastes treated at TTU Determine treatment standards Identify UHCs reasonably expected to be present in characteristic waste
Residues from treatment of reactive hazardous wastes through open burning	Acceptable Knowledge and by Sampling and Analysis, as appropriate	All characterization information previously obtained for untreated waste Physical characteristics Knowledge of treatment process Presence of liquids Flash point (for liquids), DOT hazard class (for solids) Stability, DOT hazard class Hazardous waste metals UHCs	Determine whether treated waste meets listing criteria Determine waste form Determine presence of free liquids Determine waste compatibility information Determine toxicity characteristics Determine whether waste meets treatment standards, including standards for UHCs
Waste to be treated through chemical deactivation	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained Knowledge of treatment process Cyanides and sulfides UHCs	Verify that waste is suitable for treatment by planned process Determine treatment standards Identify UHCs expected to be present in characteristic waste

TABLE C-3
Additional Parameters, Characterization Methods, and Rationale for Treated Wastes

Waste Type Description	Characterization Method	Parameter[a]	Rationale
Wastes that have been treated through chemical deactivation	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained for untreated waste Physical characteristics Knowledge of treatment process Presence of liquids Flash point (for liquids), DOT hazard class (for solids) pH (for liquids) Stability, DOT hazard class Cyanides and sulfides UHCs	Determine whether waste meets listing criteria Determine waste form Determine presence of free liquids Determine ignitability, corrosivity, and reactivity characteristics Determine waste compatibility information Determine whether waste meets treatment standards, including standards for UHCs
Waste to be treated through thermal deactivation	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained Knowledge of treatment process UHCs	Verify that waste is suitable for treatment by planned process Determine treatment standards Identify UHCs expected to be present in characteristic waste
Wastes that have been treated through thermal deactivation	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained for untreated waste Physical characteristics Knowledge of treatment process DOT hazard class Stability, DOT hazard class UHCs	Determine waste form Determine ignitability and reactivity characteristics Determine waste compatibility information Determine whether waste meets treatment standards, including standards for UHCs
Waste to be treated through amalgamation	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained Knowledge of treatment process	Verify that waste is suitable for treatment by planned process Determine treatment standards

TABLE C-3
Additional Parameters, Characterization Methods, and Rationale for Treated Wastes

Waste Type Description	Characterization Method	Parameter[a]	Rationale
Wastes that have been treated through amalgamation	Knowledge of Process	All characterization information previously obtained for untreated waste Physical characteristics Knowledge of treatment process	Determine waste form Determine whether waste meets treatment standards
Waste to be treated through stabilization/ solidification	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained Knowledge of treatment process UHCs	Verify that waste is suitable for treatment by planned process Determine treatment standards Identify UHCs expected to be present in characteristic waste
Wastes that have been treated through stabilization/ solidification	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained for untreated waste Physical characteristics Knowledge of treatment process Presence of liquids Flash point (for liquids), DOT hazard class (for solids) Stability, DOT hazard class UHCs	Determine whether waste meets listing criteria Determine waste form Determine presence of free liquids Determine ignitability and reactivity characteristics Determine waste compatibility information Determine whether waste meets treatment standards, including standards for UHCs
Waste to be treated through macroencapsulation	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained Knowledge of treatment process	Verify that waste is suitable for treatment by planned process Determine treatment standards
Waste that have been treated through macroencapsulation	Knowledge of Process	All characterization information previously obtained for untreated waste Physical characteristics Knowledge of treatment process	Determine waste form Determine whether waste meets treatment standards

TABLE C-3
Additional Parameters, Characterization Methods, and Rationale for Treated Wastes

Waste Type Description	Characterization Method	Parameter[a]	Rationale
Waste to be treated through physical treatment	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained Knowledge of treatment process UHCs	Verify that waste is suitable for treatment by planned process Determine treatment standards Identify UHCs expected to be present in characteristic waste
Wastes that have been treated through physical treatment	Acceptable Knowledge and Sampling and Analysis, as appropriate	All characterization information previously obtained for untreated waste Physical characteristics Knowledge of treatment process Presence of liquids Flash point (for liquids), DOT hazard class (for solids) Stability, DOT hazard class pH (for liquids) Hazardous waste VOCs Hazardous waste SVOCs Hazardous waste metals UHCs	Determine whether waste meets listing criteria Determine waste form, including size Determine presence of free liquids Determine ignitability, corrosivity, and reactivity characteristics Determine waste compatibility information Determine toxicity characteristic Determine whether waste meets treatment standards, including standards for UHCs

[a] Parameters listed are in addition to those shown in Table C-2. Parameters shown in *italics* are mandatory; the others are selected based on obtaining additional information necessary for treatment or for characterizing the treated waste.

C.6 WASTE SAMPLING AND ANALYSIS

Sampling and analysis shall be performed to provide supplemental information when acceptable knowledge does not provide sufficient information to adequately and properly characterize a hazardous or mixed waste as needed for the activities conducted under this Permit. Characterization methods, analytical parameters, and rationale are summarized in Tables C-2 and C-3.

Pursuant to 40 CFR 264.13(b)(1 and 2), Table C-4 identifies analytical testing requirements and test methods for parameters of interest, including UHCs that are reasonably expected to be present in the waste at the point of generation, as defined in 40 CFR 268.2(i).

C.6.1 Quality Assurance/Quality Control

The Permittees shall implement sampling quality assurance/quality control (QA)/QC) procedures to assure that analytical results are adequate for their intended purpose(s). The QA/QC program shall be designed by adhering to the EPA sampling protocol and analytical procedures specified in this section; documenting sampling activities and sample custody; using controlled and standard equipment and materials; and collecting, analyzing, and evaluating field and laboratory QA/QC samples, to meet the requirements of EPA Office of Solid Waste publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA, 1986) and all approved updates,(SW-846), Chapter 1.0.

C.6.2 Waste Sampling

The objective of waste sampling shall be to obtain a sample representative of a waste and shall consider the waste-generating and -handling processes. Some wastes separate into distinct layers, and representative samples must include aliquots or portions from each layer. In some cases, it shall be necessary to use a statistical or random sampling scheme for the collection of representative samples.

A number of criteria shall be considered by the Permittees in determining the number, location, and frequency of samples that should be collected. If the waste is uniform and from a single process location, one grab sample collected periodically may be sufficient. If a waste is a mixture of materials, more samples shall be required, and composite sampling may be appropriate. Sampling shall be repeated if the waste-generating process changes in a substantial way, or if inspection of the waste reveals the waste has changed such that the previous determination is no longer applicable.

The Permittees shall comply with SW-846, other approved EPA or American Society for Testing and Materials (ASTM) methods. The Permittees shall obtain prior approval by the Department to use other methods.

Samples of waste shall be collected and handled in a manner that preserves their original physical form and composition.

When sampling is required for waste characterization, the following strategies shall be used unless an alternative sampling strategy that meets the requirements of SW-846 is determined to be more appropriate for a specific waste:

1. Sampling shall be conducted in a manner that minimizes the generation of waste;
2. The Permittees shall consider personnel safety in determining how and whether to collect samples. If sampling of a waste would pose an unacceptable risk to human health, a non-waste item similar in chemical and physical properties to the waste may be sampled as a surrogate;
3. For heterogeneous solid items, such as contaminated debris, samples shall be obtained from areas that are most likely to be contaminated;
4. For solid items whose surfaces are suspected to be contaminated with hazardous or mixed wastes, the sampling method employed shall be appropriate for detecting surface contamination and may include, but is not limited to, surface wipe samples, crushing, grinding, and shredding, depending on the physical form of the waste and the suspected contaminants; and
5. Samples shall include portions or aliquots from each phase of a waste if more than one phase is present.

The Permittees may propose an alternative sampling strategy by submitting a sampling and analysis plan (SAP) to the Department for approval. If the Department does not notify the Permittees of the SAP's approval, conditional approval, or denial within 45 days of receipt of the SAP, the Permittees may implement the SAP provided that all applicable requirements of 40 CFR Parts 264 and 268 and this Permit are met; releases of waste are prevented; and the health and safety of workers and the public are protected from harm related to implementation of the plan.

C.6.3 Sample Handling, Preservation, and Storage

Use of appropriate sample container types and preservation are necessary to prevent some hazardous constituents from chemically, physically, or biologically altering other substances prior to analysis. Typical preservation techniques shall include the addition of appropriate chemicals, refrigeration, and adhering to holding time limitations between sampling and analysis. The Permittees shall use current EPA-approved preservation and container types, such as those presented in Table C-5 of this Permit Attachment, or in SW-846.

Field duplicate samples shall be collected at a rate of ten percent, and shall be analyzed for the same parameters as the associated waste samples. If disposable sampling equipment is not used, an equipment rinsate blank shall also be prepared and analyzed at a rate of ten percent, with at least one for each sampling event. If VOCs are included in the analyses, a trip blank shall be prepared and analyzed for volatile organic compounds (VOCs), and shall accompany VOC samples.

After a sample is collected, a label providing the following information at a minimum shall be immediately affixed to the sample container:

1. Sample number;

2. Date and time of collection;
3. Sampling location or container number(s) for composite samples;
4. Type of sample media (e.g., liquid, solid); and
5. Name of sample collector.

Sample numbers shall be unique to each sample. The sample number shall also be recorded on a sample collection log, which shall include the following information for each sample:

1. Sample number;
2. Sample and analysis request number;
3. Date and time of sample collection;
4. Sampling location or container number(s) for composite samples;
5. Type of sample media (e.g., solid, liquid);
6. Purpose of sample collection;
7. Number and volume of samples;
8. Sample type (e.g., grab, composite);
9. Results of field observations or measurements;
10. Name of sample collector; and
11. Signature of sample collector.

To assure that the sample is traceable from the time of collection to the time of analysis, an analysis request/chain-of-custody (AR/COC) form or equivalent shall be completed and maintained by the Permittees for each sample. The form shall include the following information at a minimum:

1. Sample number;
2. Date and time of sample collection;
3. Sampling location or container number(s) for composite samples;
4. Type of sample media (e.g., solid, liquid);
5. Required analytical testing;
6. Sample description (e.g., grab, composite);
7. Name of sample collector;
8. Signature of sample collector;
9. Signatures of persons involved in the chain of custody; and
10. Dates of possession.

Table C-5 lists requirements for sample containers, preservation techniques, and holding times for the active Units listed in Table J-1.1 of Permit Attachment J (*Hazardous and Mixed Waste Management Units*).

Sampling shall be performed with an appropriate device.

C.6.4 Analytical Laboratory Selection and Analytical Methods

The Permittees shall perform the chemical and physical analyses specified in SW-846 as necessary to adequately characterize waste. Laboratories conducting the analyses must have:

1. A documented comprehensive QA/QC program,
2. Technical analytical expertise,
3. A document control/records management plan, and
4. The capability to perform data reduction, validation, and reporting.

The selection of analytical testing methods for waste shall be based on the following considerations:

1. The physical form of the waste,
2. Chemical composition, and
3. Required detection limits (e.g., regulatory thresholds).

TABLE C-4
Summary of Analytical Methods

Parameter	Method Numbers [b]	Rationale
Volatile Organic Compounds Spent halogenated and non-halogenated solvents	American Society for Testing and Materials (ASTM) Method D4547-91[c] or equivalent method EPA/540/4-91/001[d] or equivalent methods[e] EPA Methods SW-846 (1311, 8260, 8261)[f] or equivalent methods[e] Methods included in 20 NMAC 4.1.600/40 CFR §§ 265.1084(a)(2), (a)(3), and (a)(4)	Determine total and/or TCLP concentration in samples of solids or liquids, to characterize wastes, evaluate air emissions, or determine whether treated wastes meet treatment standards[a]
Semivolatile Organic Compounds	EPA Methods SW-846 (1311 and 8270)[f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids to characterize wastes or determine whether treated wastes meet treatment standards[a]
Metals Arsenic Antimony Barium Beryllium Cadmium Chromium Lead Mercury Nickel Selenium Silver Thallium	EPA Methods SW-846[f]: (1311, 6010, 6020, 7000, 7010)[e] (1311, 6010, 6020, 7000, 7010)[e] (1311, 6010, 6020, 7000, 7010)[e] (1311, 6010, 6020, 7000, 7010)[e] (1311, 6010, 6020, 7000, 7010)[e] (1311, 6010, 6020, 7000, 7010)[e] (1311, 6010, 6020, 7000, 7010)[e] (1311, 7470, 7471)[e] (1311, 6010, 6020, 7000, 7010)[e] (1311, 6010, 6020, 7000, 7010, 7741, 7742)[e] (1311, 6010, 6020, 7000, 7010)[e] (1311, 6010, 6020, 7000, 7010)[e] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids, or determine whether treated wastes meet treatment standards[a]
Reactive Sulfide	EPA Methods SW-846, Test Method to Determine Hydrogen	Determine concentration of

TABLE C-4 Summary of Analytical Methods		
Parameter	**Method Numbers [b]**	**Rationale**
	Sulfide Released from Wastes[g] or equivalent methods[e] EPA Methods SW-846 (9030, 9031, 9034)[f] or equivalent methods[e]	reactive sulfides
Cyanide (total and amenable)	(1311, 9010, 9012)[e]	Determine concentration of cyanides
Paint Filter Liquids Test	EPA Methods SW-846 (9095)[f] or equivalent methods[e]	Determine presence of free liquids
Flash Point	EPA Methods SW-846 (1010, 1020, 1030)[f] or equivalent methods[e]	Determine ignitability
pH	EPA Methods SW-846 (9040, 9041, 9045)[f] or equivalent methods[e]	Determine corrosivity
Explosives in waste	EPA Methods SW-846 (Appropriate analytical method from the Method 8300 series - e.g., 8330)[f]	Determine reactivity
Dioxin/Furan Congeners	EPA Methods SW-846 (8280, 8290) [f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids to characterize wastes or determine whether treated wastes meet treatment standards[a]
Polychlorinated Biphenyls	EPA Methods SW-846 (8082, 8275) [f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids to characterize wastes or determine whether treated wastes meet treatment standards[a]
Pesticides	EPA Methods SW-846 (8140, 8141, 8081, 8085) [f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids to characterize wastes or determine whether treated wastes meet treatment standards[a]
Herbicides	EPA Methods SW-846 (8150, 8151) [f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids to characterize wastes or determine whether treated wastes meet treatment standards[a]

[a] For treated wastes, analyses are limited to determining whether treated wastes meet the treatment standards in 40 CFR § 268.40 or the universal treatment standards for the underlying hazardous constituents that can reasonably be expected to be present at the point of generation of the hazardous waste, as provided in 40 CFR § 268.48

[b] The Permittees shall use the most current methods for analysis. Method numbers shown in this table are subject to change through future updates and may differ from those shown here.

[c] 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)

[d] 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)

[e] Equivalent methods not listed in one of the references in this Permit Attachment may be substituted to accommodate waste-specific properties if approved in advance by the Department.

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

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

TABLE C-5
Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organic Compounds			
Concentrated Waste Samples	Method 5035[b]:See method. Method 5021: See method. Methods 5031 & 5032: See methods. Use polytetrafluoroethylene (PTFE)-lined lids for all procedures.	Cool to 4º degrees Celsius (ºC) and adjust pH[e] to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Soil/Sediments and Sludges	Method 5035: See method. Method 5021: See method. Methods 5031 & 5032: See methods.	See the individual method	14 days
Liquid Samples: No Residual Chlorine Present	Methods 5030, 5031, & 5032: 2 x 40- milliliter (Ml) vials with PTFE-lined septum caps.	Cool to 4ºC and adjust pH to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Liquid Samples: Residual Chlorine Present	Methods 5030, 5031, & 5032: 2 x 40-mL vials with PTFE-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
Liquid Samples: Acrolein and Acrylonitrile	Methods 5030, 5031, & 5032: 2 x 40-mL vials with PTFE-lined septum caps.	Adjust to pH of 4-5. Cool to 4ºC	14 days
Semivolatile Organic Compounds/Organochlorine Pesticides and Herbicides			
Concentrated Waste Samples	125 mL WM[c]-G[d] with PTFE-lined lid	None	14 days
Soil/Sediments and Sludges	250 mL WM[c]-G[d] with PTFE-lined lid	Cool to 4ºC	14 days
Liquid Samples, No Residual Chlorine Present	4 x 1 liter (L) AG[f] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis.	Cool to 4ºC	14 days
Liquid Samples, Residual Chlorine Present	4 x 1-L AG[f] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis.	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Cool to 4ºC.	14 days
Polychlorinated Biphenyls, Polychlorinated Dibenzo–p-dioxins, and Polychlorinated Dibenzofurans			
Concentrated waste samples	125-mL WM[c]-G[d]	None	14 days
Soil/Sediments and Sludges	250 mL WM[c]-G[d] with PTFE-lined lid	Cool to 4ºC	14 days
Liquid Samples, No Residual Chlorine Present	4 x 1 liter (L) AG[f] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis	Cool to 4ºC	14 days

TABLE C-5
Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Liquid Samples, Residual Chlorine Present	4 x 1-L AG[f] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis.	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Cool to 4ºC.	14 days
Metals and Inorganic Compounds			
Soil/Sediments and Sludges: Metals (except hexavalent chromium and mercury)	500-mL WM[c]-P[g] or G[d]	Cool to 4ºC	180 days
Soil/Sediments and Sludges: Hexavalent chromium	500-mL WM[c]-P[g] or G[d]	Cool to 4ºC	Not established - analyze as soon as possible.
Soil/Sediments and Sludges: Mercury	500-mL WM[c]-P[g] or G[d]	Cool to 4ºC	28 days
Liquid Samples: Metals (except hexavalent chromium and mercury)	1-L P[g] or G[d]	Add nitric acid to adjust pH to less than 2.	180 days
Liquid Samples: Hexavalent chromium	500-mL P[g] or G[d]	Cool to 4ºC	24 hours
Liquid Samples: Mercury	500-mL P[g] or G[d]	Add nitric acid to adjust pH to less than 2.	28 days
Cyanide	500-mL WM[c]-P[g] or G[d]	Cool to 4ºC. See method for preservation if oxidizing agents or interferences are present.	14 days

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations. Permittees shall comply with EPA requirements for container types, preservatives, and holding times as specified under the current version of SW-846 or other applicable regulations.
[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. The Permittees shall use the most current containers and preservation methods. Containers and preservatives shown in this table are subject to change through future updates and may differ from those shown here.
[c] WM = Wide-mouth
[d] G = Glass
[e] A term used to describe the hydrogen-ion activity of a system.
[f] AG = Amber glass
[g] P = Polyethylene

C.7 ORGANIC AIR EMISSION REQUIREMENTS

The Permittees manage wastes that are subject to organic air emissions requirements of 40 CFR Part 264, Subpart CC. For wastes that are not eligible for exemption, the Permittees shall address the applicable requirements for control of air pollutant emissions as follows:

1. In lieu of determining the concentration of VOCs in a waste at the point of generation, the Permittees may declare that a container holding the waste is subject to the requirements of 40 CFR Part 264, Subpart CC.
2. To determine the VOC concentration, the Permittees shall follow the waste determination procedures specified in 40 CFR 264.1083(a). If sampling and analysis is necessary, it shall be performed in accordance with the methods specified in this Permit Attachment.
3. Whenever changes to the source generating the waste are reasonably likely to or may potentially cause the average VOC concentration of the hazardous waste to increase to a level that is equal to or greater than the applicable VOC concentration limits specified in 40 C.F.R. § 264.1082, a new waste evaluation shall be performed by the Permittees, as specified in 40 C.F.R. § 264.1083(a)(1)(ii).
4. The Permittees shall review the characterization documentation for VOCs as part of the characterization process discussed in Section C.3 of this Permit Attachment.
5. Hazardous wastes containing VOCs that are newly generated through treatment and treatment residues shall be characterized for VOC content if the waste being treated contains VOCs, and/or the treatment process involves VOCs.
6. Characterization of routinely generated hazardous and mixed wastes that are subject to 40 C.F.R. Part 264, Subpart CC shall be reviewed and updated at least once every 12 months to determine whether Subpart CC requirements continue to apply.

C.8 PROCEDURES FOR ACCEPTANCE OF WASTE FROM OFF-SITE SOURCES

Hazardous and mixed wastes from off-site sources listed in Section 2.2.3 of Permit Part 2 may be accepted at the Facility.

The Permittees shall meet the requirements of 40 CFR §§, 264.13(a)(3)(ii), 264.13(a)(4), 264.13(b)(5), and 264.13(c).

Prior to accepting waste from an off-site source, the Permittees shall obtain a request and waste characterization data from the off-site source. The Permittees shall review the request and characterization data for completeness and consistency with the characterization process in Section C.3.1. The Permittees shall require large-quantity and small-quantity off-site sources to provide land disposal restriction (LDR) notification that addresses LDR requirements applicable to the wastes in the proposed shipment. The Permittees shall provide written notice to the source as required by 40 CFR 264.12(b).

The Permittees shall visually inspect each shipment to ensure that the number and type of container(s) and container labels match the manifest or other shipping papers. Discrepancies shall be addressed in compliance with 40 CFR 264.72 and Permit Section 1.9.9.8.

Documentation regarding wastes received from off-site sources shall be maintained in the Operating Record.

C.9 RECORDS

The Permittees shall enter characterization information into the Operating Record. Each package (the smallest discrete waste item) shall be assigned a unique identification and tracking number no later than its arrival at a Permitted Unit. Characterization information associated with the package shall be either in paper or electronic format. The Permittees shall document information related to activities that affect a waste package (e.g., repackaging, additional characterization, treatment).

C.10 REFERENCES

ASTM, 1991 American Society for Testing and Materials, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," 1991

ASTM, 1991 *Annual Book of ASTM Standards*, Philadelphia, Pennsylvania, American Society for Testing and Materials, 1991.

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

EPA, 1991 "Soil Sampling and Analysis for Volatile Organic Compounds," *EPA 1/540/4-91/001*, Office of Research and Development, 1991

EPA, 1994 "Waste Analysis at Facilities That Generate, Treat, Store, And Dispose of Hazardous Wastes, A Guidance Manual," *OSWER 9938.4-03*, 1994.

PERMIT ATTACHMENT D CONTINGENCY PLAN

D.1 INTRODUCTION

This Permit Attachment describes Facility and site-specific contingency plans for the Permitted Units (*See* 40 CFR Part 264, Subpart D) including the Corrective Action Management Unit (CAMU). The Permitted Units covered by this Contingency Plan are listed in Permit Attachment J (*Hazardous Waste Management* Units) and described in Permit Attachment A (*Facility Description*).

Facility security personnel shall monitor each Unit periodically during non-operating hours. If an emergency is discovered during this monitoring, the Facility Emergency Operations Center (EOC) and the Unit-specific Emergency Coordinator (EC) shall be notified immediately.

D.2 DISTRIBUTION OF CONTINGENCY PLAN AND AMENDMENTS

Copies of the current Contingency Plan, including the applicable Unit-specific information shall be maintained: (1) at each Permitted Unit, (2) at the Facility Emergency Operations Center (EOC), and (3) in the Operating Record. The Permittees shall also provide copies of the Contingency Plan and any amendments and updates of it to the KAFB Fire Department and the New Mexico Environment Department (the Department).

The Emergency Coordinators (ECs) and Facility Emergency Response Organization (ERO) personnel shall review this Contingency Plan at least annually. The Contingency Plan shall be amended, if necessary, whenever one or more of the following occurs:

1. Applicable regulations or RCRA permit conditions that affect the Plan are revised;
2. There is a significant change in Facility or Permitted Unit design, construction, maintenance, operation, or other circumstance that increases the potential for emergencies or changes the response necessary in an emergency;
3. The list of designated ECs changes;
4. The list of required emergency equipment changes; or
5. Actual implementation of the Contingency Plan during an emergency demonstrates inadequacies or the Contingency Plan fails.

D.3 EMERGENCY RESPONSE PERSONNEL AND SUPPORT AGREEMENTS

The Permittees shall ensure that emergency response personnel and support agreements are available for each Permitted Unit at the Facility as described in this section.

D.3.1 Emergency Coordinator and Responsibilities

The EC shall have thorough familiarity with this Contingency Plan, including the applicable Unit-specific information, Unit layout and operations, the location of records, the locations and characteristics of the hazardous or mixed waste managed at the Unit, and the emergency equipment and supplies. The EC shall have the authority through the Permittees' management to

commit the necessary resources (including personnel, materials, and funds) to respond to an emergency at the Permitted Unit.

During emergencies or until the Facility Emergency Response Incident Commander (IC) arrives and takes control, the EC has three primary responsibilities:

1. **Assess the Situation.** By observing the scene, interviewing personnel, and reviewing records as appropriate, the EC shall gather information relevant to the response, such as the type of event, quantity and type of released material or waste, and actual or potential hazards to human health or the environment.
2. **Protect Personnel.** The EC shall take all reasonable measures to ensure the safety of personnel, such as activating the fire alarm, accounting for personnel, attending to injuries, or coordinating the evacuation of personnel, if necessary. If evacuation is indicated for other personnel outside of a Permitted Unit, the IC must be informed.
3. **Contain or Mitigate the Hazards.** The EC shall take reasonable measures to ensure that fires, explosions, or releases do not occur, recur, or spread.

After emergencies, the EC shall ensure that the Unit and equipment are cleaned, waste is properly managed and disposed of, the Unit is safe to resume operation, and all notifications and reports are provided to the Department, as outlined in Sections D.8, D. 9, and D.13 of this Permit Attachment.

In the event that the EC is not on site or immediately available during an emergency, an alternate EC shall be responsible for conducting the duties of the EC. The names, addresses, and phone numbers of the primary and alternate ECs for each Permitted Unit are included in each Unit-specific Section of this Permit Attachment. A Unit-specific EC or alternate EC shall be on-site or immediately available during the operating hours of each Unit and shall be on call the rest of the time. The ECs shall also be available during non-routine hazardous or mixed waste management operations that may be conducted outside normal operating hours.

D.3.2 Emergency Response Groups

The Facility 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 and (2) the EOC. The Incident Command System includes Facility security, the KAFB Fire Department, and Facility Permitted Unit personnel; any of these will be deployed in an emergency response as required by the circumstances of the emergency. An IC shall be on site at the Facility at all times (24 hours per day, 7 days per week). Facility security and the KAFB Fire Department personnel are available at all times. Waste management personnel shall be available on-site at the Facility during operating hours at the Permitted Units. The Facility EOC staff shall include personnel who are responsible for the management decisions and notifications to outside parties that are required during an emergency response. Such personnel shall be available on-site at the Facility during operating hours at the Permitted Units, and shall be on call the rest of the time.

In the field, the IC shall maintain overall management and control of response operations at the emergency site once control is relinquished by the EC. The IC shall work in a unified command with the KAFB Fire Department and in concert with safety personnel, the EC, other emergency responders and waste management personnel to develop and execute response plans, including on-site protective actions and recommendations for off-site protective actions. The Incident Command System or equivalent system shall be implemented at the time an emergency occurs and shall remain in effect until the need for emergency management no longer exists.

D.3.3 Emergency Chain of Command

When the EC is notified of or discovers an incident, he shall first determine if the procedures for emergencies should be implemented. The EC shall manage the emergency response until the IC arrives at the Unit and will relinquish control to the arriving IC. If possible, the EC shall maintain communication with the IC by telephone or radio before the IC arrives at the Unit. The EC shall remain at the Unit as necessary and assist in emergency response as directed by the IC. The EC shall advise the IC, as needed, on Unit operations, Unit layout, characteristics of hazardous or mixed waste on-site, location of records, radio and cellular communication systems, and other information as necessary to respond to the emergency.

The 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 notifies the IC of an emergency.

D.3.4 Support Agreements and Coordination with Outside Agencies

The Permittees shall maintain sufficient response resources to handle emergencies arising from hazardous waste management activities as described in this Contingency Plan. These response resources include personnel, emergency equipment, medical facilities, communications systems, and support agreements with off-site agencies and facilities. Permittees shall attempt to establish mutual aid agreements and memoranda of understanding with several off-site agencies and facilities for additional response capabilities for the Facility. Such agencies and facilities include the establishments listed in Table D-1. If the Permittees cannot establish mutual aid agreements or memoranda of understanding through no fault of their own, the Permittees shall maintain in the Operating Record demonstration of the failed attempt.

D.4 EMERGENCY EQUIPMENT

A list of equipment that shall be available through the Facility emergency response system is provided in Table D-2. Lists of emergency equipment that shall be available for use at each Unit are presented below under the Unit-specific Sections of this Permit Attachment.

TABLE D-1 Agreements and Memoranda of Understanding for Emergency Response	
Agency or Facility	**Type of Service**
The New Mexico Department of Homeland Security and Emergency Management	Mutual aid involving an actual or potential emergency, assistance in training and emergency response.
The 377th Air Base Wing, Kirtland Air Force Base	Various types of support, including fire protection, police services, communications, and utilities.
The U.S. Forest Service[a]	Cooperative fire fighting arrangement between the USFS and KAFB for wild land fires.
The City of Albuquerque	Mutual support and responsibilities during a potential or actual emergency requiring the combined resources of DOE and the City of Albuquerque.
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.

[a] The Permittees are not a direct party to the agreement between the U.S. Forest Service and Kirtland Air Force Base.

D.5 CONTINGENCY PLAN IMPLEMENTATION

Anyone who becomes aware of an incident or emergency shall contact facility personnel or the EC immediately. If an incident is determined to be an emergency, the Permittees shall implement evacuation procedures, as appropriate, as described in Section D.7 of this Permit Attachment.

If the EC determines that an emergency situation exists or is imminent at the Unit, the EC shall immediately notify the EOC and activate this Contingency Plan. The methods for contacting emergency response representatives are listed in Table D-2.

TABLE D-2 Facility -Wide Emergency Response Equipment	
Item or Equipment	**Description/Telephone**
Emergency Vehicles (owned by DOE/SNL unless noted)	
Emergency Response Vehicle	Mobile Command Post equipped with communications equipment, located at the Facility. Facility Emergency Response System — Call 911 or (505) 844-0911
Ambulance	Typically located at SNL medical facility. SNL 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, located throughout SNL. SNL 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, located at KAFB fire stations. SNL Emergency Response System — Call 911 or (505) 844-0911
Medical Supplies	
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 medical facility. SNL Emergency Response System — Call 911 or (505) 844-0911
Blankets	Normal blankets, located in ambulance or at SNL medical facility. SNL Emergency Response System — Call 911 or (505) 844-0911
Medical Kits	Emergency first-aid supplies, located in ambulance or at SNL medical facility. SNL Emergency Response System — Call 911 or (505) 844-0911
Safety Supplies	
Air Packs	Self-contained breathing apparatus for use by personnel entering hazardous atmospheres, located in ambulance or response vehicle. SNL Emergency Response System — Call 911 or (505) 844-0911
Monitoring Instruments	Typically located in ambulance or emergency response vehicle. SNL Emergency Response System — Call 911 or (505) 844-0911

Note: The Facility EOC is located at Technical Area I (TA-I).

TABLE D-3 Emergency Response System Notification	
Method	**Emergency 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, except as noted	NA

Note: Any person in any Unit is authorized to implement the evacuation procedures, notify the Unit-specific EC or alternate EC, or contact the emergency response representatives in the unlikely event that the Unit-specific EC or alternate EC cannot be contacted or respond in a timely manner.

D.6 EMERGENCIES

In the event of an emergency, the EC, a designee, or waste management personnel shall immediately telephone the EOC (by calling 911 or 844-0911) or notify them in some other way. The EC and the IC shall:

1. Determine the extent of the emergency;
2. Identify the character, source, amount, and extent of released materials or waste by observation, records reviews, or chemical analysis;
3. Assess possible resulting hazards to human health or the environment, considering both direct and indirect effects;
4. Take all reasonable measures necessary to ensure fires, explosions, and releases do not occur, recur, or spread to other hazardous or mixed waste at the Unit, including collecting and containing released waste, and removing or isolating containers; and
5. Monitor for leaks, pressure buildup, gas generation, and ruptures in equipment.

D.6.1 Fire

The following steps shall be implemented as needed in the event of an emergency involving an imminent or existing fire that could threaten human health or the environment:

1. All non-essential personnel shall evacuate following the evacuation routes described in each of the Unit-specific Sections of this Permit Attachment or to an alternate assembly location as directed by the EC. All personnel may evacuate at this time.
2. The EC (or waste management personnel) shall immediately notify the Facility ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Facility ERO are also notified by activation of automatic fire alarms at the Units.

3. Waste management personnel may consider taking action to put out the fire or minimize its spread only if safe. These actions may be taken only after the IC and KAFB Fire Department have been notified. Personnel must not jeopardize their own safety or the safety of other personnel.
4. If the fire is small and the fuel source is small, portable fire extinguishers may be used to put out the fire.
5. Fire extinguishers shall only be used by personnel trained in their use, and only for very small fires.
6. Flammable materials shall be removed from the area of fire if safe.
7. Only appropriate fire extinguishers and/or fire extinguishing agents shall be used for water-reactive waste (e.g., Met-L-X, Lith-X, or equivalent).
8. If the fire spreads or increases in intensity, all remaining personnel must evacuate.
9. The EC shall take actions as directed by the IC. Unless directed otherwise, the EC shall remain near the Unit, but at a safe distance, so he can advise personnel responding to the fire of the known hazards.
10. Upon arrival at a fire, the KAFB Fire Department officer-in-charge is in command of fire fighting. DOE/Sandia emergency response and waste management personnel shall advise and assist the KAFB Fire Department, but the officer-in-charge retains the responsibility of selecting the fire-fighting methods and tactics.
11. Hazardous or mixed wastes involved in a fire can be identified in the following ways:
    a) The location of the container may indicate the contents.
    b) If the location does not indicate its contents, the label number can be used to identify the waste.
    c) Records on the contents of each container can be accessed from outside the Unit or in the Unit office.
    d) If the label has been burned and the container cannot be identified, the material or waste shall be treated as an unknown and analyzed according to the methods described in the Waste Analysis Plan under Permit Attachment C.
12. Spills of hazardous or mixed wastes shall be collected and contained by stabilizing or neutralizing the spilled waste, as appropriate; pouring an absorbent over the spilled waste; and sweeping or shoveling the absorbed waste into drums or other appropriate containers.
13. Surfaces affected by released hazardous or mixed wastes shall be cleaned using cleaners appropriate to the wastes.
14. If possible and safe, responding personnel shall take measures to contain potentially hazardous run-off and keep it away from storm drains or sewers (for example, by building dikes around storm drains).
15. Any fire-fighting waters collected in the storm water catchment and retention ponds at the HWHU and RMWMU, the storm water retention tank at the TTU, or the floor trenches at the AHCU shall be analyzed to determine the appropriate method for management and subsequent disposal of the waste water.

D.6.2 Explosion

The following steps shall be implemented as needed in the event of an emergency involving an imminent or existing explosion that could threaten human health or the environment:

1. Personnel shall immediately evacuate the area.
2. The EC (or personnel) shall immediately notify the Facility ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and the ERO are also notified by activation of automatic fire alarms at the Units.
3. The EC shall take actions as directed by the IC. Unless directed otherwise, the EC shall remain near the Unit, but at a safe distance, so that he or she can advise the response personnel of the hazards involved and the degree and location of the explosion and any fires.
4. Upon arrival at the site, the KAFB Fire Department officer-in-charge is in command of fire fighting. The EC shall advise and assist the KAFB Fire Department, but the officer-in-charge retains the responsibility of selecting the fire-fighting methods and tactics.
5. The IC shall be in overall control of Facility emergency response efforts until the emergency is terminated.
6. Wastes may be stabilized or neutralized, as appropriate; pouring an absorbent over the waste; and sweeping or shoveling the absorbed waste into drums or appropriate containers.
7. Surfaces affected by released hazardous or mixed wastes shall be cleaned using cleaners appropriate to the wastes involved.
8. If possible and safe, personnel shall take measures to contain potentially hazardous runoff and prevent it from entering storm drains, sewers, ditches, or drop inlets(for example, by building dikes around storm drains).
9. Any potentially contaminated waters collected in storm water catchment and retention ponds and tanks or floor trenches shall be analyzed to determine the appropriate treatment and disposal method, as applicable.
10. The EC shall secure all equipment (e.g., process equipment, ventilation equipment) that may be affected by the explosion and any fire once entry has been determined to be safe by the IC or a safety officer.

D.6.3 Uncontrolled Release

The following steps shall be implemented by the EC and Unit personnel in the event of an emergency involving an imminent or existing release of hazardous or mixed waste or hazardous waste constituents that could threaten human health or the environment:

1. Evacuate the immediate area.
2. The EC (or Unit personnel) shall immediately notify the ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and ERO are also notified by activation of automatic fire alarms at the Units.
3. Take actions to minimize, contain, and clean up the release only if safe.

4. Review Facility records (e.g., waste inventory database) to determine the identity and chemical nature of the released material or waste.
5. Wear appropriate personal protective equipment for exposure to the material or waste.
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 or sewers and if possible, build dikes around the storm drains.
9. Released wastes shall be collected and contained by stabilizing or neutralizing the spilled waste, as appropriate; pouring an absorbent over the spilled waste; and sweeping or shoveling the absorbed waste into drums or other appropriate containers.
10. No waste that may be incompatible with a released waste shall be treated, stored, or disposed of in the vicinity of the release location until the released waste is cleaned up or stabilized.
11. After collection of a released waste, the release site shall be sampled and evaluated. If contamination is present, the contaminated media shall be characterized and remediated to achieve clean closure as defined in Section 6.2.1 of Permit Part 6. The Permittees may choose to implement an alternative decontamination method for contaminated media such as surface cleaning or in-situ neutralization or stabilization. Any such alternative shall be approved by the Department prior to implementation. If the contaminated media cannot be remediated to achieve clean closure, the contaminated media shall be subject to corrective action as required under Permit Part 8.

D.7 EVACUATION

During an emergency that threatens the health or safety of personnel within a Permitted Unit, the following steps shall be taken to facilitate safe coordinated evacuation:

1. Stop work.
2. If safe, 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 internal communications and alarm systems.
5. Notify the Facility ERO by activating a manual pull alarm or by dialing the EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and the ERO are also notified by activation of automatic fire alarms at the Units.
6. Check whether the evacuation route is safe.
7. If there is no evidence of danger or obstacles, exit the Permitted Unit according to the evacuation routes.
8. If there is evidence of danger or obstacles, exit the Permitted Unit by any safe route available.
9. If safe, check for other personnel in other areas.
10. Proceed to the designated assembly area for roll call to be taken by the EC.
11. If the EC and personnel are assembling at an alternate location, proceed to that location.
12. Inform the EC about any people that may still be inside the Permitted Unit.
13. Do not re-enter the Permitted Unit until the IC determines that is safe.

D.8 COORDINATION WITH OFF-SITE PARTIES AND EMERGENCY NOTIFICATION

The Permittees shall verbally inform the City of Albuquerque, KAFB command, and Isleta Pueblo immediately, in the event that residents of Albuquerque or Isleta Pueblo, or workers at KAFB could be affected. The notification shall include available information about the nature and location of the emergency, the materials and wastes involved, and the recommended protective actions and any relevant information listed in Section 1.9.9 of Permit Part 1 and Section 2.13 of Permit Part 2. Protective actions may include evacuation or sheltering indoors with doors and windows closed and ventilation systems shut off.

The Permittees shall verbally notify the New Mexico Department of Public Safety (1-505-827-9329) and the National Response Center (1-800-424-8802) in accordance with 40 CFR 264.56(d) if human health or the environment outside the SNL Facility is threatened. The notification shall include a description of the emergency with the following information:

1. Name, address, and telephone number of the owner or operator, and name and telephone number of person making the report;
2. Name and address of the Facility;
   c). time and type of incident;
   d). name and quantity of material(s) involved, to the extent known;
   e). the extent of injuries, if any;
   f). the possible hazards to human health, or the environment, outside the Facility.

Further, the Permittees shall also provide this information to the Department.

D.8.1 Post-Emergency Actions

Immediately after an emergency, the EC and when present, the IC, shall:

1. Continue to monitor for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment as appropriate until normal operations are resumed;
2. Provide for proper treatment, storage, or disposal of recovered material or waste, contaminated soil or surface water, or any other media or material;
3. Ensure that no waste that may be incompatible with the released material or waste is transferred to, treated at, or stored at the Permitted Unit in the vicinity of the release location until normal operations are resumed; and
4. Ensure that all equipment that is listed in this Permit Attachment is fit for its intended use.

Before resuming hazardous waste management operations at the Permitted Unit after an emergency, the Permittees shall notify the Department.

D.9 EMERGENCY RESPONSE RECORDS AND REPORTS

The time, date, and details of an emergency that require implementation of this Contingency Plan shall be noted in the Operating Record maintained for the affected Unit. Within fifteen (15)

calendar days following the emergency, a written report shall be submitted to the Department in hard copy or via e-mail identifying:

1. Name, address, and telephone number of the reporter;
2. Name, address, and telephone number of the Facility;
3. Date, time, and type of the emergency (e.g., fire, explosion, release);
4. Name and quantity of material(s) and wastes involved;
5. Extent of injuries (if any);
6. Assessment of actual or potential hazards to human health or the environment, where applicable; and
7. Estimated quantity and disposition of recovered material, contaminated media, and wastes that resulted from the emergency.

D.10 ADDITIONAL CONTINGENCY PLAN INFORMATION FOR THE HAZARDOUS WASTE HANDLING UNIT

This Section contains additional information for the Hazardous Waste Handling Unit (HWHU). Current copies of this Contingency Plan shall be maintained at the HWHU and at the Facility EOC.

Figure 43 of Permit Attachment L (*Figures*) presents the evacuation routes for the HWHU. Figure 44 of Permit Attachment L (*Figures*), illustrates the HWHU emergency response and access information locations. The Permittees shall maintain at the HWHU the emergency equipment listed in Table D-4 of this Permit Attachment. The Permittees shall keep current the list of ECs for the HWHU in Table D-5 of this Permit Attachment.

TABLE D-4
Emergency Equipment to be Maintained at the HWHU

Category	Description	Location
Building 958		
Spill Control and Decontamination Equipment	Fixed shower / eyewash	Near south entrance
	Recovery drums and containers	In equipment storage at the HWHU
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	In equipment storage at the HWHU
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the HWHU
	Self-contained breathing apparatus (SCBA)	At south entrance
	Miscellaneous personal protective equipment (protective suits, goggles, and/or safety glasses, gloves)	In equipment storage at the HWHU
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	On the walls near north and south personnel doors
	Audible fire alarms	

TABLE D-4
Emergency Equipment to be Maintained at the HWHU

Category	Description	Location
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)	On the 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 44 of Permit Attachment L (*Figures*)
Building 959		
Spill Control and Decontamination Equipment	Fixed shower/eyewash	Near south entrance
	Recovery drums and containers	In equipment storage at the HWHU
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	In equipment storage at the HWHU
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the HWHU
	SCBA	In equipment storage at the HWHU
	Miscellaneous personal protective equipment (protective suits, goggles, and/or safety glasses, gloves)	In equipment storage at the HWHU
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).	On the walls near each personnel door and one inside the office area
	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).	On the walls near each personnel door
Fire Extinguishers	Portable (A-B-C)	One at both the north and south entrances
	Portable (D)	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 44 of Permit Attachment L (*Figures*)

TABLE D-4
Emergency Equipment to be Maintained at the HWHU

Category	Description	Location
Modular Storage Buildings (958B and 958C)		
Spill Control and Decontamination Equipment	Personal protective equipment Recovery drums and containers Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present) and spill cleanup items	Buildings 958 and 959, equipment storage at the HWHU
Internal Communication and Alarm System	Voice command	
	Fire alarm pull-boxes (pulling handle sends signal to KAFB fire department, does not actuate system).	Buildings 958 and 959
	Audible fire alarms	
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

TABLE D-5
Emergency Coordinator List for the HWHU

HWHU Emergency Coordinator		Office Phone	Home Phone
Primary Office Address:	David Castillo Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-4192 (office) (505) 269-1705 (cell) (505) 951-6340 (pager)	(505) 899-1956
First Alternate Office Address:	Chris Dean Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-8083 (office) (505) 350-4982 (cell) (505) 283-1942 (pager)	(505) 268-8913
Second Alternate Office Address	Mary Ann Krauss Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 845-9997 (office) (505) 250-2422 (cell) (505) 951-6335 (pager)	(505) 299-0793
Third Alternate Office Address	Therese Martinez-Loner Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	505) 284-5028 (office) (505) 401-0381 (cell) (505) 401-0381 (pager)	(505) 401-0381
Fourth Alternate	Angel Ripoll Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-5334 (office) (505) 573-0562 (cell) (505) 573-0562 (pager)	(505) 573-0562

TABLE D-5 Emergency Coordinator List for the HWHU			
HWHU Emergency Coordinator		**Office Phone**	**Home Phone**
Fifth Alternate	Tony Mocadlo Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 844-0564 (office) (505) 283-1947 (pager)	(505) 332-9168

D.11 ADDITIONAL CONTINGENCY PLAN INFORMATION FOR THE THERMAL TREATMENT UNIT

This Section contains additional information for the Thermal Treatment Unit (TTU). Current copies of this Contingency Plan shall be maintained at the TTU and at the Facility EOC.

Figure 45 of Permit Attachment L (*Figures*) presents the evacuation routes for the TTU. The Permittees shall maintain at the TTU the emergency equipment listed in Table D-6 of this Permit Attachment. The Permittees shall keep current the list of ECs for the TTU in Table D-7 of this Permit Attachment.

D.12 ADDITIONAL CONTINGENCY PLAN INFORMATION FOR THE RADIOACTIVE AND MIXED WASTE MANAGEMENT UNIT

This Section contains additional information for the Radioactive and Mixed Waste Management Unit (RMWMU). Current copies of this Contingency Plan shall be maintained at the RMWMU and at the Facility EOC.

Figure 46 of Permit Attachment L (*Figures*) presents the evacuation routes for the RMWMU. The Permittees shall maintain at the RMWMU the emergency equipment listed in Table D-8 of this Permit Attachment. The Permittees shall keep current the list of ECs for the RMWMU in Table D-9 of this Permit Attachment.

TABLE D-6 Emergency Equipment to be Maintained at the TTU Building 6715		
Category	**Description**	**Location**
Safety and Decontamination Equipment	Permanent eyewash/hand-held deluge showers	Building 6715
	First aid kit	Building 6715
	Absorbent (sufficient absorbent for 20.8 gallons of liquid that could be present in the burn pan)	Building 6715
	Recovery drums and containers	In equipment storage at Building 6715
	Spill cleanup items (mops, brooms, and/or shovels)	Building 6715 equipment storage
	Miscellaneous PPE (protective suits, goggles, gloves)	Building 6715

TABLE D-6 Emergency Equipment to be Maintained at the TTU Building 6715		
Category	**Description**	**Location**
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, one located at the TTU fence.
Fire Suppression	Water supplied by fire hydrant	One hydrant, location is shown in Figure 45, Attachment L (*Figures*)

TABLE D-7 Emergency Coordinator List for the TTU			
TTU Emergency Coordinator		**Office Phone**	**Home Phone**
Primary Office Address:	Tim Covert Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-4664 (office) (505) 951-7315 (pager)	(505) 506-5907
First Alternate Office Address:	Daniel Dow Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-1622 (office) (505) 951-6781 (pager)	(505) 892-0497
Second Alternate Office Address:	Marcus Chavez Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-1278 (office) (505) 283-1709 (pager)	(505) 974-8918

TABLE D-8 Emergency Response Equipment to be Maintained at the RMWMU		
Category	**Description**	**Location**
Building 6920		
Spill Control and Decontamination Equipment	Eyewash Stations/ Showers	On north wall in south bay Near office in north bay
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	In hallway between north and south bays
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMU
	Recovery drums and containers	In equipment storage at the RMWMU

TABLE D-8
Emergency Response Equipment to be Maintained at the RMWMU

Category	Description	Location
	Miscellaneous PPE (protective suits, goggles, and/or safety glasses, chemical-resistant gloves)	In hallway between north and south bays
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	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
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 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, Figure 47 of Permit Attachment L (*Figures*)
Building 6921		
Spill Control and Decontamination Equipment	Eyewash Station/Shower	On north wall of assay area
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	By north wall of assay area
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMU

TABLE D-8
Emergency Response Equipment to be Maintained at the RMWMU

Category	Description	Location
	Recovery drums and containers	In equipment storage at the RMWMU
	Miscellaneous PPE (protective suits, goggles, and/or safety glasses, chemical-resistant gloves)	By north wall of assay area
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	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 near restrooms 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 47 (*Figures*) of Permit Attachment L
Building 6925		
Spill Control and Decontamination Equipment	Portable Eyewash	By personnel door near center of south wall
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	By personnel door near center of south wall
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMU
	Recovery drums and containers	In equipment storage at the RMWMU
	Miscellaneous PPE (protective suits, goggles, and/or safety glasses,	By personnel door near center of south wall

TABLE D-8
Emergency Response Equipment to be Maintained at the RMWMU

Category	Description	Location
	chemical-resistant gloves)	
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	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 47 of Permit Attachment L (*Figures*)
Building 6926		
Spill Control and Decontamination Equipment	Eyewash Station/Shower	In southeast area of building
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	In southeast area of building 6926
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMU
	Recovery drums and containers	In equipment storage at the RMWMU
	Miscellaneous PPE (protective suits, goggles, and/or safety glasses, chemical-resistant gloves)	In southeast area of building 6926
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	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

TABLE D-8
Emergency Response Equipment to be Maintained at the RMWMU

Category	Description	Location
External Communication System	Telephone	In southeast area of building 6926
	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 the building By personnel door on south wall of the building
Fire Extinguishers	Portable (A-B-C)	By personnel door in northeast corner of building By personnel door on west wall of the 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 6926
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 47 of Permit Attachment L (*Figures*)
Modular Storage Buildings		
Spill Control and Decontamination Equipment	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	Buildings 6920 and 6926
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMU
	Recovery drums and containers	In equipment storage at the RMWMU
	Miscellaneous PPE (protective suits, goggles, and/or safety glasses, chemical-resistant gloves)	Buildings 6920 and 6926
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	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	Buildings 6920, 6921, 6925, and 6926
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

TABLE D-9

Radioactive and Mixed Waste Management Unit,

Emergency Coordinator List

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Leroy Duran Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-1488 (office) (505) 951-6297 (pager)	(505) 980-4401
First Alternate	Jesse Farr Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3041 (office) (505) 951-6336 (pager)	(505) 379-8913
Second Alternate	Howard Seeley Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-6297 (office) (505) 951-6316 (pager)	(505) 259-7422
Third Alternate	Jeff Jarry Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3080 (office) (505) 951-6332 (pager)	(505) 697-2108

One or more of these personnel are routinely available during operating hours (7:00 am to 5:30 pm, Monday through Thursday).

D.13 ADDITIONAL CONTINGENCY PLAN INFORMATION FOR THE AUXILIARY HOT CELL UNIT

This Section contains additional information for the Auxiliary Hot Cell Unit (AHCU). Current copies of this Contingency Plan shall be maintained at the AHCU and at the Facility EOC.

Figure 48 of Permit Attachment L (*Figures*) presents the evacuation routes for the AHCU. The Permittees shall maintain at the AHCU the emergency equipment listed in Table D-10 of this Permit Attachment. The Permittees shall keep current the list of ECs for the AHCU in Table D-11 of this Permit Attachment. Facility security officers shall provide unimpeded access to the AHCU for authorized personnel as directed by the IC.

TABLE D-10 Emergency Equipment to be Maintained at the AHCU		
Category	**Description**	**Location**
Building 6597		
Spill Control and Decontamination Equipment	Fixed shower/eyewash	In equipment storage in Building 6597.
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	Near north entrance to Building 6597 high bay
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage in Building 6597
	Recovery drums and containers	In equipment storage in Building 6597
	Personal protective equipment (goggles and/or safety glasses, gloves)	In equipment storage in Building 6597.
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 Building 6597 high bay
	Audible fire alarms	Located throughout the building
External Communication System	Telephones	Near north entrance to Building 6597 high bay
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One near each exit door to Building 6597 high bay
Fire Extinguishers	Portable (A-B-C)	By personnel doors on the north, east, south, and west walls
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the high-bay in Building 6597
	Sprinkler head	Hot Cell
	Sprinkler head	In fume hood
	Water supplied by fire hydrant	One hydrant, location shown on Figure 49 of Permit Attachment L (*Figures*)

TABLE D-11 Emergency Coordinator List for the AHCU			
AHCU Emergency Coordinator		**Office Phone**	**Home Phone**
Primary Office Address:	David Siddoway Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 844-2713- (office) (800)-341-1137 (pager)	(505) 867-0828
First Alternate Office Address:	Michael Torneby Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 845-3254 (office) (800) 343-9371 (pager)	(505) 823-2451
Second Alternate	Bryan Green Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-3161 (office) (505) 280-5118 (cell)	(505) 897-6366

TABLE D-12 Emergency Equipment to be Maintained at the MSBs		
Category	**Description**	**Location**
Spill Control and Decontamination Equipment	Portable Eyewash	By inner door inside each bunker
	Personal protective equipment (chemical-resistant gloves and safety glasses)	By inner door inside each bunker
	Absorbents (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	By inner door inside each bunker
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMU
	Recovery drums and containers	In equipment storage at the RMWMU
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel.
	Smoke Detectors	Smoke detectors inside each bunker Strobe light on front outside each bunker
External Communication System	Mobile telephone or portable radio	Available to all operating personnel at the bunkers
Fire Extinguishers	Portable (A-B-C)	By entrance door outside each bunker

TABLE D-12 Emergency Equipment to be Maintained at the MSBs		
Category	**Description**	**Location**
Fire Suppression	Water to extinguish fires	KAFB tanker truck at the KAFB fire station in the Manzano administrative area

TABLE D-13 Emergency Coordinator List for the MSBs			
MSB Emergency Coordinator		**Office Phone**	**Home Phone**
Primary Office Address:	Leroy Duran Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-1488 (office) (505) 951-6297 (pager)	(505) 980-4401
First Alternate Office Address:	Jesse Farr Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3041 (office) (505) 951-6336 (pager)	(505) 379-8913
Second Alternate Office Address:	Howard Seeley Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-6297 (office) (505) 951-6316 (pager)	(505) 259-7422
Third Alternate Office Address:	Jeff Jarry Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3080 (office) (505) 951-6332 (pager)	(505) 697-2108

D.14 ADDITIONAL CONTINGENCY PLAN INFORMATION FOR THE MANZANO STORAGE BUNKERS

This Section contains additional information for the Manzano Storage Bunkers (MSBs). Current copies of this Contingency Plan shall be maintained at each MSB and at the Facility EOC.

Figure 50 of Permit Attachment L (*Figures*) presents the evacuation routes for each MSB. The Permittees shall maintain at each MSB the emergency equipment listed in Table D-12 of this Permit Attachment. The Permittees shall keep current the list of ECs for each MSB in Table D-13 of this Permit Attachment.

D.15 ADDITIONAL CONTINGENCY PLAN INFORMATION FOR THE CAMU

This Section contains additional information for the Corrective Action Management Unit (CAMU). Current copies of this Contingency Plan shall be maintained at the CAMU administrative trailer and the Facility EOC.

The CAMU is a remediation-waste management unit that is located about 100 yards northwest of the adjacent chemical waste landfill (CWL). Emergency response resources for the CAMU are shared with the CWL.

Figure 51 of Permit Attachment L (*Figures*) presents the evacuation routes for the CAMU. The Permittees shall maintain at the CAMU the emergency equipment listed in Table D-14 of this Permit Attachment. The Permittees shall keep current the list of ECs for the CAMU in Table D-15 of this Permit Attachment.

TABLE D-14
Emergency Equipment to be Maintained at the CAMU

Category	Description	Location
Spill Control Equipment	Spill control materials, including sorbent material, brooms and shovels	Leachate Storage Area Shed
Fire Extinguisher	Portable, Multi-Class	One near the Leachate Storage Area and Containment Cell, and one in CAMU office
Communications: (Internal/External)	Mobile telephone or portable radio or equivalent	Carried by personnel as needed
	Telephone	CAMU office
Water Supply	Fire Hydrant	One outside the southeast entrance to the CAMU
Environmental Safety and Health	Portable eyewash station	Leachate Storage Area Shed (during waste handling activities)
Evacuation	Voice command by on-site personnel or signaled by three blasts of a vehicle warning horn.	Designated Assembly Area (See Figure 51 in Permit Attachment L (*Figures*)

TABLE D-15 Emergency Coordinator List for the CAMU			
CAMU Emergency Coordinator		**Office Phone**	**Home Phone**
Primary Office Address:	Don Schofield Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-4088 (office) (505) 259-7098 (cell) (505) 951-6153 (pager)	(505) 268-6888
First Alternate Office Address:	Robert Ziock Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-0485 (office) (505) 238-3668 (cell) (505) 951-6160 (pager)	(505) 255-4714
Second Alternate Office Address:	Danielle Nieto Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-7706 (office) (505) 239-3989 (cell) (505) 951-6537 (pager)	(505) 239-3989

PERMIT ATTACHMENT E INSPECTION PLAN

E.1 INTRODUCTION

In accordance with the requirements of 40 CFR §§ 264.15, 264.174, and 264.602 the Permitted Units shall be inspected for malfunctions and deterioration, operator errors, and discharges that may be causing, or may lead to, a release of hazardous or mixed waste or hazardous waste constituents to the environment or a threat to human health. Inspections shall be of items including, but not limited to, monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment important to prevent, detect, and respond to environmental and human health hazards. Containers of hazardous and mixed waste stored at a Permitted Unit shall also be routinely inspected to assess, secondary containment, location with respect to incompatible wastes, and compatibility of waste with containers. Unit-specific inspection requirements for all units are found below.

A copy of this Permit Attachment shall be maintained at each Permitted Unit.

1. Hazardous Waste Handling Unit (HWHU),
2. Thermal Treatment Unit (TTU) (records in Building 6715),
3. Radioactive and Mixed Waste Management Unit (RMWMU),
4. Auxiliary Hot Cell Unit (AHCU), and
5. Each Manzano Storage Bunker (MSB, 37034, 37045, 37055, 37057 and 37118).
6. The Corrective Action Management Unit (CAMU) main office.

E.2 INSPECTION RECORDS

The Permittees shall conduct inspections and record the results on inspection forms. The inspection forms shall identify the items to be inspected, and at a minimum, must include the items or parameters specified for each of the permitted units as shown in Tables E-1 through E-6. The following information shall also be recorded on inspection forms.

1. Name of the inspector,
2. The date and time of inspection,
3. Notation of observations and results of the inspection, and
4. The date and nature of any repairs or remedial actions.

Inspection records for each Unit shall be maintained at the Facility for the active life of the Unit, except as provided by 20.4.1.501.A(5) NMAC, Permit Section 7.2.2 and Permit Attachment H (Post-Closure Care Plans for the Corrective Action Management Unit). Current calendar year inspection records for each Permitted Unit shall be maintained at that Unit. All other inspection records shall be maintained in the Operating Record.

E.3 REMEDIAL ACTION

A response indicating the condition of each item subject to inspection requirements shall be entered in the appropriate column on an inspection form. If any defects, deterioration, damage, release of hazardous or mixed waste or constituents, or potential hazards are discovered during

an inspection, the Permittees shall take corrective action in a timely manner upon discovery to ensure that the problem does not lead to an environmental or human health hazard or noncompliance with this Permit. Actions taken shall, as appropriate, include evaluation and removal of accumulated liquids from secondary containment, transfer of waste from a defective container to an appropriate container in good condition, and repair or replacement of nonfunctioning equipment or systems. If an inspection reveals that a non-emergency problem has developed, corrective action including repairs, maintenance, and replacement shall be completed as soon as practical to preclude further damage.

Corrective action taken (along with time, date, results, and other pertinent information) in response to conditions discovered during an inspection shall be recorded in the appropriate section of the inspection form on which the condition requiring corrective action was first noted or the first inspection form completed following implementation of the corrective action.

E.4 INSPECTION SCHEDULE AND REQUIREMENTS FOR PERMITTED UNITS

The schedules described in this section and indicated on Tables E-1 through E-6 shall be followed for the inspection of the Units noted in Section E.1 of this Permit Attachment.

E.4.1 Daily Inspection

During each day that hazardous wastes or mixed wastes are handled (e.g., containers are opened or moved) at a Permitted Unit the Permittees shall inspect:

1. The loading/unloading areas that were used, including waste handling equipment, and the containers loaded/unloaded;
2. Treatment areas that were used, including treatment equipment.

E.4.2 Weekly Inspection

During each week that hazardous waste or mixed waste management (including storage) occurs at a Permitted Unit the Permittees shall at least inspect once weekly: container storage, including container placement, integrity, sealing, labeling, dates of storage, condition of storage area (i.e., floors, walls), secondary containment (liquid waste), waste compatibility and container compatibility storage conditions.

E.4.3 Monthly Inspection

During each month that hazardous waste or mixed waste management occurs at a Permitted Unit the Permittees shall at least once inspect monthly:

1. Safety & Emergency Equipment, including spill control equipment, fire extinguishers, decontamination equipment, external communication systems, internal communication and alarm systems, and fire suppression systems;
2. Security devices, including the perimeter fence, gates and doors, warning signs, locks and tamper indication devices;
3. Unit operation and structural equipment, including the floors, walls, ceilings;

4. Treatment areas, including general conditions (floors, walls), and treatment equipment and tools.

E.5 INSPECTION PLAN FOR THE HAZARDOUS WASTE HANDLING UNIT

Specific items and areas that shall be inspected at the HWHU, and the inspection criteria and frequency are listed in Table E-1 of this Permit Attachment. The items listed in the subject Table shall be inspected in each HWMU waste management area.

TABLE E-1
Inspection Schedule for the Hazardous Waste Handling Unit

ITEM OR PARAMETER	INSPECTION CRITERIA	INSPECTION FREQUENCY
SAFETY AND EMERGENCY EQUIPMENT **See Table D-4 in Permit Attachment D for additional information**		
Eye wash / safety shower	Operational, accessible, in good condition	Monthly
First-aid kit	Present and stocked	Monthly
Spill control and cleanup items	Present, quantities per inventory, and in good condition	Monthly
Self-contained breathing apparatus	Present and in good condition	Monthly
Personal protective equipment	Present in quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present, appears to be in good condition	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 **Buildings 958, 959, 958B, and 958C**		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when and where wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when and where wastes are managed. Monthly otherwise.

TABLE E-1 Inspection Schedule for the Hazardous Waste Handling Unit		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
Building lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Shelves (Building 959 only)	Clean, in good condition, no accumulated leaks or spills	Daily when and where wastes are handled. Weekly otherwise.
Secondary containment	Free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when and where wastes are handled. Weekly otherwise.
Loading and unloading areas	Good condition, safe working surface, no cracks, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.
Waste transfer pump	Present, operational, and in good condition	Prior to use, Monthly otherwise.
Storm water retention pond	Good condition, adequate freeboard, outlet not obstructed, no evidence of release of hazardous or mixed waste	Weekly
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present, legible, and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Weekly
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Weekly
Labeling	Correct information, correct location, legible	Weekly
Storage Conditions	Waste compatible with container, container located with compatible wastes	Weekly
Location	Correct aisle space, stable stacking	Weekly

E.6 INSPECTION PLAN FOR THE THERMAL TREATMENT UNIT

The Permittees shall perform inspections of the Thermal Treatment Unit (TTU) in accordance with the schedule and requirements in Table E-2.

TABLE E-2 Inspection Schedule for the Thermal Treatment Unit		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
SAFETY AND EMERGENCY EQUIPMENT **See Table D-6 in Permit Attachment D for additional information**		
Eye wash and safety shower	Operational, accessible, in good condition	Monthly
First-aid kit	Present and stocked	Monthly
Personal protective equipment	Present in quantities per inventory, and in good condition	Monthly
Spill control and cleanup items	Present, accessible, quantities per inventory, in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present, appears to be 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	Prior to treatment. Monthly otherwise
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	No cracks and in good condition	Prior to treatment. Monthly otherwise.
Filter element	Present, free of tears or holes, and in good condition	Monthly
Rain catch tank	Free of apparent leaks and in good condition	Monthly
Area condition	Free of combustible materials and weeds and in good condition	Prior to treatment. Monthly otherwise.

TABLE E-2 Inspection Schedule for the Thermal Treatment Unit		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
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

E.7 INSPECTION PLAN FOR THE RADIOACTIVE AND MIXED WASTE MANAGEMENT UNIT

The Permittees shall perform inspections of the Radioactive and Mixed Waste Management Unit (RMWMU) in accordance with the schedule and requirements in Table E-3.

TABLE E-3 Inspection Schedule for the RMWMU		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
SAFETY AND EMERGENCY EQUIPMENT **See Table D-8 in Permit Attachment D for additional information**		
Eye wash / safety shower	Operational, accessible, in good condition	Monthly
First-aid kit	Present and stocked	Monthly
Spill control and cleanup items	Present, accessible, quantities per inventory, in good condition	Monthly
Personal protective equipment	Present in quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present, appears to be in good condition	Monthly
Telephone(s)	Present and operational	Monthly

TABLE E-3 Inspection Schedule for the RMWMU		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
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 and where wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, no cracks, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. 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); or present if in storage	Daily when and where wastes are treated. Prior to use for consumables and items that have been stored. Monthly otherwise.
Storm water retention pond	Good condition, adequate freeboard, outlet not obstructed, no evidence of release of hazardous or mixed waste	Weekly.
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present, legible, and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Weekly.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Weekly.
Labeling	Correct information, correct location, legible	Weekly.

TABLE E-3 Inspection Schedule for the RMWMU		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when and where wastes are handled. Weekly otherwise. .
Storage Conditions	Waste compatible with container, container located with compatible wastes	Weekly.
Location	Correct aisle space, stable stacking	Weekly.

E.8 INSPECTION PLAN FOR THE AUXILIARY HOT CELL UNIT

The Permittees shall perform inspections of the Auxiliary Hot Cell Unit (AHCU) in accordance with the schedule and requirements in Table E-4. The items listed in Table E-4 shall be inspected in each AHCU waste management area.

In order to reduce the radiation exposure to levels as low as reasonably achievable (ALARA), the Permittees may conduct alternative inspections of the storage silos. When necessary to reduce radiation exposure for ALARA requirements, instead of inspecting the silos directly, the Permittees may visually inspect waste containers before they are placed in the silos and when they are removed from the silos. The visual inspection may be conducted from a safe distance or remotely via camera to maintain ALARA conditions for personnel.

TABLE E-4 Inspection Schedule for the Auxiliary Hot Cell Unit		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
SAFETY AND EMERGENCY EQUIPMENT **See Table D-10 in Permit Attachment D for additional information**		
Eye wash / safety shower	Operational and in good condition	Monthly
First-aid kit	Present and stocked	Monthly
Spill control and cleanup items	Present, quantities per inventory, and in good condition	Monthly
Personal protective equipment	Present in quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present, appears to be in good condition	Monthly
Telephone(s)	Present and operational	Monthly

TABLE E-4 Inspection Schedule for the Auxiliary Hot Cell Unit		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
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, tops of silo covers	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, no cracks, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. 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)	Daily when and where wastes are treated. Prior to use for consumables. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present, legible, and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Weekly
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Weekly
Labeling	Correct information, correct location, legible	Weekly
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when and where wastes are handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Weekly

TABLE E-4 Inspection Schedule for the Auxiliary Hot Cell Unit		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
Location	Correct aisle space, stable stacking	Weekly

E.9 INSPECTION PLAN FOR THE MANZANO STORAGE BUNKERS

The Permittees shall perform inspections of the Manzano Storage Bunkers (MSB) in accordance with the schedule and requirements in Table E-5.

TABLE E-5 Inspection Schedule for the Manzano Storage Bunkers		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
SAFETY AND EMERGENCY EQUIPMENT **See Table D-12 in Permit Attachment D for additional information**		
Portable eye wash	Operational, accessible, in good condition	Monthly
First-aid kit	Present and stocked	Monthly
Spill control and cleanup items	Present, quantities per inventory, accessible, in good condition	Monthly
Personal protective equipment	Present in quantities per inventory, and in good condition	Monthly
Smoke detector and external light	Present, appears to be in good condition	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 and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present, legible, and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Weekly
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Weekly
Labeling	Correct information, correct location,	Weekly

TABLE E-5 Inspection Schedule for the Manzano Storage Bunkers		
ITEM OR PARAMETER	**INSPECTION CRITERIA**	**INSPECTION FREQUENCY**
	legible	
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when and where wastes are handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Weekly
Location	Correct aisle space, stable stacking	Weekly

E.10 INSPECTION PLAN FOR THE CORRECTIVE ACTION MANAGEMENT UNIT

E.10.1 Inspection, Maintenance, and Repair Activities and Frequencies

The CAMU shall be routinely inspected during the post-closure care period as discussed in the following sections. The CAMU systems associated with the containment cell that will require inspection and maintenance/repair during the post-closure care period include, but are not limited to: (1) the final cover; (2) surface-water diversion structures; (3) the LCRS; (4) the VZMS; and (5) the perimeter security fence, security signs, and gate locks. Inspection and maintenance of all of these systems shall be performed throughout the post-closure care period in accordance with the schedule in Table E-6. Inspections shall be performed on a regularly scheduled basis to ensure the integrity and proper functioning of the waste containment cell and final cover, surface water diversion structures, the LCRS, the VZMS, and the perimeter fence, security signs and gate locks. Maintenance activities are addressed in more detail in Permit Attachment H.

E.10.2 Final Cover System Inspection

The final cover shall be inspected on a quarterly basis. Cover inspections shall note, in writing, deep-rooted plants (with roots at least 8 ft deep at maturity), such as shrubs and trees, by identifying such species; whether there is any settlement of the cover surface in excess of 6 inches; whether animal intrusion burrows in excess of 4 inches in diameter or burrows of species able to burrow 6 ft or deeper are present; erosion of the cover soil in excess of 6 inches deep; contiguous areas with no vegetation in excess of 200 square feet; and any other conditions that may impact the cover's integrity and performance.

The final cover shall also undergo vegetation monitoring quarterly until the vegetative cover is successfully established according to the following criteria:

1. Total percent foliar coverage equals 20 percent (i.e., 20 percent of the land surface is covered with living plants versus 80 percent bare surface area);
2. Of the 20 percent total foliar coverage, 50 percent or greater comprises native perennial species, and 50 percent or less comprises annual species; and

3. No contiguous bare spots greater than 200 square feet (approximately 14 by 14 feet) are present.

If these criteria are met, it shall be concluded that the native community is successfully established on the cover. After the native community is successfully established, full biological inspections shall be conducted annually.

E.10.3 Storm-Water Diversion Structures Inspection

The storm-water diversion structures shall be inspected on a quarterly basis to verify structural integrity and to ensure adequate performance. Inspections shall note, in writing, whether there is any erosion of the channels or sidewalls in excess of 6 inches deep and whether there is any accumulation of silt greater than 6 inches deep or debris that blocks more than one-third of the channel width.

E.10.4 LCRS Inspection

As described in Section A.7.3.1 of Permit Attachment A, the LCRS shall be inspected on a quarterly basis for the presence of leachate using the LCRS pump. For inspection purposes, the LCRS pump shall be manually activated on at least a quarterly basis and on a schedule consistent with the inspection and maintenance schedule for the LCRS outlined in Table E-6 of this Permit Attachment. When the pump is manually activated, leachate will be removed from the sump until the LCRS pump experiences cavitation. At this point the pump will be deactivated and leachate removal will cease. When the pump is manually activated and no leachate is generated a video camera inspection shall be performed to determine whether the pump is experiencing cavitation due to an insufficient leachate level or whether the pump has malfunctioned. If the pump has malfunctioned, the cause of the malfunction shall be determined, and the pump replaced or repaired as necessary. The pump assembly may be removed and properly stored until needed.

E.10.5 VZMS Inspection

During quarterly monitoring events (see Table E-6 of this Permit Attachment), the VZMS components shall be inspected. The inspection shall note, in writing, the condition of the components including protective casings, access covers and doors, instrumentation access boxes, compression caps, locks, and electronic monitoring systems.

E.10.6 Security Fence Inspection

The fence, gates, and warning signs shall be inspected on a quarterly basis. The inspections shall document, in writing, the condition of the fence, including fence wires, posts, gates, gate locks, and warning signs, and note whether there is any excessive accumulations of wind-blown plants and debris that would obscure warning signs, block access to the CAMU containment cell, or would interfere with any waste management activities or with any of the VZMS components or monitoring of any kind.

Table E-6
CAMU Post-Closure Inspection and Maintenance/Repair Schedule

CAMU System to be Inspected	Inspection Parameters	Inspection Frequency	Maintenance/Repair Implementation	Maintenance/Repair Frequency
Final Cover System	Existence of invasive plants or plants with the potential for forming deep roots (at least 8 ft deep at maturity)	Quarterly	Physically remove or otherwise eliminate the invasive or deep-rooting plant	Within 60 days of identification or as soon as seasonal conditions are most favorable for eliminating the plants.
	Settlement of cover surface in excess of 6 inches		Repair cover system damage that exceeds prescribed limits, relocate animals if possible and repair burrows	Within 60 days of discovery of needed repairs[b]
	Animal intrusion burrows in excess of 4 inches in diameter or burrows that appear to be of species able to burrow 6 ft or greater)			
	Erosion of cover soil in excess of 6 inches deep			
	Contiguous areas of no vegetation >200 ft^2		Revegetate barren areas that exceed prescribed limits	Within 60 days of discovery of needed repairs or as soon as possible if seasonal conditions are not appropriate within 60 days
Final Cover System	Full biological inspection, including: Approximate percentage vegetative coverage (actively photosynthesizing) Approximate percentage native vegetation of the total vegetative cover Main plant species growing on the CAMU cover and the approximate percentage of the cover populated by each species.	Annually[a]	Remove plants, revegetate barren areas, relocate animals if possible and repair burrows, augment soil and/or reseed per biologist recommendations	Follow schedule above for each item.
Storm-Water Diversion Structures	Channel or side-wall erosion in excess of 6 inches deep	Quarterly	Repair erosion that exceeds prescribed limits	Within 60 days of discovery of needed repairs[b]
	Accumulations of silt in excess of 6 inches deep		Remove silt and debris accumulations that exceed prescribed limits	
	Debris that blocks more than 1/3 of channel width.			

Table E-6
CAMU Post-Closure Inspection and Maintenance/Repair Schedule

CAMU System to be Inspected	Inspection Parameters	Inspection Frequency	Maintenance/Repair Implementation	Maintenance/Repair Frequency
LCRS	Leachate in sump	Quarterly[c]	Manually activate pump/inspect for leachate collection	Quarterly
	Pump	Quarterly	Maintain/repair pump	Within 60 days of discovery of needed repairs[b]
	Plumbing		Maintain/repair plumbing	
VZMS	Protective casings Access covers and doors Instrumentation access boxes Compression caps	Quarterly	Maintain/repair protective casings, access covers and doors, instrumentation access boxes, and compression caps	Within 60 days of discovery of needed repairs[b]
	Locks		Clean/replace locks	
	Electronic monitoring systems		Maintain calibration and proper operating condition of electronic monitoring systems	
	Aboveground VZMS components		Ensure aboveground VZMS components are protected from weather	
	Monitoring equipment (pump, tubing, gauges, valves, etc.) in need of repair/maintenance			
Security Fence	Presence of wind-blown plants and debris	Quarterly	Remove wind-blown plants and debris	Within 60 days of discovery of needed repairs[b]
	Condition of fence wires, posts, gates, gate locks, and warning signs		Repair broken wire sections and posts Repair and oil gates Clean or replace locks Repair or replace warning signs	
Safety and Emergency Equipment See Table D-14 in Permit Attachment D for additional information	Spill control materials, including sorbent material, brooms and shovels are present, accessible, and in good condition	Monthly	Repair or replace	As soon as possible, in accordance with Section E.3 of this Permit Attachment.
	Fire extinguisher is present, charged, accessible, and in good condition			
	Portable eyewash station is operational and in good condition			

a This inspection will be conducted quarterly until the vegetative cover is successfully established and annually thereafter.
b Maintenance/repairs shall be performed as necessary, based upon the results of inspections.
c The LCRS pump and plumbing shall be maintained/repaired based upon the results of quarterly inspections.
CAMU Corrective Action Management Unit.
ft2 Square foot (feet).
LCRS Leachate Collection and Removal System.
VZMS Vadose Zone Monitoring System

PERMIT ATTACHMENT F PERSONNEL TRAINING PLAN

F.1 INTRODUCTION

This Permit Attachment (F) describes training requirements for employees and any contractors who work at the Permitted Units, including the Corrective Action Management Unit (CAMU) (*See* 40 CFR § 264.16). The primary objective of the training is to prepare those personnel to safely manage hazardous and mixed waste. The degree of training varies with the job duties.

F.2 HAZARDOUS WASTE MANAGEMENT RESPONSIBILITIES

This program provides employees with training relevant to their positions. Personnel shall be given, at a minimum, a basic understanding of the Resource Conservation and Recovery Act (RCRA) regulatory requirements for waste management, emergency procedures, and operating procedures. Some employees shall receive additional classroom and on-the-job training designed for specific duties. In accordance with 40 CFR § 264.16(b) employees who have not received training or are unable to provide relevant and appropriate training documentation shall receive the required training within six months of assignment to hazardous and mixed waste management activities and prior to managing those wastes without supervision.

F.3 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES

Personnel who are directly involved in hazardous and mixed waste handling shall be informed of the potential hazards, procedures for safe handling of wastes, and emergency procedures. Individuals in supervisory or decision-making positions shall receive a comprehensive overview of all aspects of waste management relevant to the Permitted Unit. Personnel with specific or short-term assignments, such as visitors or temporary contractors not directly involved in waste management, may receive a site-specific safety briefing with emergency response information necessary for their duties as an alternative to the training specified in this Permit Attachment. The training program shall include a combination of classroom instruction, reviews of written documents, and on-the-job training exercises as appropriate for the position. Training course content and frequency shall be as shown in Table F-1 of this Permit Attachment. As regulatory compliance requirements change training courses shall be evaluated and modified, as necessary.

F.4 JOB TITLE/JOB DESCRIPTION AND TRAINING RECORDS

Job titles and descriptions of hazardous and mixed waste management personnel are provided in Tables F-4 through F-14 of this Permit Attachment. The job descriptions include requisite skills, education, and/or other qualifications as well as hazardous and mixed waste management job duties. The required training for each job title is listed in Tables F-1 and F-2 of this Permit Attachment. Additional required training for each job title for workers at the TTU are listed in Table F-3 of this Attachment.

In accordance with 40 CFR §264.16(d)(1) and (d)(2), a file of all Permitted Unit personnel, including their job titles and job descriptions shall be maintained at each Permitted Unit. For each job title, the file shall contain requisite qualifications, and training records.

In accordance with 40 CFR § 264.16(d) (4), training records shall be kept to document the type and amount of training received by employees at each Permitted Unit. Contents of these records shall include at a minimum, the following:

1. Job title for each position related to hazardous or mixed waste management;
2. The name of the employee assigned to each job title;
3. Written job description;
4. Written training requirements for each job title;
5. Records that document training received, such as attendance or signature lists, certificates, memoranda of training, or reports from computerized databases of training completion status.

Current-year training records shall be kept at the Unit to which employees are or were assigned and training records for previous years shall be maintained in electronic or physical form in the Facility Operating Record.

For MSB personnel, all training records to be maintained at the Unit shall be maintained at the RMWMU.

For former employees, training records shall be maintained in the Facility Operating Record for a minimum of three years from the date the employee last worked at a Permitted Unit in accordance with 40 CFR § 264.16(e).

F.5 TRAINING DIRECTOR

The Unit-specific Department Manager or designee shall function as the Training Director. The Manager shall maintain responsibility for ensuring that all Unit-specific required training is administered to all employees. The Training Director shall be knowledgeable about the hazardous waste management regulations, this Permit and specific hazardous or mixed waste management operations employed at the Permitted Unit. The Training Director shall ensure that the training required for individual employees is administered in accordance with the requirements of this Permit.

The Training Director may perform or delegate training to qualified trainers. Trainers shall be qualified on the basis of attainment of one or more of the following:

1. Certification in the subject matter addressed by the training;
2. Demonstration of knowledge and competence in the training subject; or,
3. Previous on-the-job or classroom training in the topics covered.

TABLE F-1
Training Content and Frequency

A. <u>RCRA Regulation Training</u>

Duration: Variable (1-4 hours)

Frequency: Initial/Periodic Refresher (at least annually)

Method: Classroom instruction, on-the-job training, document review.

Minimum content may include (as applicable to the specific Permitted Unit to which an employee is assigned):

1. Identification of hazardous waste
2. Treatment, storage, and disposal requirements
3. Generator and transporter requirements

B. <u>RCRA Contingency Plan and Emergency Procedures</u>

Duration: Variable (1-4 hours)

Frequency: Initial/Annual Refresher

Method: Classroom or online instruction, document review, classroom and hands-on exercises

Minimum content must include (as applicable to the specific Permitted Unit to which an employee is assigned):

1. Emergency notification procedures;
2. Response to emergencies
3. Evacuation route and procedures
4. Emergency equipment and personal protective equipment
5. Emergency Coordinator responsibilities
6. Post-emergency actions
7. Contingency Plan
8. Shutdown procedures (if any)

TABLE F-1 (Continued)

C. <u>Technical Work Documents and Refresher</u>

Duration: As appropriate

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 include, but are not limited to, the following as needed:

1. Waste Analysis Plan
2. Unit-specific safety practices
3. Unit-specific operational procedures (e.g., loading and unloading)
4. Unit security, entry, and control
5. Operation, maintenance, and inspection of equipment
6. Prevention of the ignition/reaction of ignitable/reactive wastes
7. Permit conditions
8. Emergency response
9. Unit tour

D. <u>Hazardous Waste Operations and Emergency Response</u>

Duration: Variable (24 hours or more with an 8-hour refresher)

Frequency: Initial/Refresher (at least annually)

Method: Classroom instruction, hands-on exercises

Minimum Content:

1. Hazardous and mixed waste management and regulations
2. Sources of information
3. Compatibility of hazardous and mixed wastes
4. Personnel protection
5. Principles of safety
6. Emergency procedures

TABLE F-2
Training for Each Job Title

Required Training (*See* Table F-1)	**JOB TITLES**										
	Training Director	**RCRA Project Leader**	**Emergency Coordinator**	**Chemist**	**Field Technician (Waste Handler)**	**Special Projects Staff**	**Inspector**	**Transpor-tation Manager**	**Unit Operations Support Staff**	**CAMU Leader/ Coordinator**	**CAMU Field Technician**
Resource Conservation and Recovery Act (RCRA) Regulations	X	X	X	X	X	X	X	X		X	X
Contingency Plan and Emergency Procedures	X	X	X	X	X	X	X	X	X	X	X
Technical Work Documents		X		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		X	X
Hazardous Waste Operations and Emergency Response (8-hour course)	X	X	X	X	X	X	X	X		X	X

TABLE F-3
Thermal Treatment Unit Personnel Training Content

A. **Explosives Personnel Safety Course**

Duration: Variable (at least 16 hours)

Frequency: Initial

Method: Classroom instruction

Minimum content may include:

1. Basic explosives definitions
2. Overview of explosives and explosive device categories and characteristics
3. Initiation stimuli and safety guidelines for avoiding accidental ignition
4. Standards for explosives operations, including compatibility, storage, and standard operating procedures

B. **Operating Procedures of the Thermal Treatment Unit**

Duration: Variable (1 to 4 hours)

Frequency: Annually

Method: Classroom instruction, on-the-job training, and/or document review

Minimum content may include:

1. Overview of written operating procedures
2. Overview of the Waste Analysis Plan
3. Safety practices
4. Security, site entry, and site control
5. Unit operations
6. Unit equipment and structures
7. Procedures to prevent the reaction of reactive waste
8. Permit requirements for the Thermal Treatment Unit

F.6 EMERGENCY TRAINING

Permitted Unit employees shall participate in Unit-specific emergency response training to assure effective response to emergencies. Emergency response training consists of classroom or online instruction, document reviews, and classroom or hands-on exercises. The content shall be reviewed at least annually and revised as necessary to incorporate changes in regulatory compliance requirements. Topics covered shall include at a minimum:

1. Emergency notification procedures;
2. Response to emergencies, including fires, explosions, and releases of hazardous and mixed wastes;
3. Procedures for using, inspecting, maintaining, and replacing emergency equipment and personal protective equipment;
4. Procedures for the shutdown of operations;
5. Procedures for evacuation (i.e., communications/alarms);
6. Responsibilities of the Emergency Coordinator;
7. Post-emergency reports and actions; and
8. Contingency Plan (See Permit Attachment D).

F.7 IMPLEMENTATION OF TRAINING PROGRAMS

The training program shall be implemented to assure that Unit personnel receive appropriate training in a timely manner.

Table F-4
Job Title, Description, and Qualifications:
RCRA Training Director

Job Title: Training Director

Job Description:

The Training Director shall ensure that all personnel meet the training requirements of this Permit. Examples of duties are:

- Identify and coordinate training required by RCRA regulations, this Permit, and Facility waste management worker-training requirements;
- Ensure maintenance of training records required by RCRA regulations and this Permit and demonstrate compliance with Facility waste management worker training requirements for all personnel; and
- Inform personnel when specific training is required.

Skill, Education, and Other Qualifications:

At a minimum, the qualifications for the Training Director are:

- Bachelor's degree from an accredited post-secondary institution; or,
- Three years' experience with RCRA hazardous or mixed waste management regulations.

Training:

Initial and refresher training shall be as required in Table F-1 and Table F-2 of this Permit Attachment.

Table F-5
Job Title, Description, and Qualifications:
RCRA Project Leader

Job Title: RCRA Project Leader

Job Description:

A RCRA Project Leader oversees, supervises, and coordinates collection, storage, and shipment of hazardous waste at a Permitted Unit. Examples of duties are:

- Ensure operation of the Permitted Unit in compliance with applicable RCRA regulations and this Permit;
- Identify and coordinate training required by RCRA regulations and this Permit;
- Determine training and reading requirements specific to positions, tasks or Unit activities;
- Coordinate activities related to management of hazardous or mixed waste at a Permitted Unit;
- Ensure maintenance of records required by RCRA regulations and this Permit, such as training records, inspection records, waste analysis records, and Contingency Plan;
- Ensure maintenance of additional records required for the Unit Operating Record;
- Prepare, review, and submit documents on waste management activities;
- Ensure compliance with RCRA regulations and this Permit for hazardous or mixed waste shipments; and
- Coordinate activities pertaining to hazardous or mixed waste audits.

Skill, Education, and Other Qualifications:

At a minimum, the qualifications for a RCRA Project Leader are:

- Bachelor's degree from an accredited post-secondary institution; or,
- Three years' experience in managing hazardous or mixed waste.

Training:

Initial and refresher training shall be as required in Table F-1 and Table F-2 of this Permit Attachment.

Table F-6
Job Title, Description, and Qualifications:
Emergency Coordinator

Job Title: Emergency Coordinator

Job Description:
An Emergency Coordinator evaluates, coordinates, and implements emergency actions in accordance with the Contingency Plan during an emergency (as defined in the Contingency Plan, Permit Attachment D). As defined in the Contingency Plan, Emergency Coordinator duties during and after an emergency include, but are not limited to:

- Identify the character, exact source, amount, and extent of released material or hazardous or mixed waste by observation, records reviews, or chemical analysis;
- Assess possible 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 hazardous or mixed waste at the Unit including stopping processes and operations, collecting and containing released waste, and removing or isolating containers;
- Monitor for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment if the Unit stops operations prior to restoration of normal operations;
- Provide for properly treating, storing, or disposing of recovered material, waste, contaminated soil or surface water, or any other media or material;
- Ensure that no waste that may be incompatible with the released waste is treated, stored, or disposed of until cleanup procedures are completed; and
- Ensure that all equipment listed in the Contingency Plan and site-specific contingency plan for any affected Unit is cleaned and fit for its intended use before resuming operations.

Skill, Education, and Other Qualifications:
At a minimum, the qualifications for an Emergency Coordinator are:

- High school diploma or equivalent;
- Three years' experience working with hazardous or mixed waste.

Training:
Initial and refresher training will be as required in Table F-1 and Table F-2 of this Permit Attachment.

Table F-7
Job Title, Description, and Qualifications:
Chemist

Job Title: Chemist

Job Description:
A Chemist conducts supporting characterization of hazardous and mixed waste managed at the Facility. Examples of duties are:

- Evaluate data provided by the initial generator of a solid waste, and obtain additional information as needed for hazardous waste determination;
- Determine whether solid wastes are hazardous or mixed wastes as defined in 40 CFR Part 261;
- Assign appropriate hazardous waste codes to hazardous and mixed wastes;
- Identify treatment options and treatment standards for hazardous and mixed wastes to be treated on site;
- Evaluate data or information for treated wastes and treatment residues to characterize the residues, assign appropriate hazardous waste codes, and determine land disposal restrictions; and,
- Segregate hazardous and mixed waste.

Skill, Education, and Other Qualifications:
At a minimum, the qualifications for a Chemist are:

- Bachelor's degree in chemistry or related field, and
- Two years' experience working with hazardous or mixed waste.

Training:
Initial and refresher training will be as required in Table F-1 and Table F-2 of this Permit Attachment.

Table F-8
Job Title, Description, and Qualifications:
Field Technician

Job Title: Field Technician (Waste Handler)

Job Description:
A Waste Handler conducts hazardous and mixed waste handling, segregating, and storing operations at a Permitted Unit. Examples of duties are:

- Transport and handle hazardous and mixed waste;
- Conduct daily inspections of Permitted Units where hazardous and mixed waste loading, unloading, or treatment operations occur;
- Perform basic maintenance and housekeeping activities;
- Segregate hazardous and mixed waste
- Sort, package, mark, label, store, treat, and segregate hazardous and mixed waste; and
- Compile information for the Facility or Unit Operating Record.

Skill, Education, and Other Qualifications:

At a minimum, the qualifications for a Waste Handler are:

- High school diploma or equivalent; or
- Two years' experience in handling hazardous or mixed waste.

Training:

Initial and refresher training shall be as required in Table F-1 and Table F-2 of this Permit Attachment.

Table F-9
Job Title, Description, and Qualifications:
Special Project Staff

Job Title: Special Projects Staff

Job Description:
A Special Projects Staff member performs duties associated with non-routine and special projects at a Permitted Unit. Examples of duties are:

1. Handle hazardous and mixed waste during a special project;

- Perform special project related maintenance and housekeeping activities;
- Operate hazardous and mixed waste treatment equipment associated with a special project;
- Store, label, and segregate hazardous and mixed waste associated with a special project;
- Identify and schedule special project activities involving hazardous waste or mixed waste;
- Monitor hazardous or mixed waste special project activities for safety and procedural compliance; and
- Compile special project information for the Facility or Unit Operating Record.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualifications for a Special Projects Staff member are:

- High school diploma or equivalent; or
- Two years' experience in handling hazardous or mixed waste.

Training:
Initial and refresher training shall be as required in Table F-1 and Table F-2 of this Permit Attachment.

Table F-10
Job Title, Description, and Qualifications:
Inspector

Job Title: Inspector

Job Description: An Inspector conducts inspections of both hazardous or mixed waste and a Permitted Unit. Examples of duties are:

- Inspect at least daily areas subject to spills of hazardous or mixed waste when these areas are in use;
- Inspect at least weekly containers holding hazardous or mixed waste, container equipment, and secondary containment;
- Inspect at least monthly emergency equipment, security devices, and structural equipment at a Permitted Unit; and
- Record 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 qualifications for an Inspector are:

- High school diploma or equivalent; or
- Two years' experience working with hazardous or mixed waste.

Training:
Initial and refresher training shall be as required in Table F-1 and Table F-2 in this Permit Attachment.

Table F-11
Job Title, Description, and Qualifications:
Transportation Manager

Job Title: Transportation Manager

Job Description:
A Transportation Manager coordinates the shipment of hazardous or mixed waste from a Permitted Unit. Examples of duties are:

- Prepare documentation and paperwork for off-site shipments of hazardous or mixed waste;
- Ensure proper packaging, labeling, marking, and placarding are in place for off-site shipments of hazardous and mixed waste; and
- Coordinate the loading of hazardous and mixed waste for off-site shipment.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualifications for a Transportation Manager are:

- High school diploma or equivalent; or
- Two years' experience coordinating shipments of hazardous or mixed waste.

Training:
Initial and refresher training shall be as required in Table F-1 and Table F-2 in this Permit Attachment.

Table F-12
Job Title, Description, and Qualifications:
Unit Operations Support Staff

Job Title: **Unit Operations Support Staff**

Job Description:
A Unit Operations Support Staff member has unescorted access to the Permitted Units but performs no activities that require contact with hazardous or mixed waste or waste containers. Unit Operations Support Staff include, but are not limited to:

- Administrative personnel;
- Information systems (database) personnel;
- Generator interface personnel, and
- Radiation support personnel. Note that the duties of radiation support personnel involve collecting radiological data; this requires contact with hazardous and mixed wastes and waste containers but is not consistent with the duties of a field technician in Table F-8.

Skill, Education, and Other Qualifications:
The Training Supervisor determines the requisite level of experience for each position.

Training:
Initial and refresher training shall be as required in Table F-1 and Table F-2 of this Permit Attachment.

Table F-13
Job Title, Description, and Qualifications:
CAMU Project Leader/Operations Coordinator

Job Title: **Corrective Action Management Unit (CAMU) Project Leader/Operations Coordinator**

Job Description:
To provide ongoing oversight, supervision, and coordination at the CAMU during the post-closure care period for vadose zone monitoring and inspection and maintenance of the containment cell and Vadose Zone Monitoring System (VZMS) in compliance with this Permit. Examples of duties are:

- Coordinate and implement VZMS monitoring activities;
- Compile and archive VZMS monitoring data into the Operating Record;
- Produce annual monitoring results reports and other reports;
- Maintain/revise sampling and analysis plans for VZMS monitoring, as required;
- Coordinate and implement leachate removal and management activities;
- Ensure necessary inspections and required maintenance are properly conducted;
- Assure the maintenance of records, such as training records, inspection and maintenance records, and data reports, as specified in this Permit;
- Supervise the inventory, maintenance, and repair of all tools, supplies, equipment, and vehicles (i.e., ensure that they are in good working order) used for monitoring and maintenance operations; and
- Provide oversight of CAMU Field Technicians.

Required Education, Skill, and/or Experience:

- Bachelors' degree in chemistry, biology, physical science, engineering, environmental science; or
- Minimum of 5 years' experience in waste management operations and/or environmental restoration; and
- Project management experience.

Training:

- Initial and refresher training shall be as required in Table F-1 and Table F-2 of this Permit Attachment.

Table F-14
Job Title, Description, and Qualifications:
CAMU Field Technician

Job Title: Corrective Action Management Unit (CAMU) Field Technician

Job Description:
Perform post-closure monitoring, inspection, and maintenance activities as instructed by the CAMU Project Leader/Operations Coordinator. Examples of duties are:

- Perform VZMS monitoring activities;
- Perform inspection and maintenance activities; and
- Assist CAMU Project Leader/Operations Coordinator with leachate removal and management activities.

Required Education, Skill, and/or Experience:
The Training Supervisor determines the requisite level of experience for each position.

Training:
Initial and refresher training shall be as required in Table F-1 and Table F-2 of this Permit Attachment.

PERMIT ATTACHMENT G CLOSURE PLANS

G.1 CLOSURE PLAN FOR THE HAZARDOUS WASTE HANDLING UNIT

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G.1.1 INTRODUCTION

This closure plan details the activities necessary to close the Hazardous Waste Handling Unit south of Technical Area I at Sandia National Laboratories, hereafter referred to as the HWHU. This closure plan incorporates the requirements in 40 CFR §§ 264.110 through 264.116, 264.178, and Permit Part 6.

The HWHU is located south of TA-I, north of the entrance to TA-II, and occupies 1.35 acres enclosed within a fence on Facility property between the two Technical Areas. For purposes of closure the HWHU consists of four structures, an outdoor loading and driving surface, various equipment, a storm water catchment pond, and environmental media. Structures at the HWHU include the Hazardous Waste Packaging Building (Building 959), the Hazardous Waste Storage Building (Building 958), and two modular storage buildings (Buildings 958B and 958C). A covered storage pad, two office trailers, six storage sheds located near the eastern boundary of the HWHU, and associated equipment, furnishings, and tools that do not manage or contact hazardous or mixed wastes are not subject to the closure procedures and performance standards in this closure plan. A complete physical and operational description of the HWHU is in Permit Attachment A, Section A.2. The various HWHU components are shown generally on Figure G.1-1.

The HWHU is permitted to repackage and store hazardous and mixed wastes with the EPA waste codes listed in Permit Attachment B, Section B.2, in containers. The storm water catchment pond is designed to receive storm water and snowmelt run-off from the HWHU. The operating capacity of the four buildings is specified at Permit Attachment J, Table J-1.1.

It is anticipated that the HWHU will be clean closed. The Permittees shall attain clean closure of the HWHU by meeting the closure performance standards specified at Permit Section 6.2.1. Final closure of the HWHU will be complete when the New Mexico Environment Department (Department) approves the Closure Report and certification required under Permit Part 6, Section 6.10 and Section 6.0 of this Closure Plan.

G.1.2 CLOSURE PROCESS

The Permittees shall, in accordance with Permit Part 6, Section 6.3.1, notify the Department in writing that they have initiated closure at the HWHU.

The Permittees shall, in accordance with Permit Part 6, Section 6.3.2 and Table 6.1, complete all HWHU closure activities.

The Permittees shall, in accordance with Permit Section 6.3.4, remove all hazardous and mixed waste from the HWHU no later than 90 days after initiating closure at the Unit, and shall also remove any solid waste that adversely interferes with closure activities.

The Permittees shall, in accordance with Permit Section 6.3.5, conduct a records review and structural assessment of the HWHU and shall submit the review and assessment in the form of a written report in accordance with that Section.

The Permittees shall, in accordance with Permit Section 6.3.6, decontaminate or remove all contaminated structures and equipment at the HWHU.

The Permittees shall, in accordance with Permit Section 6.3.7 and Section 3.0 (below), perform decontamination verification sampling of all structures and equipment at the HWHU that were required to be decontaminated.

The Permittees shall, in accordance with Permit Section 6.3.8 and Section 3.0 (below), sample soils and base materials (*e.g.*, gravel) associated with HWHU to quantify constituents of concern associated with any releases of hazardous or mixed wastes.

The Permittees shall ensure that soils and base materials at the HWHU contaminated with constituents of concern that pose an unacceptable risk to human health (based on the closure criteria in Permit Section 6.2.1) or the environment as specified in Permit Section 6.3.8 are removed from the Permitted Unit in accordance with Permit Section 6.3.9. The complete removal shall be verified by the Permittees in accordance with Permit Section 6.3.9.

If the contaminated soil or other environmental media cannot be removed because it would be impracticable, the soil or other environmental media shall be subject to corrective action under Permit Section 6.8.

G.1.3 SAMPLING AND ANALYSIS PLAN

This sampling and analysis plan identifies: 1) the constituents of concern at the HWHU, 2) the locations where sampling shall occur, 3) the laboratory analytical methods that shall be employed to quantify analyte concentration in samples, and 4) the quality assurance procedures to be utilized during closure.

The constituents of concern at the HWHU shall be determined in accordance with Permit Sections 6.3.5 and 6.5(1). A preliminary list of groups of constituents is presented in Table G.1-1 of this Permit Attachment; the list shall be modified at the time of closure if necessary in accordance with Permit Section 6.3.5.

The Permittees shall collect wet-wipe and soil samples, and perform sample quality assurance procedures in accordance with Permit Sections 6.3.10.1, 6.3.10.2, and 6.3.10.3.

The Permittees shall sample soils and base materials at the applicable locations identified at Permit Section 6.3.8. Soil sampling locations are identified in part on Figure G.1-1. Because of the length of the storm water catchment pond, the Permittees shall also collect two samples at the specified depths at each of three locations within the pond, the east and west ends and in the middle.

The Permittees shall sample structures and equipment at the applicable locations identified in accordance with Permit Section 6.3.7.

The wet-wipe sampling locations to verify decontamination at Buildings 958, 959, and 958B/958C are identified in part on Figures G.1-2, G.1-3, and G.1-4 respectively.

Sampling locations may vary from those shown in the figures due to conditions at closure. Sampling locations may also change as a result of amendments to this closure plan, such as amendments required under Permit Section 6.6.

The Permittees shall handle samples as specified at Permit Part 8, Section 8.10.2.9.

The Permittees shall utilize the laboratory analytical methods, the sample preservation criteria, and the sample holding times as specified in Table G.1-1, as the information in the table may be updated via a closure plan amendment. The Permittees shall abide with the requirements for chemical analyses at laboratories as specified at Permit Part 8, Section 8.10.3.

The Permittees shall document field activities associated with closure as specified at Permit Section 8.10.2.14.i.

Table G.1-1
Sampling Requirements[1]

Parameter	Laboratory Method(s)	Preservation	Holding Time
Metals (Total: Ag, As, Ba, Be, Cd, Cr, Hg, Ni, Pb, Sb, Se, and Tl)	6010/6020/ 7470/7471	None	6 months (except Hg 28 days)
VOCs	8260	Headspace free, Cool to 4°C	14 days
SVOCs	8270	Cool to 4°C	14 days
Dioxin/Furan Congeners	8280, 8290	Place in dark and cool to 4°C	30 days
PCBs	8080/8082	Cool to 4°C	14 days
Herbicides	8150/8151	Cool to 4°C	14 days
Cyanide	9010/9012	Cool to 4°C	14 days

[1] Methods are EPA SW-846 Methods, as revised and updated.

G.1.4 AMENDMENT TO THIS CLOSURE PLAN

The Permittees shall submit permit modification requests to amend this Closure Plan, if needed, in accordance with Permit Section 6.6.

G.1.5 WASTES GENERATED FROM CLOSURE ACTIVITIES

The Permittees shall ensure that waste (*e.g.*, demolition debris and contaminated soil) generated from closure of the HWHU is managed in compliance with all applicable state, federal, and local requirements (*see* 40 CFR § 264.114).

G.1.6 CLOSURE REPORT AND CERTIFICATION

No later than 60 days after completing closure of the HWHU, the Permittees shall in accordance with Permit Section 6.10 submit a closure report to the Department for review and approval.

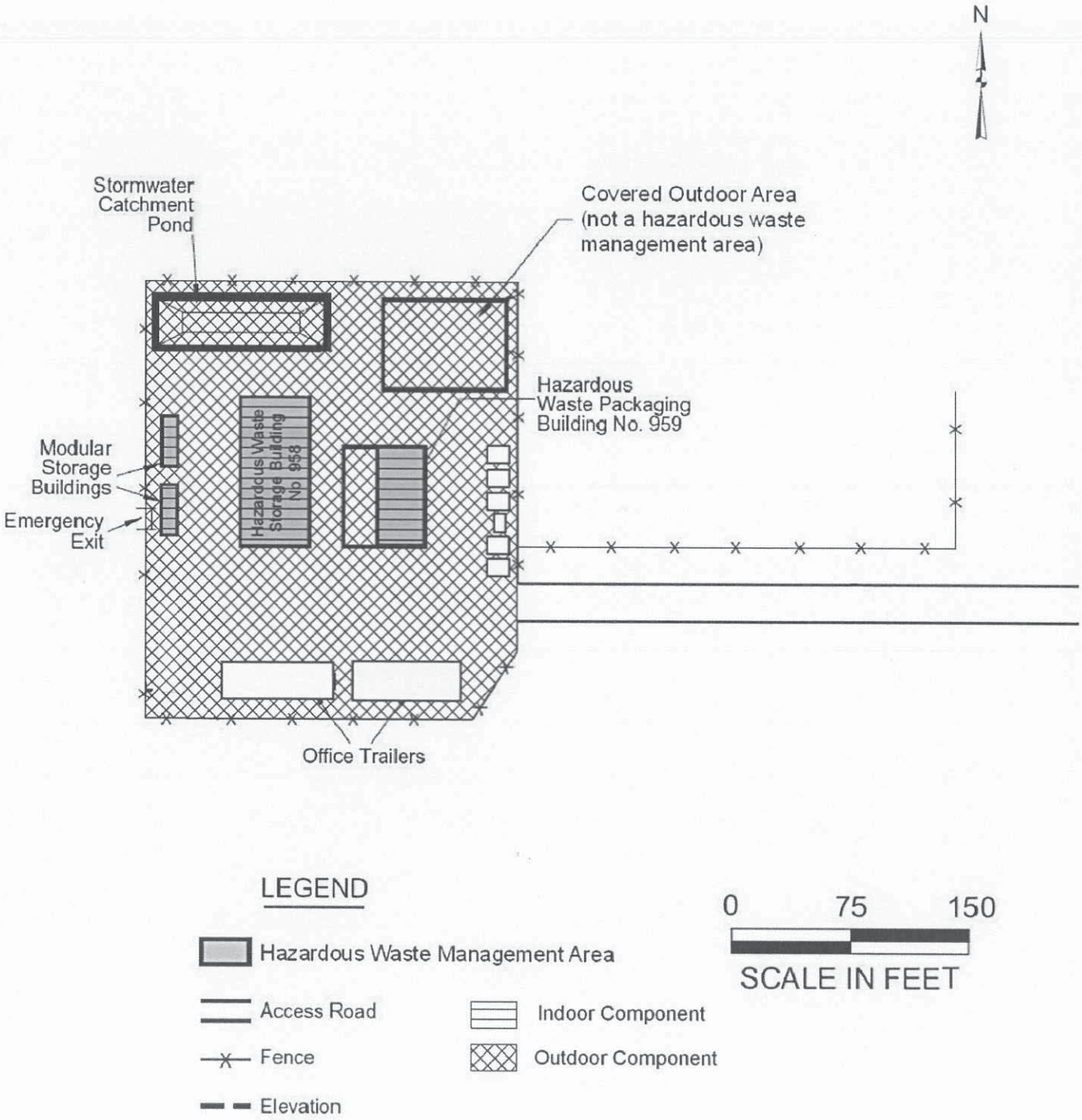
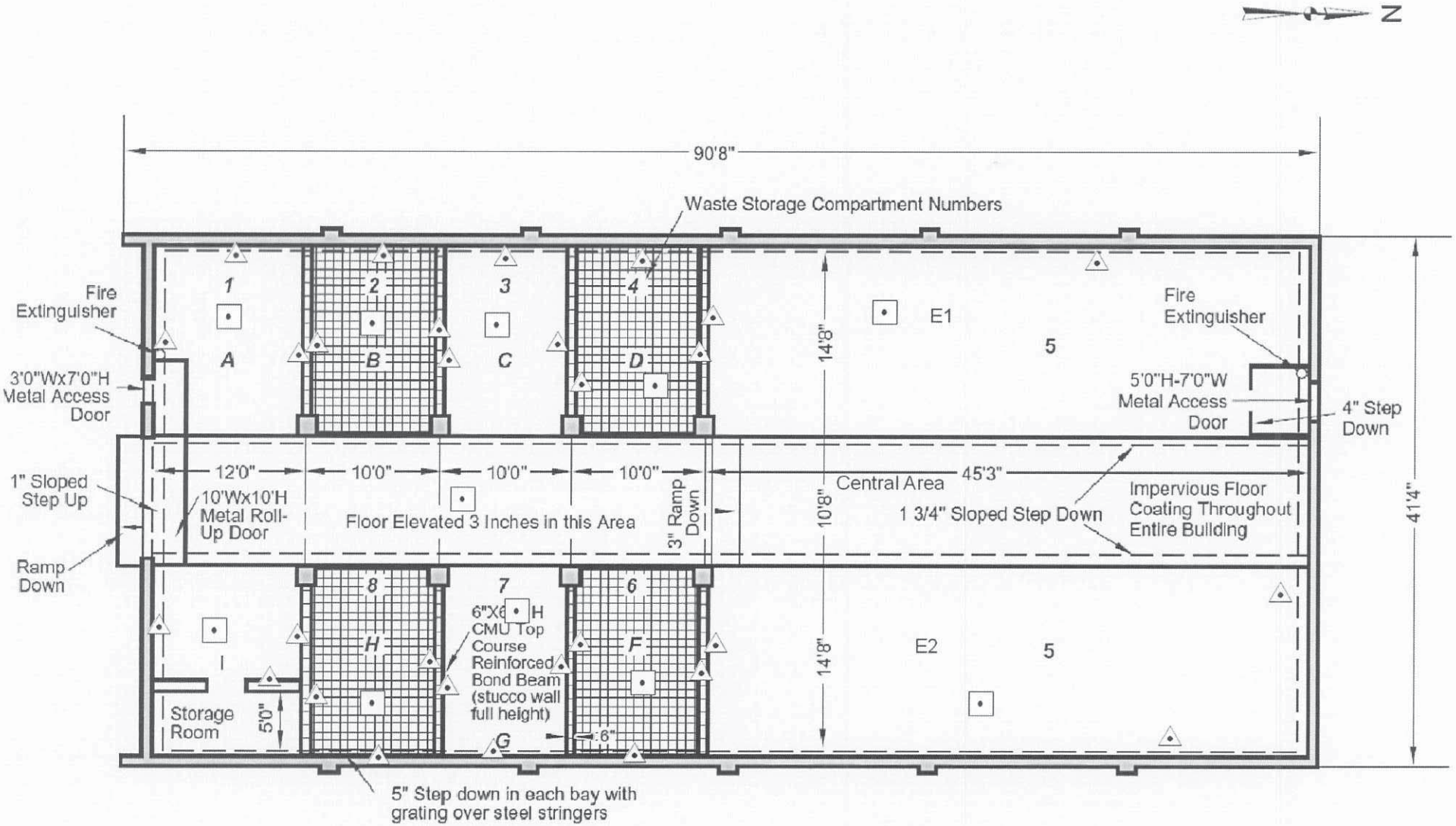


Figure G.1-1
Indoor and Outdor Components at the Hazardous Waste Management Unit

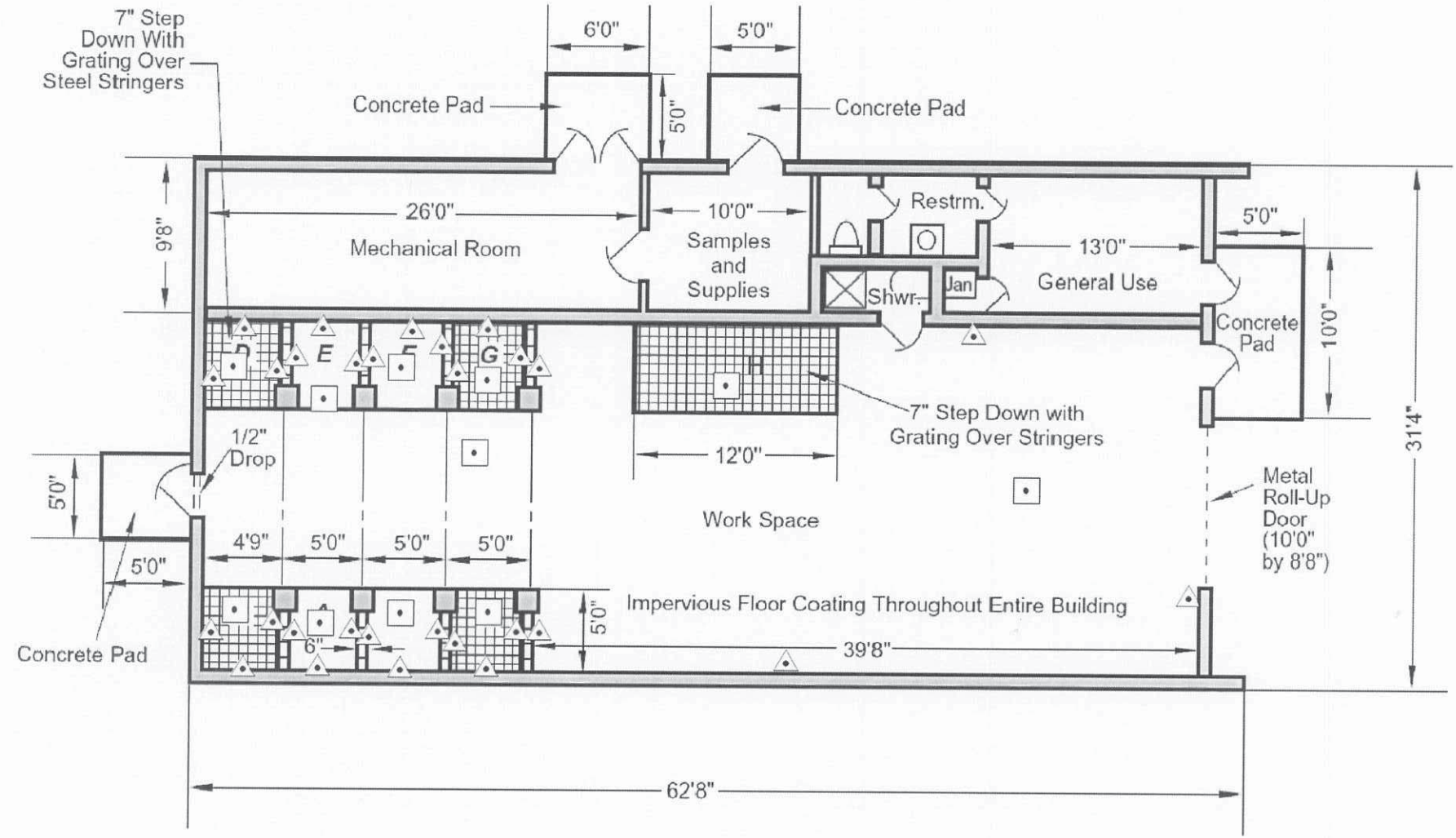


Actual locations may vary from the figure.

Legend

- floor (11)
- wall (29)

Figure G.1-2
HWHU Building 958 Sampling Locations

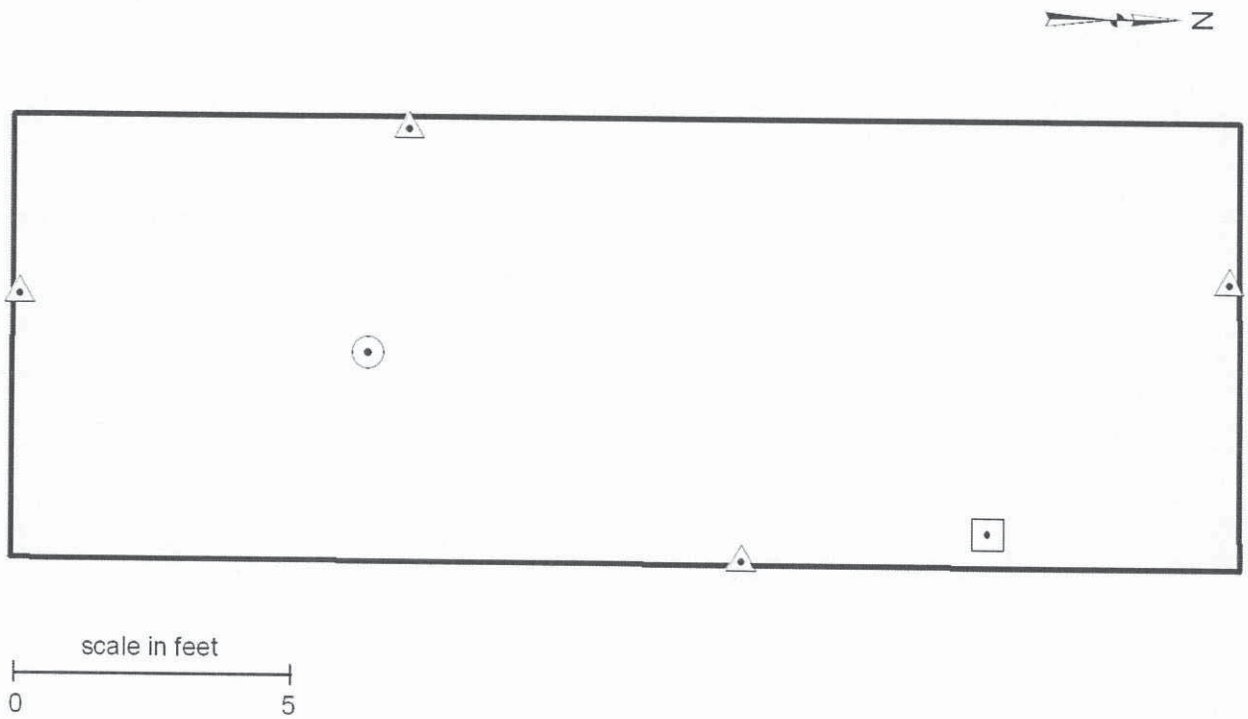


Actual locations may vary from the figure.

floor (11)

wall (29)

Figure G.1-3
HWHU Building 959 Sampling Locations



Actual locations may vary from the figure.

Note: Same sample plan for both modular buildings.

floor (1)

wall (4)

ceiling (1)

Figure G.1-4
HWHU Buildings 958B and 958C Sampling Locations

G.2 CLOSURE PLAN FOR THE THERMAL TREATMENT UNIT

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G.2.1 INTRODUCTION

This closure plan details the activities necessary to close the Thermal Treatment Unit at Technical Area III at Sandia National Laboratories, hereafter referred to as the TTU. This closure plan incorporates the requirements in 40 CFR §§ 264.110 through 264.116, 264.601 through 264.603, and Permit Part 6.

The TTU is a steel burn pan and cage located in a fenced area on a concrete pad south of Building 6715 and is surrounded by an earthen berm. The area potentially impacted by the TTU and therefore subject to closure extends outside the TTU caged area and includes ancillary piping and equipment, a loading area, and soils potentially impacted by particulate deposition and surface water run-off. A complete physical and operational description of the TTU is in Permit Attachment A, Section A.3. The various TTU components are shown generally on Figures G.2-1 and G.2-2.

The TTU treats reactive (*i.e.*, explosive) and ignitable hazardous wastes with the EPA waste codes listed in Permit Attachment B, Section B.1.

It is anticipated that the TTU will be clean closed. The Permittees shall attain clean closure of the TTU by meeting the closure performance standards specified at Permit Section 6.2.1. Final closure of the TTU will be complete when the New Mexico Environment Department (Department) approves the Closure Report and certification required under Permit Part 6, Section 6.10 and Section 7.0 of this Closure Plan.

G.2.2 CLOSURE PROCESS

The Permittees shall, in accordance with Permit Part 6, Section 6.3.1, notify the Department in writing that they have initiated closure at the TTU.

The Permittees shall, in accordance with Permit Part 6, Section 6.3.2 and Table 6.1, complete all TTU closure activities.

The Permittees shall, in accordance with Permit Section 6.3.4, remove all hazardous waste from the TTU no later than 90 days after initiating closure at the Unit, and shall also remove any solid waste that adversely interferes with closure activities.

The Permittees shall, in accordance with Permit Section 6.3.5, conduct a records review and structural assessment of the TTU and shall submit the review and assessment in the form of a written report in accordance with that Section.

The Permittees shall, in accordance with Permit Section 6.3.6, decontaminate or remove all contaminated structures and equipment at the TTU.

The Permittees shall, in accordance with Permit Section 6.3.7 and Section 3.0 (below), perform decontamination verification sampling of all structures and equipment at the TTU that were required to be decontaminated.

The Permittees shall, in accordance with Permit Section 6.3.8 and Section 3.0 (below), sample soils and base materials (*e.g.*, gravel) associated with TTU to quantify constituents of concern associated with any releases of hazardous or mixed wastes.

The Permittees shall ensure that soils and base materials at the TTU contaminated with constituents of concern that pose an unacceptable risk to human health (based on the closure criteria in Permit Section 6.2.1) or the environment as specified in Permit Section 6.3.8 are removed from the Permitted Unit in accordance with Permit Section 6.3.9. The complete removal shall be verified by the Permittees in accordance with Permit Section 6.3.9.

If the contaminated soil or other environmental media cannot be removed because it would be impracticable, the soil or other environmental media shall be subject to corrective action under Permit Section 6.8.

G.2.3 SAMPLING AND ANALYSIS PLAN

This sampling and analysis plan identifies: 1) the constituents of concern at the TTU, 2) the locations where sampling shall occur, 3) the laboratory analytical methods that shall be employed to quantify analyte concentration in samples, and 4) the appropriate quality assurance procedures to be utilized during closure.

The constituents of concern at the TTU shall be determined in accordance with Permit Sections 6.3.5 and 6.5(1). A preliminary list of constituents and groups of constituents is presented in Table G.2-1 of this Permit Attachment; the list shall be modified at the time of closure if necessary in accordance with Permit Section 6.3.5.

The Permittees shall collect wet-wipe and soil samples, and perform sample quality assurance procedures in accordance with Permit Sections 6.3.10.1, 6.3.10.2, and 6.3.10.3.

The Permittees shall sample soils and base materials at the applicable locations identified at Permit Section 6.3.8 and Figures G.2-1 and G.2-2.

The Permittees shall sample structures and equipment at the applicable locations identified in accordance with Permit Section 6.3.7.

Sampling locations may vary from those shown in the figures due to conditions at closure. Sampling locations may also change as a result of amendments to this closure plan, such as amendments required under Permit Section 6.6.

The Permittees shall handle samples as specified at Permit Part 8, Section 8.10.2.9.

The Permittees shall utilize the laboratory analytical methods, the sample preservation criteria, and the sample holding times as specified in Table G.2-1, as the information in the table may be updated via a closure plan amendment. The Permittees shall abide with

the requirements for chemical analyses at laboratories as specified at Permit Part 8, Section 8.10.3.

The Permittees shall document field activities associated with closure as specified at Permit Section 8.10.2.14.i.

Table G.2-1
Sampling Requirements[1]

Parameter	Laboratory Method(s)	Preservation	Holding Time
Total silver	6010/6020	None	6 months
VOCs	8260	Headspace free, Cool to 4°C	14 days
SVOCs	8270	Cool to 4°C	14 days
Dioxin/Furan Congeners	8280, 8290	Cool to 4°C	30 days
High Explosives	8330	Cool to 4°C	14 days

[1] Methods are EPA SW-846 Methods, as revised and updated.

G.2.4 AMENDMENT TO THIS CLOSURE PLAN

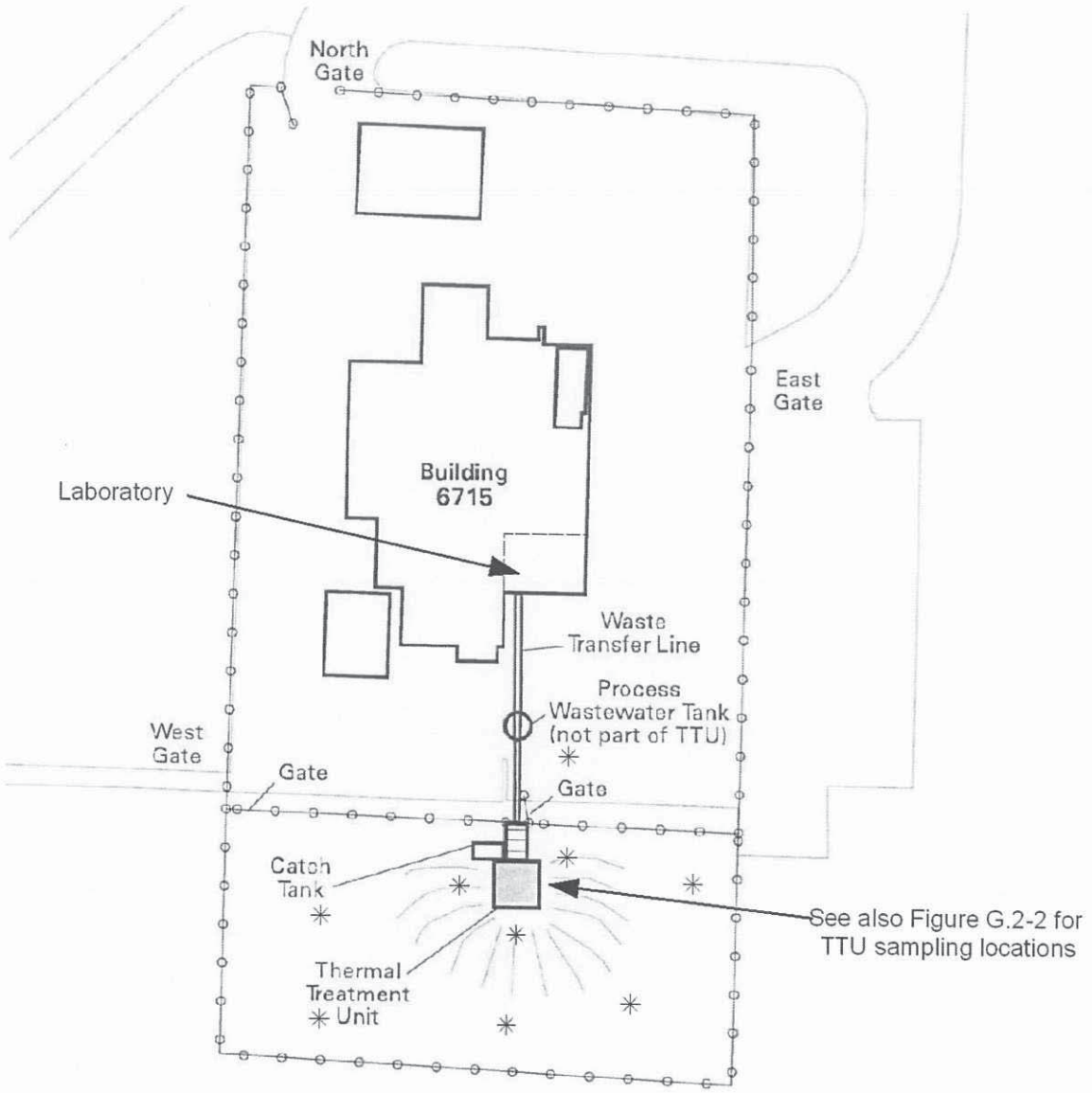
The Permittees shall submit permit modification requests to amend this Closure Plan, if needed, in accordance with Permit Section 6.6.

G.2.5 WASTES GENERATED FROM CLOSURE ACTIVITIES

The Permittees shall ensure that waste (*e.g.*, demolition debris and contaminated soil) generated from closure of the TTU is managed in compliance with all applicable state, federal, and local requirements (*see* 40 CFR § 264.114).

G.2.6 CLOSURE REPORT AND CERTIFICATION

No later than 60 days after completing closure of the TTU, the Permittees shall in accordance with Permit Section 6.10 submit a closure report to the Department for review and approval.



Legend

- Earthen Berm
- Road / Parking
- Fence
- Building / Structure
- Hazardous Waste Management Area
- Steps

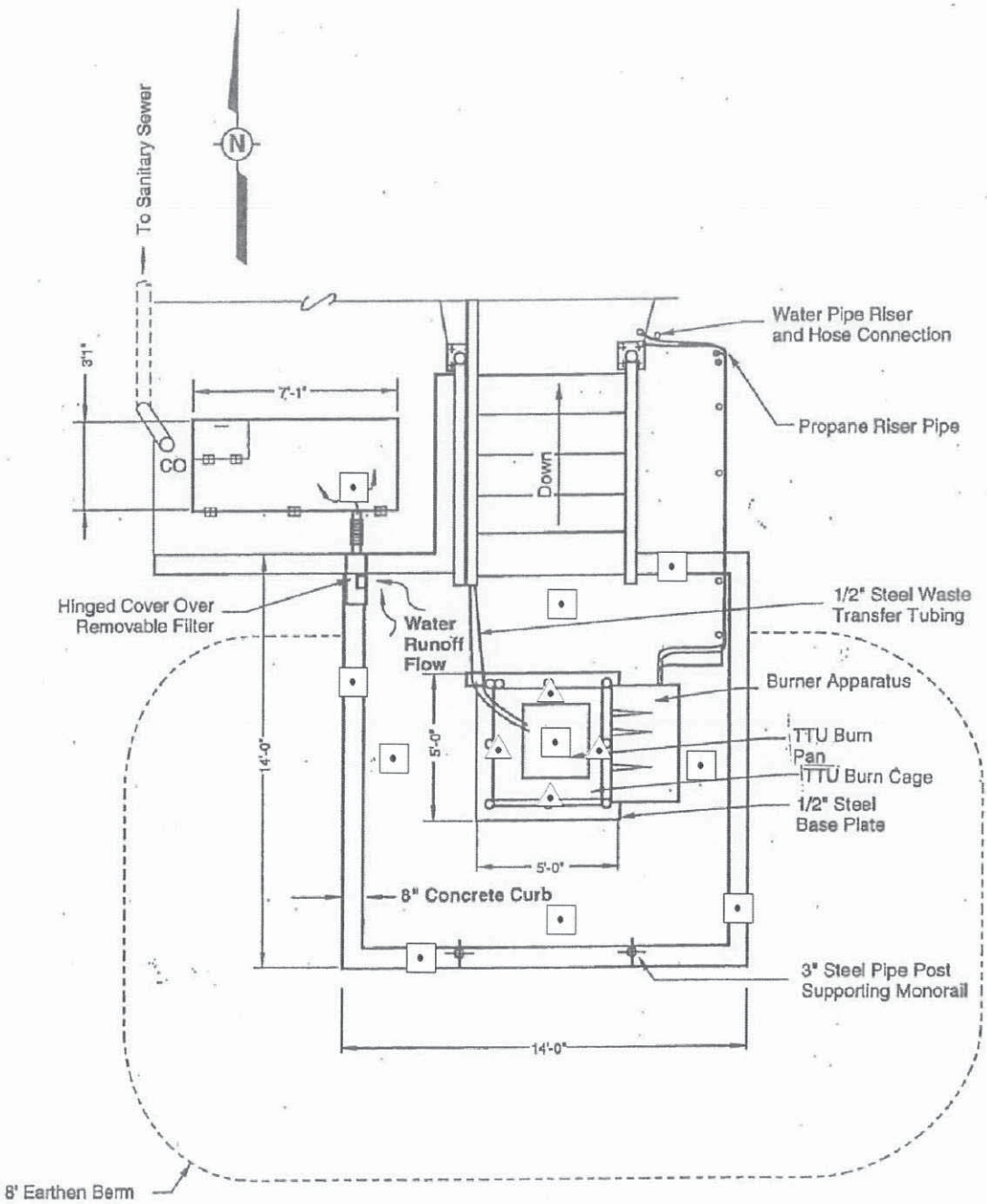
Actual locations may vary from the figure.

✳ outdoor (9)

0 25 50
Scale in Feet

N

Figure G.2-1
TTU Soil Sampling Locations



Actual locations may vary from the figure.

- floor (10)
- wall (4)

Figure G.2-2
TTU Sampling Locations

G.3 CLOSURE PLAN FOR THE RADIOACTIVE AND MIXED WASTE MANAGEMENT UNIT

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G.3.1 INTRODUCTION

This closure plan details the activities necessary to close the Radioactive and Mixed Waste Management Unit at Technical Area III at Sandia National Laboratories, hereafter referred to as the RMWMU. This closure plan incorporates the requirements in 40 CFR §§ 264.110 through 264.116, 264.178, and Permit Part 6.

The RMWMU is located in the southeastern portion of Technical Area (TA)-III and occupies approximately 3.1 acres enclosed within a fence. For purposes of closure the RMWMU consists of six structures, equipment, an outdoor storage pad and driving surface, a storm water retention pond, and environmental media. The waste management structures include Buildings 6920, 6921, 6925, and 6926, and two modular storage buildings, TP-150 and TP-153. The outdoor storage pad includes the paved areas within the fence to the north, east, and west of Building 6920 and to the south of Building 6921. Buildings 6920 and 6921 have associated fume hoods and negative-pressure ventilation systems whose exhaust passes through a HEPA filter before being released to the environment through an exhaust stack. The outdoor storage pad and driving surface drain to a storm water retention basin. Numerous rooms within Buildings 6920 and 6921 and associated equipment, furnishings, and tools that do not manage or contact hazardous or mixed wastes are not subject to the closure procedures and performance standards in this closure plan. A complete physical and operational description of the RMWMU is in Permit Attachment A, Section A.4. The various RMWMU components are shown generally on Figure G.3-1.

The RMWMU is permitted to store and treat hazardous and mixed wastes with the EPA waste codes listed in Permit Attachment B, Section B.2. The RMWMU is permitted to treat hazardous and mixed wastes with the set of EPA waste codes indicated in Permit Attachment B, Section B.3. The total square footage and permitted operating capacity of the buildings, the modular storage buildings, and the outdoor storage pad are specified at Permit Attachment J, Table J-1.1.

It is anticipated that the RMWMU will be clean closed. The Permittees shall attain clean closure of the RMWMU by meeting the closure performance standards specified at Permit Section 6.2.1. Final closure of the RMWMU will be complete when the New Mexico Environment Department (Department) approves the Closure Report and certification required under Permit Part 6, Section 6.10 and Section 6.0 of this Closure Plan.

G.3.2 CLOSURE PROCESS

The Permittees shall, in accordance with Permit Part 6, Section 6.3.1, notify the Department in writing that they have initiated closure at the RMWMU.

The Permittees shall, in accordance with Permit Part 6, Section 6.3.2 and Table 6.1, complete all RMWMU closure activities.

The Permittees shall, in accordance with Permit Section 6.3.4, remove all hazardous and mixed waste from the RMWMU no later than 90 days after initiating closure at the Unit, and shall also remove any solid waste that adversely interferes with closure activities.

The Permittees shall, in accordance with Permit Section 6.3.5, conduct a records review and structural assessment of the RMWMU and shall submit the review and assessment in the form of a written report in accordance with that Section.

The Permittees shall, in accordance with Permit Section 6.3.6, decontaminate or remove all contaminated structures and equipment at the RMWMU.

The Permittees shall, in accordance with Permit Section 6.3.7 and Section 3.0 (below), perform decontamination verification sampling of all structures and equipment at the RMWMU that were required to be decontaminated .

The Permittees shall, in accordance with Permit Section 6.3.8 and Section 3.0 (below), sample soils and base materials (*e.g.*, gravel) associated with RMWMU to quantify constituents of concern associated with any releases of hazardous or mixed wastes.

The Permittees shall ensure that soils and base materials at the RMWMU contaminated with constituents of concern that pose an unacceptable risk to human health (based on the closure criteria in Permit Section 6.2.1) or the environment as specified in Permit Section 6.3.8 are removed from the Permitted Unit in accordance with Permit Section 6.3.9. The complete removal shall be verified by the Permittees in accordance with Permit Section 6.3.9.

If the contaminated soil or other environmental media cannot be removed because it would be impracticable, the soil or other environmental media shall be subject to corrective action under Permit Section 6.8.

G.3.3 SAMPLING and analysis plan

This sampling and analysis plan identifies: 1) the constituents of concern at the RMWMU, 2) the locations where sampling shall occur, 3) the laboratory analytical methods that shall be employed to quantify analyte concentration in samples, and 4) the quality assurance procedures to be utilized during closure.

The constituents of concern at the RMWMU shall be determined in accordance with Permit Sections 6.3.5 and 6.5(1). A preliminary list of groups of constituents is presented in Table G.3-1 of this Permit Attachment; the list shall be modified at the time of closure if necessary in accordance with Permit Section 6.3.5.

The Permittees shall collect wet-wipe and soil samples, and perform sample quality assurance procedures in accordance with Permit Sections 6.3.10.1, 6.3.10.2, and 6.3.10.3.

The Permittees shall sample soils and base materials at the applicable locations identified at Permit Section 6.3.8. Soil sampling locations are identified in part on Figure G.3-1. Because of the length of the storm water retention pond at the RMWMU, the Permittees shall collect two samples at the specified depths at each of three locations within the pond, the north and south ends and in the middle.

The Permittees shall sample structures and equipment at the applicable locations identified in accordance with Permit Section 6.3.7. The wet-wipe sampling locations to verify decontamination at Buildings 6920, 6921, 6925 and 6926, and modular storage units TP-150 and TP-153 are identified in part on Figures G.3-2, G.3-3, G.3-4, and G-3-5 respectively.

Sampling locations may vary from those shown in the figures due to conditions at closure. Sampling locations may also change as a result of amendments to this closure plan, such as amendments required under Permit Section 6.6.

The Permittees shall handle samples as specified at Permit Part 8, Section 8.10.2.9.

The Permittees shall utilize the laboratory analytical methods, the sample preservation criteria, and the sample holding times as specified in Table G.3-1, as the information in the table may be updated via a closure plan amendment. The Permittees shall abide with the requirements for chemical analyses at laboratories as specified at Permit Part 8, Section 8.10.3.

The Permittees shall document field activities associated with closure as specified at Permit Section 8.10.2.14.i.

Table G.3-1
Sampling Requirements[1]

Parameter	Laboratory Method(s)	Preservation	Holding Time
Metals (Total: Ag, As, Ba, Be, Cd, Cr, Hg, Ni, Pb, Sb, Se, and Tl)	6010/6020/ 7470/7471	None	6 months (except Hg 28 days)
VOCs	8260	Headspace free, Cool to 4°C	14 days
SVOCs	8270	Cool to 4°C	14 days
High Explosives	8330	Cool to 4°C	14 days

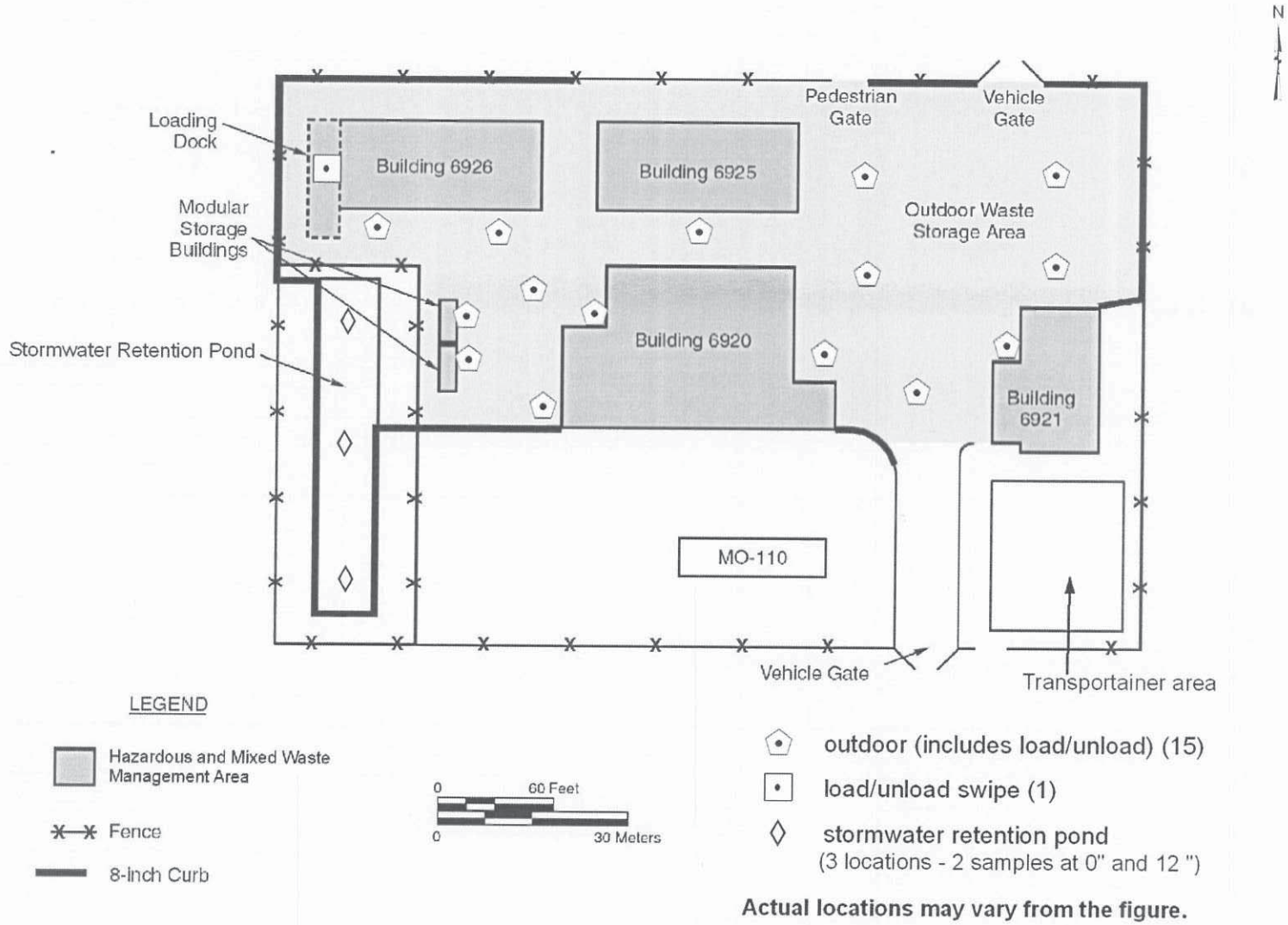
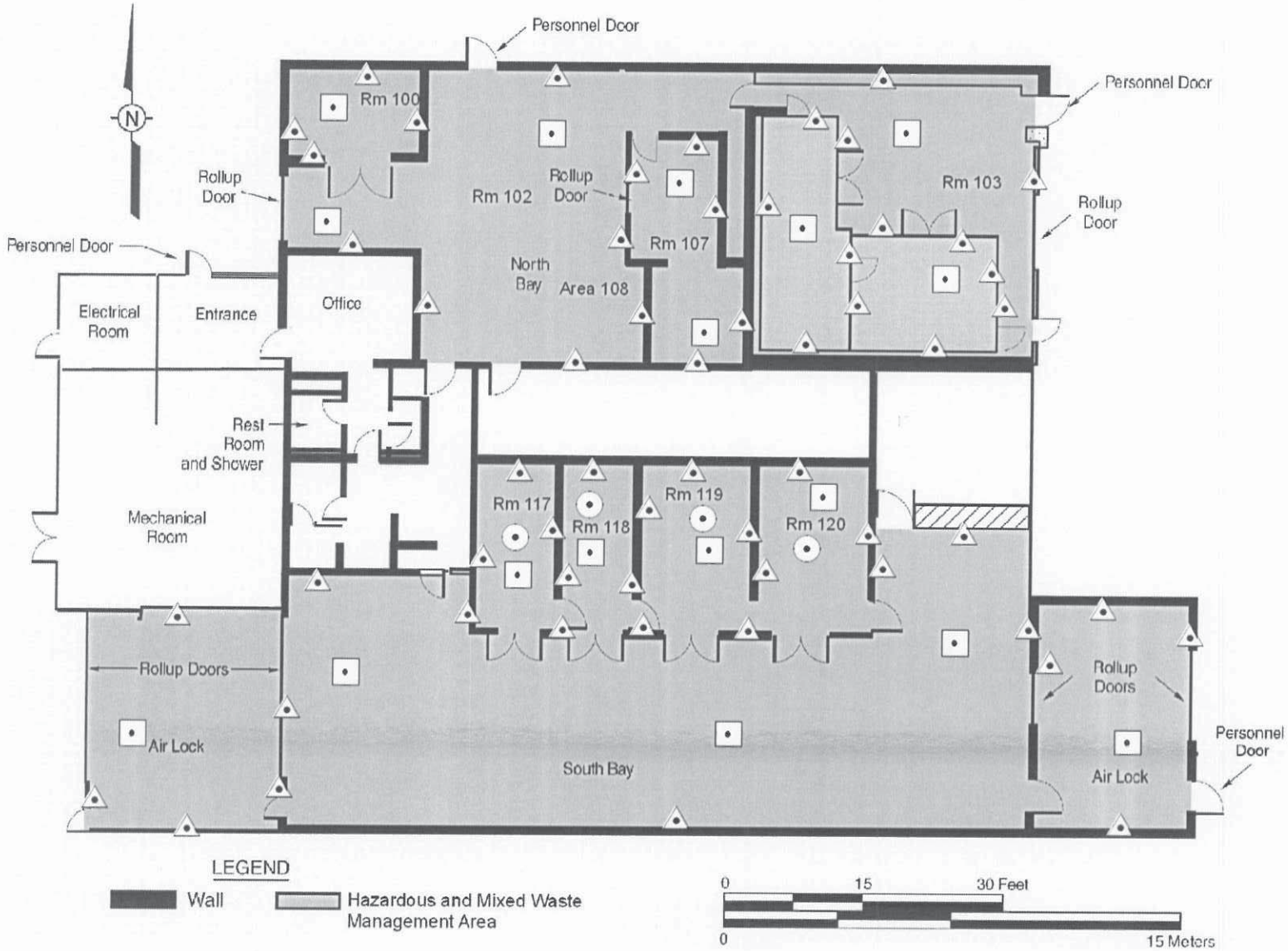


Figure G.3-1
RMWMU Sampling Locations



6920 floor (17)

6920 wall (57)

6920 ceiling (4)

Actual locations may vary from the figure.

Figure G.3-2
RMWMU Building 6920 Sampling Locations

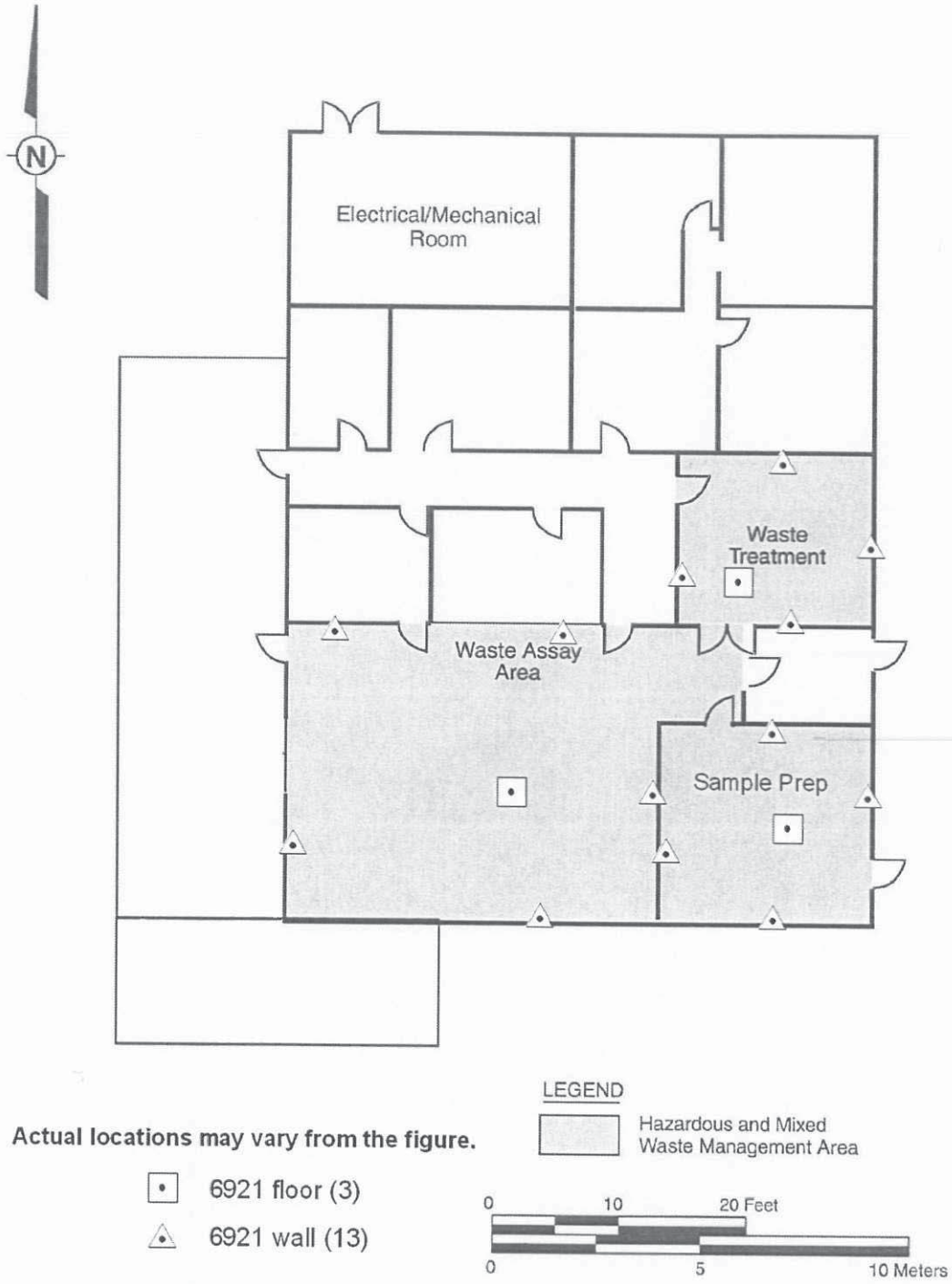
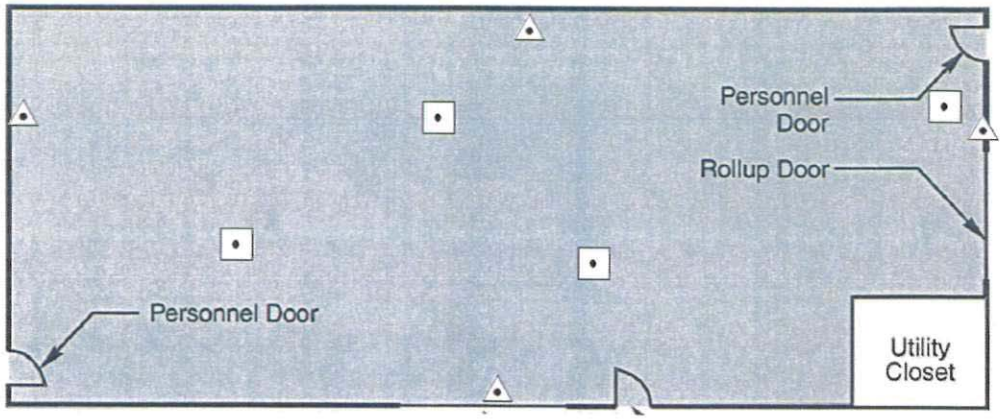
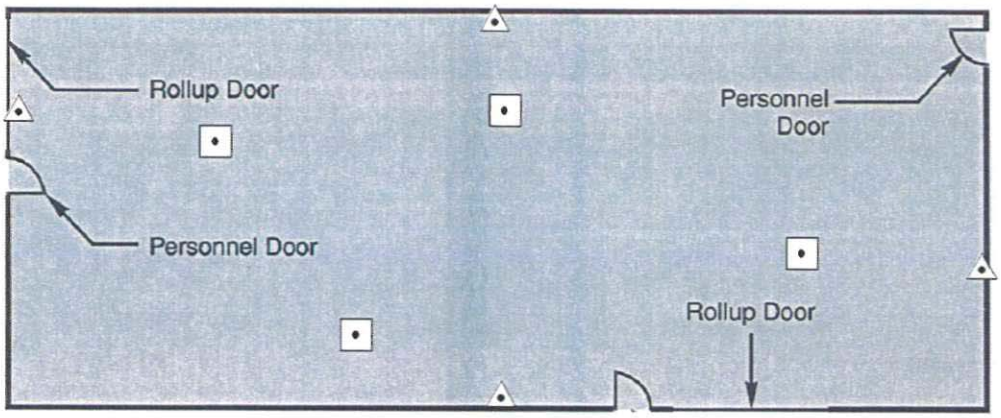


Figure G.3-3
RMWMU Building 6921 Sampling Locations



Building 6925



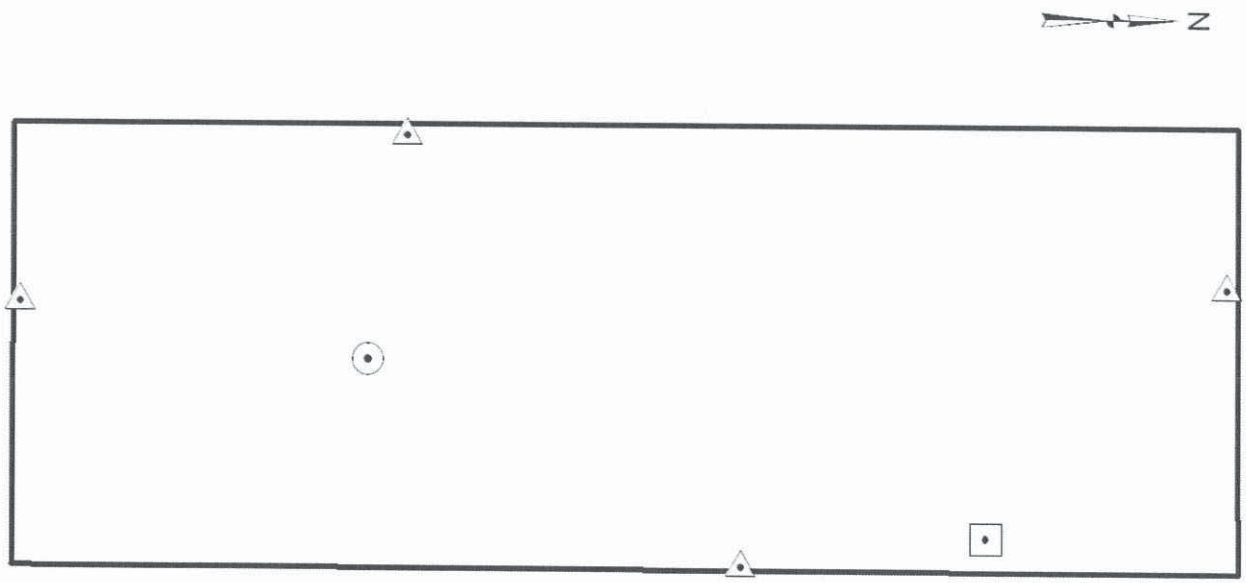
Building 6926

Actual locations may vary from the figure.

floor (4 each)

wall (4 each)

Figure G.3-4
RMWMU Buildings 6925 and 6926 Sampling Locations



scale in feet

0 5

Actual locations may vary from the figure.

floor (1)

wall (4)

ceiling (1)

Note: Same sample plan for both modular buildings.

Figure G.3-5
RMWMU Modular Storage Units - TP-150 and TP-153 Sampling Locations

G.4 CLOSURE PLAN FOR THE AUXILIARY HOT CELL UNIT

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G.4.1 INTRODUCTION

This closure plan details the activities necessary to close the Auxiliary Hot Cell Unit at Technical Area V at Sandia National Laboratories, hereafter referred to as the AHCU. This closure plan incorporates the requirements in 40 CFR §§ 264.110 through 264.116, 264.178, and Permit Part 6.

The AHCU is located in the high bay of Building 6597 and is comprised of four waste management areas: 1) the auxiliary hot cell, 2) the work area near the hot cell including a fume hood, 3) the storage silos, and 4) the container storage area. The unloading/loading area is indoors. A complete physical and operational description of the AHCU is in Permit Attachment A, Section A.5. The various AHCU components are shown generally on Figure G.4-1.

The AHCU is permitted to treat and store hazardous and mixed wastes with the EPA waste codes listed in Permit Attachment B, Section B.1. The AHCU is permitted to treat hazardous and mixed wastes with the set of EPA waste codes listed in Permit Attachment B, Section B.3. The square footage and operating capacity of the AHCU are identified in Permit Attachment J, Table J-1.1.

It is anticipated that the AHCU will be clean closed. The Permittees shall attain clean closure of the AHCU by meeting the closure performance standards specified at Permit Section 6.2.1. Final closure of the AHCU will be complete when the New Mexico Environment Department (Department) approves the Closure Report and certification required under Permit Part 6, Section 6.10 and Section 7.0 of this Closure Plan.

G.4.2 CLOSURE PROCESS

The Permittees shall, in accordance with Permit Part 6, Section 6.3.1, notify the Department in writing that they have initiated closure at the AHCU.

The Permittees shall, in accordance with Permit Part 6, Section 6.3.2 and Table 6.1, complete all AHCU closure activities.

The Permittees shall, in accordance with Permit Section 6.3.4, remove all hazardous and mixed waste from the AHCU no later than 90 days after initiating closure at the Unit, and shall also remove any solid waste that adversely interferes with closure activities.

The Permittees shall, in accordance with Permit Section 6.3.5, conduct a records review and structural assessment of the AHCU and shall submit the review and assessment in the form of a written report in accordance with that Section.

The Permittees shall, in accordance with Permit Section 6.3.6, decontaminate or remove all contaminated structures and equipment at the AHCU.

The Permittees shall, in accordance with Permit Section 6.3.7 and Section 3.0 (below), perform decontamination verification sampling of all structures and equipment at the AHCU, that were required to be decontaminated.

The Permittees shall, in accordance with Permit Section 6.3.8 and Section 3.0 (below), sample soils and base materials (*e.g.*, gravel) associated with AHCU as needed to quantify constituents of concern associated with any releases of hazardous or mixed wastes.

The Permittees shall ensure that soils and base materials at the AHCU contaminated with constituents of concern that pose an unacceptable risk to human health (based on the closure criteria in Permit Section 6.2.1) or the environment as specified in Permit Section 6.3.8, are removed from the Permitted Unit in accordance with Permit Section 6.3.9. The complete removal shall be verified by the Permittees in accordance with Permit Section 6.3.9.

If the contaminated soil or other environmental media cannot be removed because it would be impracticable, the soil or other environmental media shall be subject to corrective action under Permit Section 6.8.

G.4.3 SAMPLING AND ANALYSIS PLAN

This sampling and analysis plan identifies: 1) the constituents of concern at the AHCU, 2) the locations where sampling shall occur, 3) the laboratory analytical methods that shall be employed to quantify analyte concentration in samples, and 4) the quality assurance procedures to be utilized during closure.

The constituents of concern at the AHCU shall be determined in accordance with Permit Sections 6.3.5 and 6.5(1). A preliminary list of groups of constituents is presented in Table G.4-1 of this Permit Attachment; the list shall be modified at the time of closure if necessary in accordance with Permit Section 6.3.5.

The Permittees shall collect wet-wipe and soil samples, and perform sample quality assurance procedures in accordance with Permit Sections 6.3.10.1, 6.3.10.2, and 6.3.10.3.

The Permittees shall sample soils and base materials at the applicable locations identified at Permit Section 6.3.8. Soil sampling locations are identified in part on Figure G.4-1. The Permittees shall sample structures and equipment at the applicable locations identified in accordance with Permit Section 6.3.7.

Sampling locations may vary from those shown in the figures due to conditions at closure. Sampling locations may also change as a result of amendments to this closure plan, such as amendments required under Permit Section 6.6.

Table G.4-1.
Sampling Requirements[1]

Parameter	Laboratory Method(s)	Preservation	Holding Time
Metals (Total: Ag, As, Ba, Be, Cd, Cr, Hg, Ni, Pb, Sb, Se, and Tl)	6010/6020/ 7470/7471	None	6 months (except Hg 28 days)
VOCs	8260	Headspace free, Cool to 4°C	14 days
SVOCs	8270	Cool to 4°C	14 days
Cyanide	9010/9012	Cool to 4°C	14 days

[1] Methods are EPA SW-846 Methods, as revised and updated.

The Permittees shall handle samples as specified at Permit Part 8, Section 8.10.2.9.

The Permittees shall utilize the laboratory analytical methods, the sample preservation criteria, and the sample holding times as specified in Table G.4-1, as the information in the table may be updated via a closure plan amendment. The Permittees shall abide with the requirements for chemical analyses at laboratories as specified at Permit Part 8, Section 8.10.3.

The Permittees shall document field activities associated with closure as specified at Permit Section 8.10.2.14.i.

G.4.4 AMENDMENT TO THIS CLOSURE PLAN

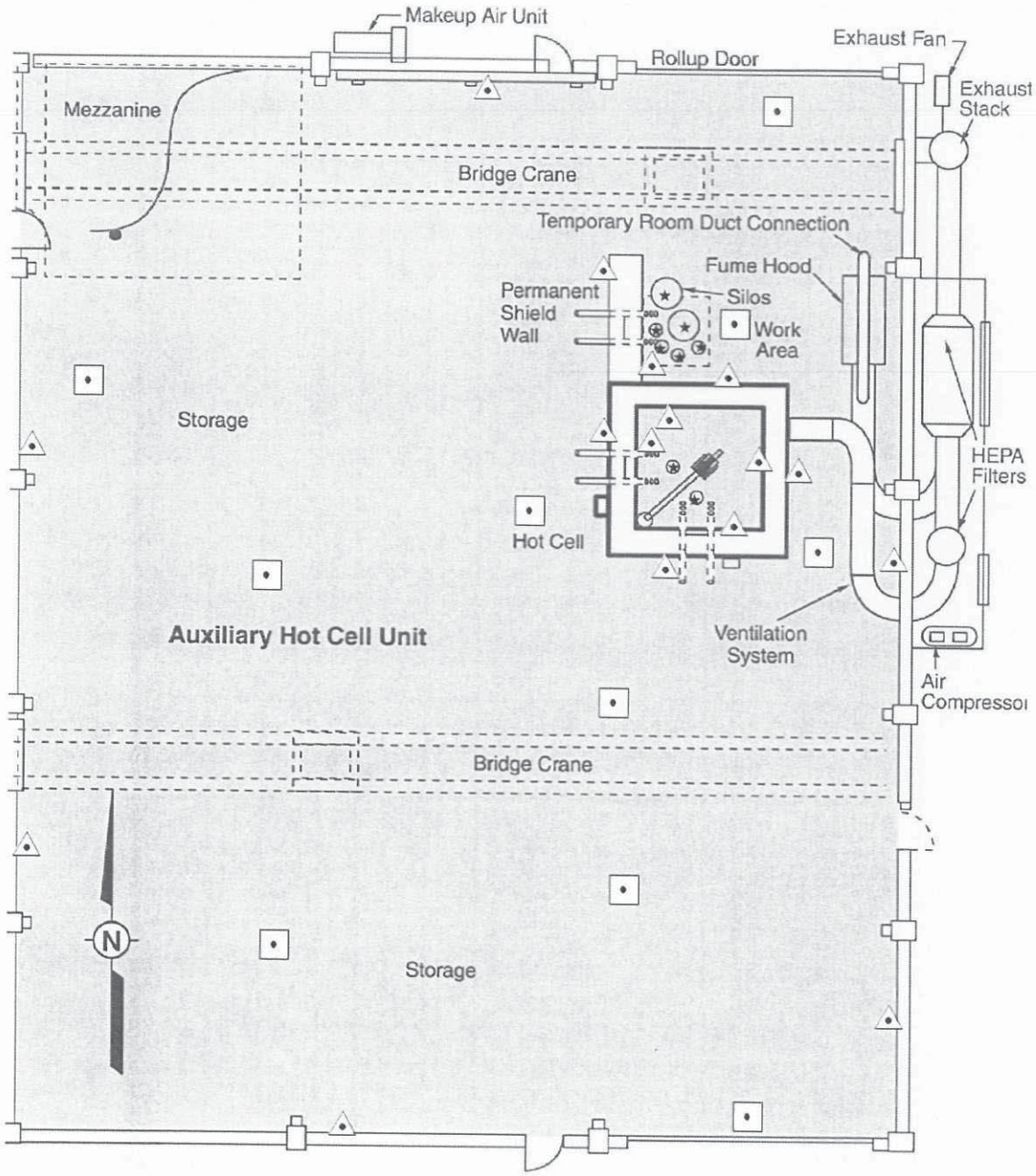
The Permittees shall submit permit modification requests to amend this Closure Plan, if needed, in accordance with Permit Section 6.6.

G.4.5 WASTES GENERATED FROM CLOSURE ACTIVITIES

The Permittees shall ensure that waste (*e.g.*, demolition debris and contaminated soil) generated from closure of the AHCU is managed in compliance with all applicable state, federal, and local requirements (*see* 40 CFR § 264.114).

G.4.6 CLOSURE REPORT AND CERTIFICATION

No later than 60 days after completing closure of the AHCU, the Permittees shall in accordance with Permit Section 6.10 submit a closure report to the Department for review and approval.



LEGEND

Hazardous and Mixed Waste Management Area

0 7.5 15
SCALE IN FEET

AHCU floor (10)

AHCU wall (16)

AHCU silo (8) Note: Each silo requires 1 sample.

Actual locations may vary from the figure.

Figure G.4-1
AHCU Sampling Locations

G.5 CLOSURE PLAN FOR THE MANZANO STORAGE BUNKERS

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Figure G.5-3 Manzano Bunkers 37045, 37055, and 37057 (Type D Bunker Configuration) Sampling Locations

G.5.1 INTRODUCTION

This closure plan details the activities necessary to close the Manzano Storage Bunkers. The Manzano Storage Bunkers are hereafter referred to as the MSBs. This closure plan incorporates the requirements in 40 CFR §§ 264.110 through 264.116, 264.178, and Permit Part 6.

The MSBs are located within the fenced Manzano Base approximately 1 mile east of the exit road leading to the entrances to Technical Areas (TAs)-III and V and at the end of Pennsylvania Avenue. The location of the MSBs within the Sandia National Laboratories is shown on Figures 2 and 25 in Permit Attachment L (*Figures*).

There are five bunkers collectively referred to as the MSBs. Each of the five bunkers is considered an individual hazardous waste management unit. The five bunkers include Bunkers 37034, 37045, 37055, 37057, and 37118. There are three types of bunkers: Type B (37034); Type C (37118); and Type D (37045, 37055, and 37057). Each of these bunkers is constructed of concrete (walls, roof, and floor), is covered by earthen materials, and the walls and roof of each bunker are rounded. Type B and D bunkers consist of an access tunnel leading to a main chamber that is used for storage of hazardous and mixed wastes. Type C bunkers do not have an access tunnel and consist entirely of a main chamber used for storage of hazardous and mixed wastes. The waste loading/unloading area for each MSB is immediately outside the outer door. A complete physical and operational description of the MSBs is in Permit Attachment A, Section A.6. Type B, C, and D bunker configurations and dimensions are shown generally on Figures G.5-1, G.5-2, and G.5-3 respectively.

Because this Permit Attachment G.5 addresses five hazardous waste management units, and because the units may close at different times or in concert, the requirements of this closure plan may be fulfilled at separate times for individual units or at the same time and with the same documents for all or multiple units.

The MSBs are permitted to store hazardous and mixed wastes with the EPA waste codes listed in Permit Attachment B, Section B.2, in containers. The operating capacities and total square footage of the individual bunkers are identified at Permit Attachment J, Table J-1.1.

It is anticipated that the MSBs will be clean closed. The Permittees shall attain clean closure of the MSBs by meeting the closure performance standards specified at Permit Section 6.2.1. Final closure of the MSBs will be complete when the New Mexico Environment Department (Department) approves the Closure Report and certification required under Permit Part 6, Section 6.10 and Section 6.0 of this Closure Plan.

G.5.2 CLOSURE PROCESS

The Permittees shall, in accordance with Permit Part 6, Section 6.3.1, notify the Department in writing that they have initiated closure at a given MSB.

The Permittees shall, in accordance with Permit Part 6, Section 6.3.2 and Table 6.1, complete all closure activities at the MSB.

The Permittees shall, in accordance with Permit Section 6.3.4, remove all hazardous and mixed waste from the MSB no later than 90 days after initiating closure at the Unit, and shall also remove any solid waste that adversely interferes with closure activities.

The Permittees shall, in accordance with Permit Section 6.3.5, conduct a records review and structural assessment of the MSB and shall submit the review and assessment in the form of a written report in accordance with that Section.

The Permittees shall, in accordance with Permit Section 6.3.6, decontaminate or remove all contaminated structures and equipment at the MSB.

The Permittees shall, in accordance with Permit Section 6.3.7 and Section 3.0 (below), perform decontamination verification sampling of all structures and equipment at the MSB that were required to be decontaminated.

The Permittees shall, in accordance with Permit Section 6.3.8 and Section 3.0 (below), sample soils and base materials (*e.g.*, gravel) associated with the MSB to quantify constituents of concern associated with any releases of hazardous or mixed wastes.

The Permittees shall ensure that soils and base materials at the MSB contaminated with constituents of concern that pose an unacceptable risk to human health (based on the closure criteria in Permit Section 6.2.1 or the environment as specified in Permit Section 6.3.8, are removed from the Permitted Unit in accordance with Permit Section 6.3.9. The complete removal shall be verified by the Permittees in accordance with Permit Section 6.3.9.

If the contaminated soil or other environmental media cannot be removed because it would be impracticable, the soil or other environmental media shall be subject to corrective action under Permit Section 6.8.

G.5.3 SAMPLING AND ANALYSIS PLAN

This sampling and analysis plan identifies: 1) the constituents of concern at the MSB, 2) the locations where sampling shall occur, 3) the laboratory analytical methods that shall be employed to quantify analyte concentration in samples, and 4) the quality assurance procedures to be utilized during closure.

The constituents of concern at the MSB shall be determined in accordance with Permit Sections 6.3.5 and 6.5(1). A preliminary list of groups of constituents is presented in Table G.5-1 of this Permit Attachment; the list shall be modified at the time of closure if necessary in accordance with Permit Section 6.3.5.

The Permittees shall collect wet-wipe and soil samples, and perform sample quality assurance procedures in accordance with Permit Sections 6.3.10.1, 6.3.10.2, and 6.3.10.3.

The Permittees shall sample soils and base materials at the applicable locations identified at Permit Section 6.3.8. Samples shall be collected at the waste loading and unloading area (*i.e.*, area outside the door to the bunker).

Table G.5-1
Sampling Requirements[1]

Parameter	Laboratory Method(s)	Preservation	Holding Time
Metals (Total: Ag, As, Ba, Be, Cd, Cr, Hg, Ni, Pb, Sb, Se, and Tl)	6010/6020/ 7470/7471	None	6 months (except Hg 28 days)
VOCs	8260	Headspace free, Cool to 4°C	14 days
SVOCs	8270	Cool to 4°C	14 days
High Explosives	8330	Cool to 4°C	14 days
PCBs	8080/8081	Cool to 4°C	14 days
Cyanide	9010/9012	Cool to 4°C	14 days

[1] Methods are EPA SW-846 Methods, as revised and updated.

The Permittees shall sample structures and equipment at the applicable locations identified in accordance with Permit Section 6.3.7. The sampling locations to demonstrate decontamination verification are identified in part on Figures G.5-1, G.5-2, and G.5-3.

Sampling locations may vary from those shown in the figures due to conditions at closure. Sampling locations may also change as a result of amendments to this closure plan, such as amendments required under Permit Section 6.6.

The Permittees shall handle samples as specified at Permit Part 8, Section 8.10.2.9.

The Permittees shall utilize the laboratory analytical methods, the sample preservation criteria, and the sample holding times as specified in Table G.5-1, as the information in the table may be updated via a closure plan amendment. The Permittees shall abide with the requirements for chemical analyses at laboratories as specified at Permit Part 8, Section 8.10.3.

The Permittees shall document field activities associated with closure as specified at Permit Section 8.10.2.14.i.

G.5.4 AMENDMENT TO THIS CLOSURE PLAN

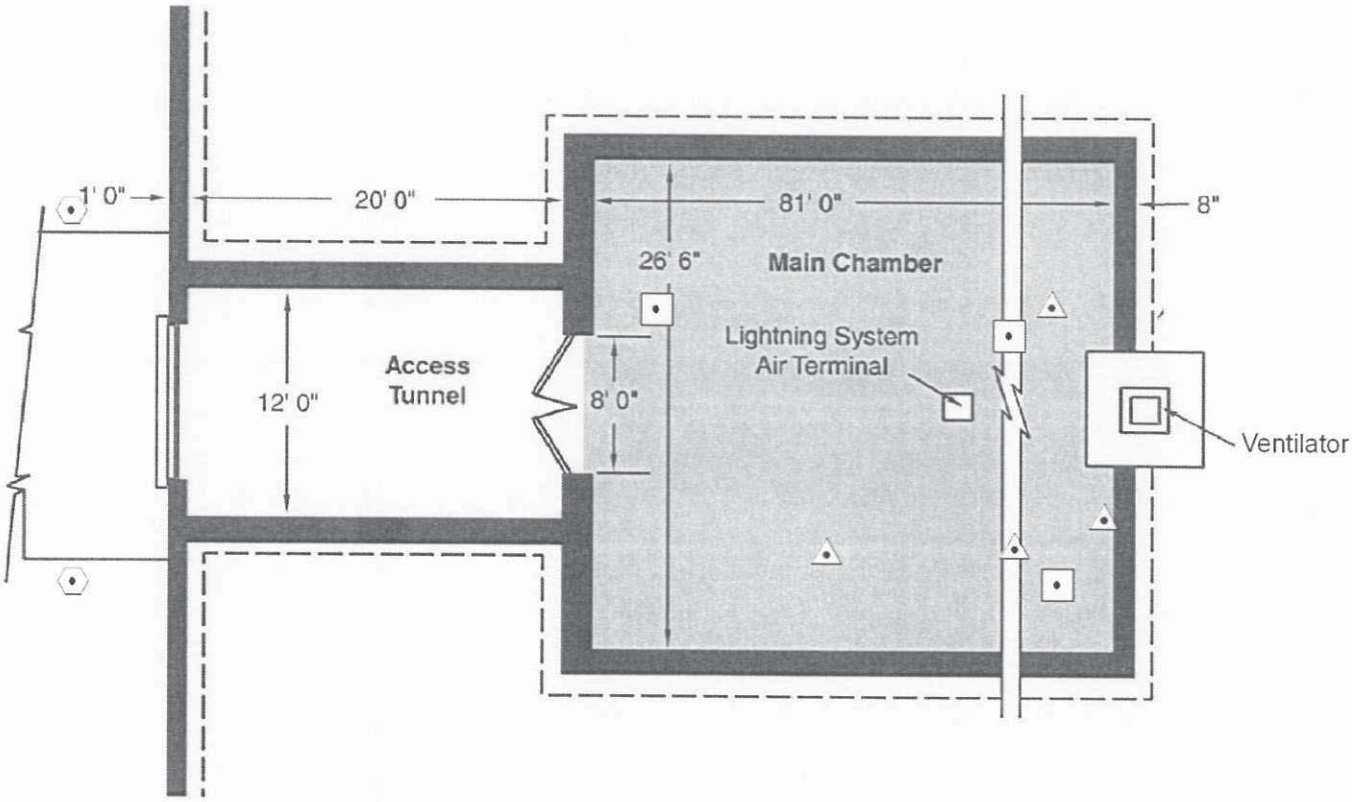
The Permittees shall submit permit modification requests to amend this Closure Plan, if needed, in accordance with Permit Section 6.6.

G.5.5 WASTES GENERATED FROM CLOSURE ACTIVITIES

The Permittees shall ensure that waste (*e.g.*, demolition debris and contaminated soil) generated from closure of each MSB is managed in compliance with all applicable state, federal, and local requirements (*see* 40 CFR § 264.114).

G.5.6 CLOSURE REPORT AND CERTIFICATION

No later than 60 days after completing closure of the MSB, the Permittees shall in accordance with Permit Section 6.10 submit a closure report to the Department for review and approval.



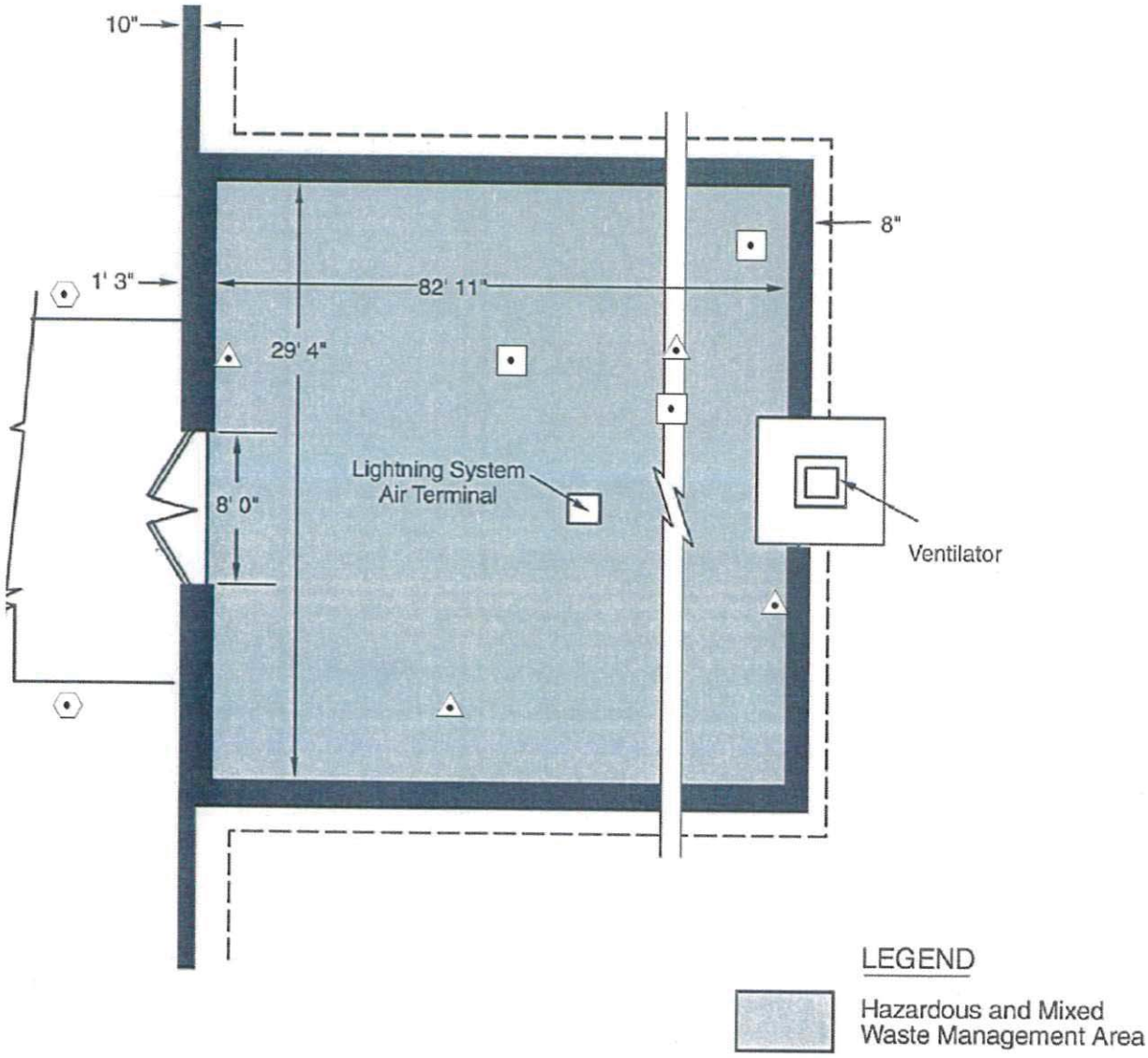
LEGEND

Hazardous and Mixed Waste Management Area

Actual locations may vary from the figure.

- floor (3)
- wall/ceiling (4)
- load/unload/soil (2)

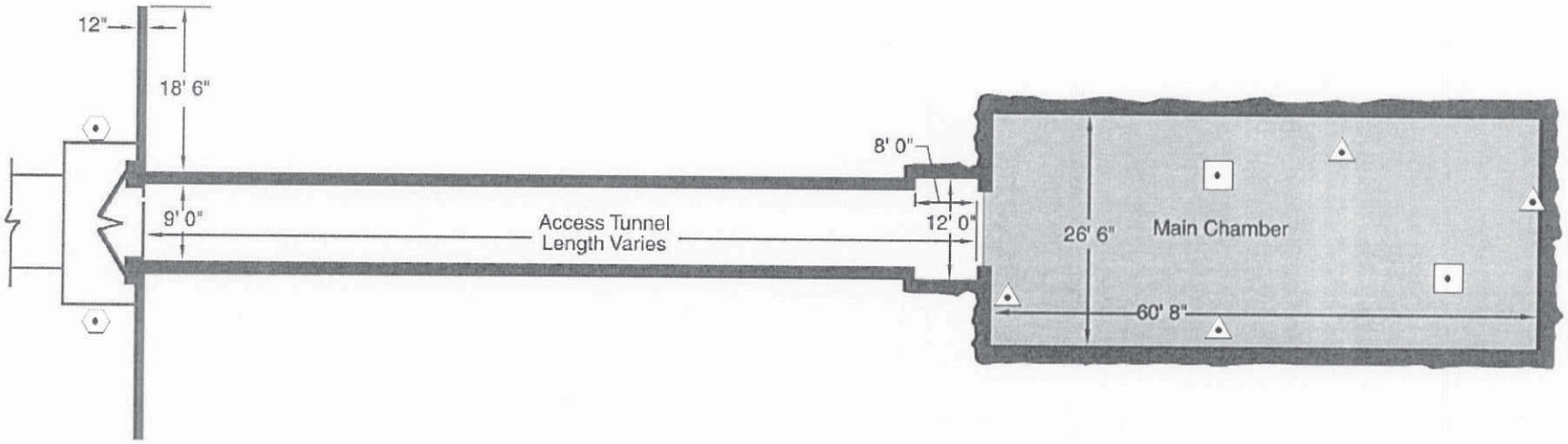
Figure G.5-1
Manzano Bunker 37034 (Type B Bunker Configuration) Sampling Locations



Actual locations may vary from the figure.

- floor (3)
- wall/ceiling (4)
- load/unload/soil (2)

Figure G.5-2
Manzano Bunker 37118 (Type C Bunker Configuration) Sampling Locations



Actual locations may vary from the figure.

- floor (2)
- wall/ceiling (4)
- load/unload/soil (2)

LEGEND

Hazardous and Mixed Waste Management Area

Figure G.5-3
Manzano Bunkers 37045, 37055, and 37057 (Type D Bunker Configuration) Sampling Locations

PERMIT ATTACHMENT H POST-CLOSURE CARE PLAN FOR THE CORRECTIVE ACTION MANAGEMENT UNIT

H.1 INTRODUCTION

This post-closure care plan addresses the post-closure activities that shall be performed at the Corrective Action Management Unit (CAMU) by the Permittees. The CAMU is used for the containment of hazardous and toxic wastes that were generated during remediation activities at the Chemical Waste Landfill (CWL), which is located 100 yards southeast of the CAMU. The CWL is regulated by a stand-alone Post-Closure Care Permit.

This post-closure plan incorporates the requirements of 40 CFR § 264.117 through § 264.120 and § 264.552(e)(6). Post-closure care of the CAMU began on October 15, 2003, and shall continue for 30 years after that date, except that the 30-year post-closure care period may be shortened or extended, as specified in Part 7 of this Permit.

Additional information on post-closure waste management practices to be conducted at the CAMU, and a description of the Unit is provided in Permit Attachment A (*Facility Description*).

During the post-closure care period, the CAMU containment cell shall be monitored and maintained in a manner that shall ensure protection of human health and the environment. The potential for exposure shall be minimized by means of employing the following:

1. Engineered barriers shall be maintained to minimize the migration of leachate into the surrounding environment;
2. Security measures shall be maintained to restrict access to the area; and
3. Inspections, maintenance, and repairs shall be performed as needed and in accordance with Permit Attachment E and this Permit Attachment.

H.2 STORM-WATER DIVERSION STRUCTURES

During post-closure care, the function of storm-water diversion structures associated with the containment cell is to prevent storm-water run-on and runoff from eroding the final cover and to reduce the amount of water that potentially could infiltrate into the final cover. As shown in Figure 36 of Permit Attachment L (*Figures*), the two storm-water diversion structures associated with the containment cell are the site diversion ditch and the containment cell perimeter drainage swale. Storm-water run-on is diverted away from the containment cell by the site diversion ditch where it is directed toward existing surface-water drainage features. Storm-water runoff from the containment cell cover is directed to the perimeter drainage swale where it is discharged off-site via an outfall.

H.3 SECURITY

Figure 32 of Permit Attachment L (*Figures*) shows the post-closure perimeter boundary for the CAMU containment cell area. A contiguous four-strand, barbed-wire fence with two main gates

delineates this boundary. The gates are locked when authorized personnel are not present at the CAMU; only authorized personnel control access. Warning signs stating, "*Danger—Unauthorized Personnel Keep Out*" are posted on all sides of the CAMU fence at 100-foot intervals, at the main gate, and at the emergency exit. The warning signs are legible from a distance of at least 25 feet, visible from any approach to the CAMU, and are posted in both Spanish and English.

H.4 MAINTENANCE AND REPAIRS

Maintenance and repairs shall be conducted as required in this Permit Attachment and in accordance with Permit Attachment E, Section E.3 and Table E-6.

H.4.1 Final Cover System

Water shall be prevented from ponding on the surface of the CAMU cover in any area in excess of 100 square feet. The Permittees shall prevent the establishment of deep-rooted plants, such as shrubs and trees by identifying such species during quarterly inspections and eliminating them before they become established. The plants shall be killed within 60 days or as soon as seasonal conditions are favorable for eliminating them.

Cover damage that exceeds the limits described in Permit Attachment E, Section E.10.2 and Table E-6, shall be repaired within 60 days to a condition that meets or exceeds the original design. Repair specifications shall include, but not be necessarily limited to, the following.

Animal intrusion burrows, settlement areas, and areas of erosion shall be backfilled and compacted using non-contaminated soil with properties similar to the soil used to construct the final cover. The soil shall meet the original construction specifications for the CAMU final cover. The Permittees shall make reasonable attempts to relocate animals prior to backfilling their burrows.

Areas with no vegetation in excess of 200 square feet shall be reseeded in accordance with the original construction specifications for the CAMU final cover. If seasonal conditions (e.g. temperature) are not appropriate for establishing vegetation within 60 days, repairs shall be completed as soon as possible when appropriate conditions occur. Where necessary, the topsoil layer and gravel mulch surface shall be repaired to provide a suitable seedbed. The repair shall be done using materials meeting the original specifications of the CAMU final cover.

H.4.2 Storm-Water Diversion Structures

Based upon the results of the storm-water diversion structure inspections, erosion or damage that exceeds the limits described in Permit Attachment E, Section E.10.3 and Table E-6 shall be repaired within 60 days to a condition that meets or exceeds the original design. Silt and debris accumulations that exceed the above specified limits shall be removed within 60 days.

H.4.3 LCRS

The LCRS pump and plumbing shall be maintained/repaired as necessary to maintain them in good condition based upon the results of quarterly inspections. Maintenance/repairs shall be done within 60 days of discovery that the maintenance/repairs are needed.

H.4.4 VZMS

The VZMS components shall be maintained/repaired within 60 days, as needed, to maintain them in good condition, based upon inspection results. Activities shall include, but not be limited to, maintaining protective casings, access covers/doors, and instrumentation access boxes, ensuring the PSL and CSS compression caps are in good repair, cleaning or replacing locks as necessary, and maintaining calibration and proper operating condition of all electronic monitoring systems. Maintenance/repair activities shall also include ensuring that all aboveground VZMS components are protected from the weather.

H.4.5 Security Fencing and Signage

The fence, gates, and warning signs shall be maintained/repaired within 60 days, as needed, to maintain them in good condition, as indicated by quarterly inspections. Activities shall include, but are not limited to, the following as needed: removing excessive accumulations of wind-blown plants and debris, repairing broken wire sections and posts, repairing and oiling gates, cleaning or replacing locks, and repairing or replacing warning signs.

H.5 VADOSE ZONE MONITORING SYSTEM LEAK DETECTION MONITORING FREQUENCY AND ASSESSMENT

Sampling and analysis plans (SAPs) for the PSL, VSA, and CSS monitoring subsystems are included in Sections H.6, H.7 and H.8 of this Permit Attachment, respectively, and related Sandia National Laboratories/NM (SNL/NM) Field Operating Procedures (FOPs) are summarized in Table H-2. The purpose of these SAPs is to document procedures for the collection and reporting of consistent, reliable, defensible, and comparable sampling results. Other instructions are provided in SNL/NM FOPs; however, the requirements of the SAPs in this Permit Attachment shall take precedence over any cited FOPs. The most current versions of these FOPs shall be consulted for the purpose of conducting vadose zone monitoring.

The Permittees shall provide to the New Mexico Environment Department (the Department) within 60 days of the effective date of this Permit in hard copy and electronic format the current versions of the FOPs cited in this Permit Attachment. The Permittees shall provide the Department with any updated versions of the FOPs within 30 days of their acceptance by the Permittees. If any requirement or procedure is found by the Department to be unacceptable for reasons including, but not limited to, the requirement or procedure will or could prevent the acquisition of representative and reliable sampling results, the requirement or procedure shall be replaced by the Permittees with a different requirement or procedure that is acceptable to the Department.

TABLE H-1
Vadose Zone Monitoring System Post-Closure Monitoring Frequency, Parameters, and Methods

Time Frame	Monitoring Frequency	Monitoring System	Monitoring/Sampling Parameter	Monitoring Method
Years 2–30 after closure[a]	Quarterly	PSL	Moisture Content	Neutron Probe
		VSA	Soil Moisture Content Temperature	TDR probe Temperature Sensor
		CSS	Moisture Content	Neutron Probe
	Annually[b]	VSA	Active Soil Gas	EPA Method TO-14 or equivalent, as revised and updated[c]
		CSS		

TDR Time domain reflectometer
a Closure of the Unit was completed in October 2003.
b Active soil-gas sampling shall be conducted annually unless increased soil moisture is detected, in which case active soil-gas sampling shall be conducted on a quarterly basis.
c Method TO-14 or an equivalent method such as TO-15 that includes the same analyte list, method detection limits equal to or lower than the TO-14 limits, and provides the same or higher level of data quality. Methods from *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air – Second Edition* (EPA/625/R-96/010b), 1999, as revised and updated.

Table H-2
Applicable SNL Operating Procedures[a]

Procedure Number	Procedure Title
FOP 08-20	Soil Moisture Determination Utilizing Neutron Logging
FOP 08-21	Soil Moisture Monitoring Using Time Domain Reflectometry
FOP 08-22	Soil Vapor Sampling

[a] Sandia National Lab's Procedures (procedures will be used as revised and updated)

H.5.1 Frequency

During the initial stages of the post-closure care period, the primary subliner (PSL), vertical sensor array (VSA), and chemical waste landfill and sanitary sewer line monitoring subsystems

(CSS) of the vadose zone monitoring system (VZMS) were monitored on a monthly and annual basis for one year. Monitoring shall continue on a quarterly and annual basis for the remainder of the monitoring period unless corrective action is required because of a release of hazardous waste or constituents. A summary of the VZMS post-closure monitoring frequency, parameters, and methods are presented in Table H-1 of this Permit Attachment.

H.5.2 Assessment

As part of each monitoring event, soil moisture content and soil gas results obtained from the VZMS shall be evaluated to determine if there has been leakage or a release of soil gas from the containment cell and, if so, the character and magnitude of the leak or release.

H.5.2.1 Soil Moisture

In the case of a soil moisture increase greater than 4 percent above baseline (expressed as gravimetric percent moisture content at CSS and PSL locations or expressed as volumetric percent moisture content at VSA locations) at any monitoring location(s), the Permittees shall immediately confirm the result by collecting and analyzing additional samples. If a second analysis confirms that the trigger level has been exceeded, the Permittees must notify the Department in writing within seven days after receipt of the second analysis confirming that the trigger level has been exceeded during the particular sampling event. Within 180 days, the Permittees shall evaluate the soil moisture data to determine the likely location and source of the moisture and report the results in writing to the Department. If the likely source is the sanitary sewer line, the Permittees shall continue monitoring and shall take action if necessary to locate, reduce, and/or eliminate the source of the moisture.

If the likely source is the containment cell, the Permittees shall initiate corrective action as specified below.

H.5.2.2 Soil Gas

If a soil-gas sample result exceeds a trigger level of 20 parts per million by volume (ppmv) total volatile organic compounds (VOCs), the Permittees shall immediately confirm the result by collecting and analyzing additional samples. If a second analysis confirms that the trigger level has been exceeded, the Permittees must notify the Department in writing within seven days after receipt of the second analysis confirming that the trigger level has been exceeded during the particular sampling event.

H.5.2.3 Corrective Action

The Permittees shall submit, within 180 days of confirmation that the trigger level for soil gas has been exceeded, an evaluation of soil gas data in the vicinity of the CAMU, including data for the CWL. The evaluation shall include a determination of the source of the soil gas, and an evaluation of whether the increased soil gas will cause groundwater contamination of any hazardous constituent to exceed the cleanup levels specified in Permit Part 8. After the Department has reviewed and approved the evaluation, and the source is determined to be the

CAMU, the Permittees shall submit, within 180 days, an application for a permit modification to establish a corrective action program for the CAMU. The application must include at a minimum, a detailed description of the corrective action that will be taken by the Permittees to reduce the concentrations of soil gas to levels that will not exceed the trigger level of 20 ppmv total VOCs, and the action that will be taken to reduce the concentrations of soil gas to levels that will not cause groundwater contamination of any hazardous constituent to exceed the cleanup levels specified in Permit Part 8. The application shall also include a plan for a soil-gas monitoring program that will demonstrate the effectiveness of the corrective action.

For soil moisture, if the Permittees have determined that the likely source of increased moisture is the containment cell, the Permittees shall submit within 180 days an application for a permit modification to establish a corrective action program for the CAMU. The application must include at a minimum, a detailed description of the corrective action that will be taken by the Permittees to stop the release.

All applications for corrective action shall contain a schedule for implementation of the corrective action, and shall describe any necessary characterization and cleanup of the vadose zone and groundwater that must be accomplished to protect human health and environment in accordance with the requirements of Permit Section H.1 and Permit Part 8.

H.6 SAMPLING AND ANALYSIS PLAN FOR THE CAMU PRIMARY SUBLINER MONITORING SYSTEM

The Primary Subliner (PSL) is one of three vadose zone monitoring systems associated with the Corrective Action Management Unit (CAMU) containment cell. Monitoring using the PSL Monitoring Subsystem shall be conducted to verify containment cell integrity and performance. This Sampling and Analysis Plan (SAP) describes the monitoring and sampling strategy for the PSL that shall be used during post-closure care.

The PSL is the primary monitoring system for the containment cell. It consists of five parallel-trending, horizontal, vitrified clay pipes (VCPs) located 5 feet below the containment cell bottom liner, with horizontal spacing of 17 to 27 feet. A polyvinyl chloride access tube is connected to the ends of each VCP to facilitate the deployment of a neutron probe for moisture monitoring. The access tubes open on the north and south sides of the containment cell. A neutron probe is manually moved through the VCP during monitoring events.

Monitoring requirements for the post-closure care period are specified in Table H-1 of this Permit Attachment.

H.6.1 Monitoring Methods

Moisture monitoring in the PSL subsystem involves measuring soil moisture content through each VCP using a neutron probe. The moisture sensor will be a California Pacific Nuclear (CPN) 503DR Hydroprobe Moisture Depth Gauge, or equivalent. The CPN 503DR probe uses a 50.0-millicurie americium-241:beryllium neutron source for moisture content measurement. With the custom-made cable-and-winch system available at the Facility, the CPN 503DR probe

can be configured to move through each VCP while communicating with the control box on the surface.

Following neutron logging, the calculated moisture content data shall be entered onto a computer spreadsheet for evaluation. Moisture monitoring shall be conducted in accordance with FOP 08-20 (most current version).

H.6.2 CPN 503DR Hydroprobe Moisture Depth Gauge QA/QC and Correlation

The CPN 503DR Hydroprobe Moisture Depth Gauge is used to measure absorption of emitted neutrons and is a geophysical technique to measure soil moisture content. The assumption is made that the hydrogen in soil moisture is the dominant absorber of the emitted neutrons.

The CPN 503DR probe shall be operated in accordance with FOP 08-20. The standard count measures the proper function of the gauge electronics and also compensates for the source decay. This measurement shall be performed daily when the probe is used, as described in the FOP.

The correlation of neutron counts to soil moisture content using the CPN 503DR neutron probe was initially performed in a vessel that duplicated as closely as possible the *in situ* characteristics at the field measuring location. The probe was inserted into the access tube within the vessel, and count readings were taken for a known soil moisture content in the repacked native soil. The resulting neutron count/soil moisture content relationship was used to develop the initial correlation currently used for the instrument, which associates a neutron count to a known soil moisture content. To ensure the accuracy of the moisture measurement using the correlation formula the neutron probe must be recalibrated to account for source decay and drift of the electronic counting system. During calibration the probe response is restored to the same condition as existed when the correlation formula was determined. The probe shall be returned to the manufacturer annually for calibration.

H.7 SAMPLING AND ANALYSIS PLAN FOR THE CAMU VERTICAL SENSOR ARRAY MONITORING SYSTEM

The Vertical Sensor Array (VSA) monitoring subsystem provides both lateral and vertical gradient information on *in situ* soil moisture, soil temperature and soil gas. Sampling and analysis via the VSA monitoring system shall be conducted to verify the integrity and performance of the CAMU containment cell. This Sampling and Analysis Plan (SAP) describes the monitoring and sampling strategy that shall be used for the VSA during post-closure care.

The VSA monitoring subsystem consists of 11 vertical boreholes located below the containment cell. Each borehole contains sampling points at 5 and 15 feet below the containment cell liner. The sampling points contain the following three components: a time-domain reflectometry (TDR) soil-moisture probe, a temperature sensor, and an active soil-gas sampler. Instrumentation cabling and tubing is ducted to the surface outside of the containment cell liner perimeter. The cabling and tubing connection ends for each VSA borehole are located within individual weatherproof, aboveground enclosures positioned around the perimeter of the containment cell.

H.7.1 Monitoring and Sampling Strategy

Monitoring requirements for the VSA are also outlined in Table H-1 of this Permit Attachment.

TDR moisture monitoring and temperature monitoring will be conducted in accordance with FOP 08-21.

H.7.2 Sampling Methods and Analytical Procedures

The soil gas-sampling package consists of a 2-inch-diameter and 6-inch-long, end-capped and slotted polyvinyl chloride screen at the sampling location, connected to the ground surface by 1/4-inch-inside-diameter Teflon™ tubing. Except as required herein, soil gas sampling shall be conducted in accordance with FOP 08-22.

Laboratory sample custody, data management, reporting, and sample disposal shall be performed in accordance with established laboratory procedures. Analytical procedures shall follow established laboratory standard operating procedures based upon the referenced EPA method. Active soil gas sampling shall be conducted for volatile organic compounds included in EPA Methods TO-14 or equivalent analytical method.

Except as required herein, Table H-2 of this Permit Attachment lists the field procedures that will be used in support of this SAP. These procedures provide instructions for conducting VSA monitoring and sampling operations. For each scheduled sampling event on Table H-2, field and laboratory quality assurance (QA) samples shall include duplicate samples and trip and field blanks in accordance with the procedure and the TO-14 or equivalent analytical method.

H.7.3 Time-Domain Reflectometer and Data Acquisition Software and QA/QC

The TDR100 Time-Domain Reflectometer and PC-TDR software will be operated in accordance with the FOP 08-21 and the Campbell Scientific, Inc. TDR100 Instruction Manual (Campbell Scientific, Inc., April 2002).

The reflectometer will be operated and tested according to the operator's manual as discussed in FOP 08-21. Predetermined settings for the cable length, waveform, and probe for each monitoring location are entered into the PC-TDR software to ensure capture of the waveform signal to determine soil volumetric water content.

H.8 SAMPLING AND ANALYSIS PLAN FOR THE CHEMICAL WASTE LANDFILL AND SANITARY SEWER LINE MONITORING SYSTEM AT THE CAMU

The Chemical Waste Landfill (CWL) and Sanitary Sewer Line (CSS) monitoring subsystem is designed to allow detection and identification of leakage from the sanitary sewer line, as well as volatile organic compounds (VOCs) that could potentially migrate from the CWL towards the CAMU containment cell. This SAP describes the monitoring and sampling strategy that shall be used for the CSS monitoring system during post-closure care.

The CSS monitoring subsystem is located east of the containment cell and consists of six vertical, 20-foot-deep boreholes, spaced approximately 100 feet apart in a line parallel to the north-south oriented sanitary sewer line. Each borehole is equipped with galvanized steel casing suitable for deployment of a neutron probe for soil moisture monitoring and a sampling port used to collect soil gas samples.

H.8.1 Monitoring and Sampling Strategy

Monitoring shall also be conducted as specified in Table H-1 of this Permit Attachment. The CSS monitoring system shall be used to perform the following activities:

1. Detect liquid releases from the sanitary sewer line, thereby providing information to eliminate false positive detections at the other vadose zone monitoring systems. Potential releases from the sanitary sewer line would be of an aqueous nature and could contain nitrates and perhaps phosphates and sulfates. VOCs originating from the sanitary sewer line are not anticipated; and
2. Detect VOC vapors migrating northwest through the vadose zone toward the containment cell from residual contamination at the CWL.

A neutron probe shall be used at the CSS monitoring locations to measure soil moisture. During a monitoring event, the probe is manually lowered to the selected monitoring point inside the galvanized steel casing. Moisture monitoring within the CSS shall be conducted following FOP 08-20.

H.8.2 Sampling Methods and Analytical Procedures

The CSS monitoring points shall also be used for soil gas sampling to detect and identify VOC vapors that may potentially migrate toward the containment cell from residual contamination at the CWL. Except as required herein, soil gas sampling shall be conducted in accordance with FOP 08-22.

An analytical laboratory under contract to the Permittees for the Facility shall be used to provide the analytical services. Laboratory sample custody, data management, reporting, and sample disposal shall be performed in accordance with established laboratory procedures. Active soil gas sampling shall be conducted for VOCs included in EPA Methods TO-14 or equivalent analytical method.

Except as required herein, Table H-2 of this Permit Attachment lists the field procedures that shall be used in support of this SAP. These procedures provide instructions for CSS monitoring and sampling operations. For each scheduled sampling event prescribed by Table H-1 of this Permit Attachment, field and laboratory quality assurance (QA) samples shall include duplicate samples.

The Permittees shall perform the QA/QC checks and correlations for the CPN 503DR Hydroprobe Moisture Depth Gauge as set forth in Section H.6.2 of this Permit Attachment, and shall operate the probe in accordance with FOP 08-20.

H.9 ANNUAL REPORT

The Permittees shall submit to the Department a certified annual report describing the post-closure care conducted at the CAMU for the previous year. The annual report shall be submitted no later than March 31 of every year that post-closure care takes place. The report shall summarize the results of required inspection and maintenance/repair activities indicating whether repairs were effective and met the applicable CAMU construction or Permit maintenance specifications. The report shall also summarize sampling results, leachate generation, and any problems, leaks, or releases that either endangered or presented significant potential to endanger human health or the environment and what was done to mitigate such problems, leaks, or releases.

H.10 CERTIFICATION OF COMPLETION OF POST-CLOSURE CARE

Within 60 days of the end of the post-closure care period for the CAMU, the Permittees shall submit to the Department, by registered mail, a written certification that post-closure care for the CAMU was performed in accordance with the specifications of this Permit including this Permit Attachment. Responsible officials of the Permittees, as well as an independent registered professional engineer, shall sign the certification. Documentation supporting the independent registered professional engineer's certification of completion of post-closure care shall be furnished by the Permittees to the Department upon request In addition, the Permittees shall prepare a final post-closure care report summarizing pertinent information regarding post-closure monitoring, maintenance, and repair activities and any variances from this Permit Attachment and the reasons for the variances. The post-closure care report shall be provided with the certification to the Department within 60 days of the end of the post-closure period. Transmittal of the report shall include a request from the Permittees for the Department to approve termination of post-closure care for the CAMU. However, submittal of the latter request does not obligate the Department to terminate post-closure care, and the Department instead, may extend the period of post-closure care if necessary to protect human health and the environment pursuant to 40 CFR § 264.117(a)(2)(ii).

PERMIT ATTACHMENT I COMPLIANCE SCHEDULES

Reserved

PERMIT ATTACHMENT J HAZARDOUS AND MIXED WASTE MANAGEMENT UNITS

J.1 ACTIVE PORTION OF THE FACILITY

The active portion of the facility comprises those units permitted to treat and store hazardous and mixed waste. These units are listed in Table J-1.1.

The following information describes process codes and associated process descriptions:

- S01-storage in containers (Table J-1.1)
- T04-treatment in containers (Table J-1.2)
- X01-treatment by open burning (Table J-1.2)
- T04-physical treatment (Table J-1.2)

Table J-1.1. Units Permitted for Storage in Containers (Process Code S01)

Unit Identifier	Storage Capacity	General Information	Type of Unit
TA-I: Hazardous Waste Handling Unit Building 958	59,950 gal	Includes hazardous and mixed waste packaging and storage Total square footage : 3520	Indoor
TA-I: Hazardous Waste Handling Unit Building 959	7,590 gal	Includes hazardous and mixed waste packaging and storage Total square footage: 1800	Indoor
TA-I: Hazardous Waste Handling Unit, Modular Storage Building 958B	5,000 gal	Includes the storage of ignitable and reactive wastes (e.g., lithium batteries) and flammable solids Total square footage: 176	Indoor
TA-I: Hazardous Waste Handling Unit, Modular Storage Building 958C	5,000 gal	Includes the storage of ignitable and reactive wastes (e.g., lithium batteries) and flammable solids Total square footage: 176	Indoor
TA-III: Radioactive And Mixed Waste Management Unit - Building 6920	13,420 gal	Includes storage, treatment (see Table J-1.2), and repackaging of hazardous and mixed wastes Total square footage: 5800	Indoor
TA-III: Radioactive And Mixed Waste Management Unit - in Building 6921	7,810 gal	Includes treatment (See Table J-1.2), , repackaging and storage of hazardous and mixed wastes Total square footage: 1450	Indoor
TA-III: Radioactive And Mixed Waste Management Unit - Building 6925	83,160 gal	Includes treatment (See Table J-1.2), repackaging and storage of hazardous and mixed wastes Total square footage: 4000	Indoor
TA-III: Radioactive And Mixed Waste Management Unit - Building 6926	83,160 gal	Includes storage of hazardous and mixed wastes Total square footage: 4000	Indoor

Table J-1.1. Units Permitted for Storage in Containers (Process Code S01)			
Unit Identifier	**Storage Capacity**	**General Information**	**Type of Unit**
TA-III: Radioactive And Mixed Waste Management Unit - Modular Storage Building TP150	1,100 gal	Includes storage of reactive and ignitable hazardous and mixed wastes Total square footage: 207	Indoor
TA-III: Radioactive And Mixed Waste Management Unit - Modular Storage Building TP153	1,100 gal	Includes storage of reactive and ignitable hazardous and mixed wastes Total square footage: 207	Indoor
TA-III: Radioactive And Mixed Waste Management Unit - Asphalt Storage Area located North, East, and West of Building 6920	19,800 gal	Includes the storage of hazardous and mixed wastes. Total square footage: 48500	Outdoor
TA-V: Auxiliary Hot Cell Unit	6,620 gal	Includes storage, treatment (See Table J-1.2), and repackaging of hazardous and mixed wastes in Building 6597 Total square footage: 3500	Indoor
TA-V: Auxiliary Hot Cell Unit	1,455 gal	Includes storage of mixed waste in Storage Silos located in Building 6597 Total square footage: 13	Indoor
Manzano Base: Bunker 37034	25,080 gal	Includes storage of hazardous and mixed waste Total square footage: 2146	Indoor
Manzano Base: Bunker 37045	18,480 gal	Includes storage of hazardous and mixed waste Total square footage: 1608	Indoor
Manzano Base: Bunker 37055	18,480 gal	Includes storage of hazardous and mixed waste Total square footage: 1608	Indoor
Manzano Base: Bunker 37057	18,480 gal	Includes storage of hazardous and mixed waste Total square footage: 1608	Indoor
Manzano Base: Bunker 37118	35,200 gal	Includes storage of hazardous and mixed waste Total square footage: 2433	Indoor

Table J-1.2. Units Permitted for Treatment (Process Codes T04 and X01)

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-III: Radioactive And Mixed Waste Management Unit – All treatment in Buildings 6920 and 6921 Macroencapsulation also in Building 6925	T04	65 gal/day 3,000 gal/yr 80 lb/day 150 lb/yr 550 gal/day 6,000 gal/yr 16 lb/day 100 lb/yr 13,800 gal/day 138,000 gal/yr 5,000 lb/day 50,000 lb/yr	Chemical deactivation Thermal deactivation Stabilization and solidification Amalgamation Macroencapsulation Physical treatment See Table J-1.1 for storage	Indoor
TA-III: Thermal Treatment Unit	X01	20.8 gal in pan 9,500 lb/yr	Open burning	Outdoor
TA-V: Auxiliary Hot Cell Unit	T04	55 gal/day 2,000 gal/yr 550 gal/day 2,000 gal/yr 840 gal/day 6,000 gal/yr 5,000 lb/day 50,000 lb/yr	Chemical deactivation Stabilization and solidification Macroencapsulation Physical treatment See Table J-1.1 for storage	Indoor

Units subject to post-closure care under this Permit are listed in Table J-2. The Chemical Waste Landfill is regulated under a stand-alone Post-Closure Care Permit.

Table J-2. Permitted Units Undergoing Post-Closure Care (Process Code S99)

Unit Identifier	Regulatory Status	Operating Capacity	General Information
TA-III: Corrective Action Management Unit	Post-Closure Permitted Unit	31,800 cubic yards	Post-Closure care of CAMU containment cell where remediation wastes remain in place

The closed units that are listed in Table J-3 do not require post-closure care and are not considered units subject to the requirements of this Permit. Therefore, Table J-3 is for informational purposes only.

Table J-3. Closed Units Not Requiring Post-Closure Care

Unit Identifier	Process Codes	Regulatory Status	Operating Capacity	General Information
TA-V: High Bay Waste Storage Unit, Building 6596	S01	Clean Closed	100,320 gallons	Container storage unit underwent RCRA Clean Closure in June of 2006
Manzano Base: Bunker 37063	S01	Clean Closed	25,080 gallons	Container storage unit was never used for hazardous or mixed waste storage. Therefore, the application to permit it was withdrawn and the Unit was closed in October of 2006
Manzano Base: Bunker 37078	S01	Clean Closed	35,200 gallons	Container storage unit was never used for hazardous or mixed waste storage. Therefore, the application to permit it was withdrawn and the Unit was closed in October of 2006

PERMIT ATTACHMENT K SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN

Table K-1 provides the list of solid waste management units (SWMUs) and areas of concern (AOCs) at the Facility for which corrective action is required under the Consent Order; whereas, Table K-2 includes the SWMUs, AOCs, and hazardous waste management units for which corrective action is required under this Permit. Table K-3 provides the list of SWMUs, AOCs, and hazardous waste management units for which corrective action is complete with controls. Table K-4 includes the SWMUs, AOCs, and hazardous waste management units for which corrective action is complete without controls and that do not require monitoring. Attachment J, Tables J-1, J-2, and J-3 include lists of hazardous waste management units at the Facility and their status (*e.g.*, permitted, under post-closure care, closed) of each unit.

TABLE K-1
Solid Waste Management Units and Areas of Concern Requiring Corrective Action Under the Consent Order

SWMU/AOC #	Name or Description	Comments
OU-1289	***Mixed Waste Landfill***	
76	Mixed Waste Landfill (TA-III)	
OU 1295	***Septic Tanks and Drainfields***	
149	Bldg. 9930 Septic System (Coyote Test Field)	
154	Bldg. 9960 Septic System and Seepage Pits (Coyote Test Field)	
OU-1306	***TAs-III & V***	
83	Long Sled Track	
84	Gun Facilities	
240	Short Sled Track	
OU-1332	***Foothills Test Area***	
8	Open Dump (Coyote Canyon Blast Area)	
58	Coyote Canyon Blast Area	
OU-1334	***Central Coyote Test Area***	
68	Old Burn Site	
	Miscellaneous Sites	
	Tijeras Ground-Water (TAG) Investigation	
	TA-V Ground-Water Investigation	
	Burn Site Ground-Water Investigation	
502	Building 9938 Surface Discharge Site	

TABLE K-2 Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units Requiring Corrective Action Under this Permit		
SWMU/AOC #	**Name or Description**	**Comments**
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved
Reserved	Reserved	Reserved

TABLE K-3 Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete with Controls		
SWMU/AOC#	**Name or Description**	**Date of CAC Approval**
OU 1295	***Septic Tanks and Drainfields***	
137	Bldg. 6540/6542 Septic System (TA-III)	02/08
OU 1302	***TA-I***	
96	Storm System Drain	06/06
98	Bldg. 863 (TCA, Photochemical Releases: Silver Catch Boxes)	11/05
187	Septic Tank Piping for POTW	06/06
190	Steam Plant Tank Farm	06/06
226	Old Acid Waste Line	06/06
OU 1303	***TA-II***	
1	Radioactive Waste Landfill	02/08
2	Classified Waste Landfill (TA-II)	06/06
3	Chemical Disposal Pit	02/08
135	Bldg. 906 Drain System (TA-II)	06/06
OU 1306	***TAs-3&5***	
105	Mercury Spill (Bldg. 6536)	12/14
196	Bldg. 6597 Cistern (TA-V)	12/14
OU 1307	***Liquid Waste Disposal System***	
4	LWDS Surface Impoundments	12/14
OU 1309	***Tijeras Arroyo***	

TABLE K-3 Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete with Controls		
SWMU/AOC#	**Name or Description**	**Date of CAC Approval**
45	Liquid Discharge (behind TA-IV)	02/08
46	Old Acid Waste Line Outfall	12/14
229	Storm Drain System Outfall (for TA-II)	06/06
OU 1332	***Foothills Test Area***	
87	Bldg. 9990 Firing Site	06/06
OU 1335	***Southwest Test Area***	
91	Lead Firing Site (Thunder Range)	12/14
	Miscellaneous Sites	
1029	Bldg. 6584 North Septic System (TA-III)	06/06
1081	Bldg. 6650 Septic System (TA-III)	02/08
1090	Bldg. 6721 Septic System (TA-III)	12/14

TABLE K-4 Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete without Controls			
SWMU/AOC#	**Name or Description**	**Date of CAC Approval**	**Comments**
OU 1295	***Septic Tanks and Drainfields***		
49	Bldg. 9820 Drains (Lurance Canyon)	12/14	
101	Bldg. 9926/9926A Septic System and Seepage Pit (Coyote Test Field)	12/14	
116	Bldg. 9990 Septic System (Coyote Test Field)	12/14	
138	Bldg. 6630 Septic System (TA-III)	12/14	
139	Bldg. 9964 Septic System	12/95	
140	Bldg. 9965 Septic System and Drywell (Thunder Range)	12/14	
141	Bldg. 9967 Septic System	11/01	
142	Bldg. 9970 Septic System	09/00	
143	Bldg. 9972 Septic System	09/00	
144	Bldg. 9980 Septic System	09/00	
145	Bldgs. 9981/9982 Septic System	09/00	
146	Bldg. 9920 Drain System (Coyote Test Field)	02/08	
147	Bldg. 9925 Septic Systems (Coyote Test Field)	12/14	
148	Bldg. 9927 Septic System (Coyote Test Field)	02/08	
150	Bldgs. 9939/ 9939A Septic System and Drainfield (Coyote Test Field)	12/14	
151	Bldg. 9940 Septic System	11/01	
152	Bldg. 9950 Septic System (Coyote Test Field)	02/08	
153	Bldg. 9956 Septic Systems (Coyote Test Field)	02/08	
160	Bldg. 9832 Septic System	11/01	
161	Bldg. 6636 Septic System (TA-III)	12/14	
OU 1300			
211	Bldg. 840, Former UST 840-1 (TA-I)	09/00	
OU 1302	***TA-I***		
25	Burial Site (South of TA-I)	12/95	
30	PCB Spill (Reclamation Yard)	04/05	
32	Steam Plant Oil Spill	12/95	
33	Motor Pool Oil Spill	04/05	
41	Bldg. 838 Mercury Spill	12/95	
42	Acid Spill, Bldg. 879 Water Treatment Facility	09/00	
73	Hazardous Waste Repackaging and Storage (Bldg. 895)	12/95	
104	PCB Spill	12/95	
186	TCE Dumping south of Bldg. 859	09/00	

TABLE K-4 Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete without Controls			
SWMU/AOC#	**Name or Description**	**Date of CAC Approval**	**Comments**
192	TA-I Waste Oil Tank	07/00	
276	Former Bldg. 829X Silver Recovery Sump (TA-I)	02/08	
OU 1303	**TA-II**		
43	Radioactive Material Storage Yard (TA-2)	09/00	
44	Decontamination Site and Uranium Calibration Pits (UCPs)	07/00	
48	Bldg. 904 Septic System and HE Drain System (TA-II)	06/06	
113	Area II Firing Sites	11/01	
114	Explosive Burn Pit	04/05	
136	Bldg. 907 Septic System and HE Drain System (TA-II)	06/06	
159	Bldg. 935 Septic System and Drywell (TA-II)	06/06	
165	Bldg. 901 Septic System (TA-II)	06/06	
166	Bldg. 919 Septic System (TA-II)	06/06	
167	Bldg. 940 Septic System and Seepage Pit (TA-II)	06/06	
OU 1306	***TAs-3&5***		
18	Concrete Pad	04/05	
26	Burial Site (Western Part of TA-3)	04/05	
31	Electrical Transformer Oil Spill	11/01	
34	Centrifuge Oil Spill	11/01	
35	Vibration Facility Oil Spill (TA-3)	04/05	
36	HERMES Oil Spill	11/01	
37	PROTO Oil Spill	11/01	
51	Bldg. 6924 Pad, Tank, and Pit	11/01	
78	Gas Cylinder Disposal Pit	02/08	
100	Bldg. 6620 Drain/Sump	11/01	
102	Radioactive Disposal Area	11/01	
107	Explosive Test Area (South-East TA-3)	04/05	Also site of CAMU
111	Bldg. 6715 Sump/Drain	11/01	
188	Bldg. 6597 Above Ground Containment Spill Tank	12/95	
241	Storage Yard	04/05	
275	Seepage Pits, TA-V	07/00	
OU 1307	***Liquid Waste Disposal System***		
5	LWDS Drainfield (TA-V)	12/14	
52	LWDS Holding Tank	12/14	
OU 1309	***Tijeras Arroyo***		

TABLE K-4
Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete without Controls

SWMU/AOC#	Name or Description	Date of CAC Approval	Comments
7	Gas Cylinder Disposal (Arroyo del Coyote)	09/00	Transferred to KAFB in 2000, listed on KAFB Permit
16	Open Dumps (Arroyo del Coyote)	09/00	
23	Disposal Trenches (near Tijeras Arroyo)	07/00	
40	Oil Spill (6000 Igloo Area)	11/97	
50	Old Centrifuge Site (Tijeras Arroyo)	09/00	
77	Oil Surface Impoundment	07/00	
227	Bunker 904 Outfall	06/06	
228A	Centrifuge Dump Site	09/00	
228B	Centrifuge Dump Site	11/01	
230	Storm Drain System Outfall (for TA-4)	04/05	
231	Storm Drain System Outfall (for TA-4)	04/05	
232	Storm Drain System Outfall	04/05	
233	Storm Drain System Outfall	07/12	
234	Storm Drain System Outfall	07/12	
235	Storm Drain System Outfall	09/00	
OU 1332	***Foothills Test Area***		
15	Trash Pits (Frustration Site)	12/97	
19	TRUPAK Boneyard Storage Area (NW End of Old Aerial Cable)	07/00	
27	Animal Disposal Pit (Coyote Springs)	07/00	
28-1	Mine Shafts	12/97	
28-2	Mine Shafts	12/14	
28-3	Mine Shafts	12/97	
28-4	Mine Shafts	12/97	
28-5	Mine Shafts	12/97	
28-6	Mine Shafts	12/97	
28-7	Mine Shafts	12/97	
28-8	Mine Shafts	12/97	
28-9	Mine Shafts	12/97	
28-10	Mine Shafts	11/01	
66	Boxcar Site	04/05	
67	Frustration Site	11/01	
82	Old Aerial Cable Site	11/01	
277	New Firing Site East of Optical Range	11/01	
OU 1333	***Canyons Test Area***		
10	Burial Mounds (Bunker Area North of Pendulum Site)	07/00	
12A	Open Arroyo Channel	09/00	
12B	Buried Debris in Graded Area	07/00	
13	LCBS Oil Surface Impoundment (Lurance Canyon Burn Site)	07/00	
59	Pendulum Site	07/00	
60	Bunker Area	11/01	

TABLE K-4
Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete without Controls

SWMU/AOC#	Name or Description	Date of CAC Approval	Comments
63-A	Balloon Test Area: Plutonium Dispersal Study Program (PDSP) Site	09/00	
63-B	Balloon/Helicopter Site	07/00	
64	Gun Site (Madera Canyon)	09/00	
65-A	Lurance Canyon Explosive Test Site: Small Debris Mound	09/00	
65-B	Lurance Canyon Explosive Test Site: Primary Detonation Area	09/00	
65-C	Lurance Canyon Explosive Test Site: Secondary Detonation Area	09/00	
65-D	Lurance Canyon Explosive Test Site: Near Field Dispersion Area	09/00	
65-E	Far Field Dispersion Area	07/00	
72	Operation Beaver Site	07/00	
81-A	Catcher Box/Sled Track	11/01	
81-B	Impact Pad	11/01	
81-C	New Aerial Cable Site: Former Burial Location	09/00	
81-D	Northern Cable Area	11/01	
81-E	Gun Impact Area	11/01	
81-F	Scrap Yard	11/01	
92	Pressure Vessel Test Site (Coyote Canyon Blast Area)	12/97	
93	Madera Canyon Rocket Launcher Pads A, B & C	07/00	
94-A	Aboveground Tanks, Lurance Canyon Burn Site	07/00	
94-B	Debris/Soil Mound Area	04/05	
94-C	Bomb Burner Area and Discharge Line	11/01	
94-D	Lurance Canyon Burn Site: Bomb Burner Discharge Pit	09/00	
94-E	Lurance Canyon Burn Site: Small Surface Impoundment	09/00	
94-F	LAARC Discharge Pit	04/05	
94-G	Scrap Yard, Lurance Canyon Burn Site	11/01	
94-H	Fuel Spill at Open Pool Test Area, Lurance Canyon Burn Site	04/05	
225	AEC Storage Facility/Kirtland AFB	12/05/96	Transferred to KAFB in 1996, listed on KAFB Permit
OU 1334	***Central Coyote Test Area***		
9	Burial/Open Dump (Schoolhouse Mesa)	04/05	
11	Explosive Burial Mounds	09/00	
20	School House Mesa Burn Site	12/95	
21	Metal Scrap (Coyote Springs)	09/00	

TABLE K-4
Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete without Controls

SWMU/AOC#	Name or Description	Date of CAC Approval	Comments
22	Storage/Burn (West of DEER)	07/00	
47	Unmanned Seismic Observatory	12/95	
57-A	Workman Site-Firing Site	09/00	
57-B	Workman Site-Target Area	09/00	
61-A	Blast Area	07/00	
61-B	Cratering Area	12/05/96	Transferred to KAFB in 1996, listed on KAFB Permit
61-C	Schoolhouse Mesa Test Site -- Schoolhouse Bldg.	09/00	
62	Greystone Manor Site (Coyote Springs)	12/95	
69	Old Borrow Pit	12/95	
70	Explosives Test Pit (Water Towers)	09/00	
71	Moonlight Shot Area	07/00	
88-A	Firing Site: Ranch House	12/95	
88-B	Firing Site: Instrumentation Pole	09/00	
OU 1335	***Southwest Test Area***		
6	Gas Cylinder Disposal Pit (Bldg. 9966)	11/01	
6-A	Gas Cylinder Disposal Pit	11/01	
14	Burial Site (Bldg. 9920)	07/00	
17	Scrap Yards/Open Dump (Thunder Range)	07/00	
39	Oil Spill - Solar Facility	11/97	
38	Oil Spills (Bldg. 9920)	07/00	
53	Bldg. 9923 Storage Igloo	11/97	
54	Pickax Site (Thunder Range)	07/00	
55	Red Towers Site (Thunder Range)	09/00	
56	Old Thunderwells (Thunder Range)	07/00	
85	Burial Site (Bldg. 9920)	07/00	
86	Firing Site (Bldg. 9927)	11/01	
89	Shock Tube Site (Thunder Range)	07/00	
90	Beryllium Firing Site (Thunder Range)	09/00	
103	Scrap Yard (Bldg. 9939)	07/00	
108	Firing Site (Bldg. 9940)	07/00	
109	Firing Site (Bldg. 9950)	07/00	
112	Explosive Contaminated Sump (Bldg. 9956)	09/00	
115	Firing Site (Bldg. 9930)	09/00	
117	Trenches (Bldg. 9939)	11/01	
191	EQUUS Red	11/01	
193	Sabotage Test Area	07/00	
194	General Purpose Heat Source Test Area	11/97	
Misc. Sites			
	Building 828, TA-1	04/05	
	TNT Site	04/05	

TABLE K-4
Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete without Controls

SWMU/AOC#	Name or Description	Date of CAC Approval	Comments
195	Experimental Test Pit	11/05	
1001	Bldg. 898 Septic System (TA-I)	11/05	
1002	Bldg. 8895/MO 100 Septic System (TA-I)		No Investigation Needed, Active System
1003	Former Bldg. 915/922 Septic System (TA-II)	11/05	
1004	Bldg. 6969 Septic System (Robotic Vehicle Range)	02/08	
1005	Bldg. 6020 Septic System (6000 Igloo Area)		No Investigation Needed, Active System
1006	Bldg. 6741 Septic System (TA-III)	06/06	
1007	Bldg. 6530 Septic System (TA-III)	06/06	
1008	Bldg. 6750 Septic System (TA-III)	11/05	
1009	Bldg. 6620 Internal Sump (TA-III)	11/05	
1010	Bldg. 6530 Septic System (TA-III)	06/06	
1013	Bldg. T-52 and Former Bldg. 6500 South Septic System (TA-V)		Does Not Exist
1014	Former T-12, T-42, and T-43 Septic System (TA-V)	11/05	
1015	Bldg. 6530 Septic System (TA-III)	06/06	
1016	Bldg. 914 Seepage Pit (TA-II)		No Investigation Needed
1017	Bldg. 897X Septic System (TA-I)		Does Not Exist
1020	MO-146, MO-235, and T-40 Septic System (TA-III)	06/06	
1021	Bldg. 859 Drywell (TA-I)		No Investigation Needed
1022	Bldg. 6505A Seepage Pit (TA-III)		No Investigation Needed
1023	Bldg. 6505 Southwest Seepage Pit (TA-III)		No Investigation Needed
1024	MO 242-245 Septic System (TA-III)	06/06	
1025	Bldg. 6501 East Septic System (TA-III)	11/05	
1026	Bldg. 6501 West Septic System (TA-III)	11/05	
1027	Bldg. 6530 Septic System (TA-III)	11/05	
1028	Bldg. 6560 Septic System (TA-III)	06/06	
1030	Bldg. 6587 Septic System (TA-III)	11/05	
1031	Former Bldgs. 6589 and 6600 Septic System (TA-III)	02/08	
1032	Bldg. 6610 Septic System (TA-III)	11/05	
1033	Bldg. 6631 Septic System (TA-III)	11/05	
1034	Bldg. 6710 Septic System (TA-III)	02/08	
1035	Bldg. 6715 Septic System (TA-III)	02/08	
1036	Bldg. 6922 Septic System (TA-III)	02/08	
1037	MO 14, MO 15 Septic System (TA-I)		No Investigation Needed, Active System

TABLE K-4
Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete without Controls

SWMU/AOC#	Name or Description	Date of CAC Approval	Comments
1038	MO 154 Drywell (TA-I)		No Investigation Needed
1039	MO 155 Drywell (TA-I)		No Investigation Needed
1040	MO 156 Drywell (TA-I)		No Investigation Needed
1041	T-28 Drywell (TA-I)		No Investigation Needed
1042	T-29 Drywell (TA-I)		No Investigation Needed
1043	T-30 Drywells (TA-I)		No Investigation Needed
1044	T-31 Drywell (TA-I)		No Investigation Needed
1045	T-32-2 Drywell (TA-I)		No Investigation Needed
1046	T-44 Drywell (TA-I)		No Investigation Needed
1047	T-45 Drywell (TA-I)		No Investigation Needed
1048	T-46 Drywell (TA-I)		No Investigation Needed
1049	T-47 Drywells (TA-I)		No Investigation Needed
1050	T-48 Drywells (TA-I)		No Investigation Needed
1051	Bldg. 803 Outfall (TA-1)		No Investigation Needed
1052	Bldg. 803 Seepage Pit (TA-I)	02/08	
1053	Bldg. 823 Outfall (TA-I)		No Investigation Needed
1054	Bldg. 823 Drywells (TA-I)		No Investigation Needed
1055	Bldg. 829 Drywell (TA-I)		No Investigation Needed
1056	Bldg. 838 Drywell (TA-I)		No Investigation Needed
1057	Bldg. 839 Drywell (TA-I)		No Investigation Needed
1058	Bldg. 847 Drywell (TA-I)		No Investigation Needed
1059	Bldg. 850 Drywell (TA-I)		No Investigation Needed
1060	Bldg. 857A Drywell (TA-I)		No Investigation Needed
1061	Bldg. 867 Drywells (TA-I)		No Investigation Needed
1062	Bldg. 869 Drywell (TA-I)		No Investigation Needed
1063	Bldg. 882 Drywell (TA-I)		No Investigation Needed
1064	Bldg. 890 Drywells (TA-I)		No Investigation Needed
1065	Bldg. 893 Drywells (TA-I)		No Investigation Needed
1066	Bldg. 894 Drywells (TA-I)		No Investigation Needed
1067	Bldg. 959 Drywell (TA-I)		No Investigation Needed
1068	Bldg. 904E Drywell (TA-II)		No Investigation Needed
1069	Bldgs. 913/913A Septic System (TA-II)		Does Not Exist?
1070	Bldg. 962 Drywells (TA-IV)		No Investigation Needed
1071	Bldg. 986 Drywell (TA-IV)		No Investigation Needed
1072	Bldg. T-52 and Former Bldg. 6500 Septic System (TA-V)	11/05	
1073	Bldg. 6580 Seepage Pit (TA-V)	11/05	
1074	Bldgs. 6581/6582 MO 32/57 Septic System (TA-V)		No Investigation Needed
1075	Bldg. 6582 Septic System (TA-V)		Does Not Exist
1076	Bldg. 6585 Septic System (TA-V)		Does Not Exist
1077	Bldg. 6920 Septic System (TA-III)	11/05	
1078	Bldg. 6640 Septic System (TA-III)	02/08	
1079	Bldg. 6643 Septic System (TA-III)	02/08	
1080	Bldg. 6644 Septic System (TA-III)	02/08	

TABLE K-4
Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete without Controls

SWMU/AOC#	Name or Description	Date of CAC Approval	Comments
1082	Bldg. 6620 Septic System (TA-III)	11/05	
1083	Bldg. 6570 Septic System (TA-III)	06/06	
1084	Bldg. 6505 Septic System (TA-III)	02/08	
1085	Bldg. 6520 Septic System (TA-III)		Does Not Exist
1086	Bldg. 6526 Septic System (TA-III)	06/06	
1087	Bldg. 6743 Seepage Pit (TA-III)	02/08	
1088	Bldg. 6736 Septic System (TA-III)		Does Not Exist
1089	Bldg. 6734 Seepage Pit (TA-III)	11/05	
1091	Bldg. 6720 Septic System (TA-III)	11/05	
1092	MO 228-230 Septic System (TA-III)	02/08	
1093	Bldg. 6584 West Septic System (TA-III)	11/05	
1094	Live Fire Range East Septic System (Lurance Canyon)	12/14	
1095	Bldg. 9938 Seepage Pit (Coyote Test Field)	12/14	
1096	Bldg. 6583 Septic System (TA-III)	11/05	
1097	SFER/127/128/130 Septic System (Lurance Canyon) (DOE Facility)		No Investigation Needed
1098	TA-V Plenum Rooms Drywell (TA-V)	02/08	
1099	Bldg. 634 Outfall (TA-I)		No Investigation Needed
1100	Bldg. 814 Outfall (TA-I)		No Investigation Needed
1101	Bldg. 885 Septic System (TA-I)	12/14	
1102	Former Bldg. 889 Septic System (TA-I)	02/08	
1103	Bldg. 6030 Septic System (6000 Igloo Area)		No Investigation Needed, Active System
1104	Bldg. 6595 Seepage Pit (TA-V)	02/08	
1105	Bldg. 6596 Drywell (TA-V)	11/05	
1106	Bldg. 6505 Interior Sump (TA-III)		No Investigation Needed
1107	Bldg. 6526 Drywell (TA-III)		No Investigation Needed
1108	Bldg. 6531 Seepage Pits (TA-III)	06/06	
1109	Bldg. 6530 Seepage Pit (TA-III)		No Investigation Needed
1110	Bldg. 6536 Drain System (TA-III)	06/06	
1111	Bldg. 6720 Seepage Pit (TA-III)	11/05	Site referred to as Bldg. 6720 Drywell (TA-III) in Consent Order
1112	Bldg. 6590 Reactor Sump Drywell (TA-V)	11/05	
1113	Building 6597 Drywell (TA-V)	02/08	
1114	Bldg. 9978 Drywell (Coyote Test Field)	12/14	
1115	Former Offices Septic System (Solar Tower Complex)	07/12	
1116	Bldg. 9981A Seepage Pit (Solar Tower Complex)	12/14	

TABLE K-4 Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete without Controls			
SWMU/AOC#	**Name or Description**	**Date of CAC Approval**	**Comments**
1117	Bldg. 9982 Drywell (Solar Tower Complex)	12/14	
1118	Bldg. 9966 Drywell (Thunder Range)		No Investigation Needed
1119	Live Fire Range West Septic System (Lurance Canyon) (DOE Facility)		No Investigation Needed, Active System
1120	Bldg. 6595 Seepage Pit (TA-V)	02/08	
LTES-1	Cable Debris Site	12/14	

PERMIT ATTACHMENT L FIGURES

(for Attachment G and Attachment M figures, see Attachments G and M)

Figure 1: Regional Location Map of Sandia National Laboratories
Figure 2: Technical Areas and Permitted Hazardous and Mixed Waste Management Units at the Facility
Figure 3: Location of the Hazardous Waste Handling Unit at the Facility
Figure 4: Hazardous Waste Handling Unit, Hazardous and Mixed Unit Waste Management Areas
Figure 5: Hazardous Waste Handling Unit Building 959 Floor Plan
Figure 6: Hazardous Waste Handling Unit Building 958 Floor Plan
Figure 7: Hazardous Waste Handling Unit Access Control Features and Loading/Unloading Areas
Figure 8: Hazardous Waste Handling Unit Drainage Control Features
Figure 9: Location of the Thermal Treatment Unit at the Facility
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Figure 17: Radioactive and Mixed Waste Management Unit Building 6920 Hazardous and Mixed Waste Management Areas
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Figure 19-A: Radioactive and Mixed Waste Management Unit, Buildings 6925 and 6926, Hazardous and Mixed Waste Management Areas
Figure 19-B: Radioactive and Mixed Waste Management Unit, Loading/Unloading and Access Control Features
Figure 19-C: Radioactive and Mixed Waste Management Unit, Drainage Control Features
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Figure 21-A: Location of the Auxiliary Hot Cell Unit at the Facility
Figure 21-B: Location of the Auxiliary Hot Cell Unit (AHCU) in Technical Area (TA) V
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Figure 23: Auxiliary Hot Cell Unit Loading/Unloading and Access Control Features
Figure 24: Auxiliary Hot Cell Unit (AHCU), Drainage Control Features
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Figure 26: Location of the Manzano Storage Bunkers at Manzano Base
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Figure 28: Views, Manzano Storage Bunker, Type C, Bunker 37118
Figure 29: Views, Manzano Storage Bunkers, Type D, Bunkers 37045, 37055, and 37057
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Figure 33: Corrective Action Management Unit Containment Cell Site Plan
Figure 34: Corrective Action Management Unit, North-South Cross-Section of Leachate Collection and Removal System Sump ~~C~~
Figure 35: Corrective Action Management Unit, East-West Cross-Section of Containment Cell
Figure 36: Plan View of Completed Corrective Action Management Unit (CAMU) Containment Cell Showing Final Cover Configuration and Associated Perimeter Drainage Pathways
Figure 37: Schematic Cross-Section of the Final Cover System, Corrective Action Management Unit Containment Cell
Figure 38: Plan View of Corrective Action Management Unit Containment Cell and Vadose Zone Monitoring System
Figure 39: Block Diagram of the Corrective Action Management Unit Containment Cell and Vadose Zone Monitoring System
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Figure 41: Configuration of Vertical Sensor Array Monitoring Subsystem
Figure 42: Cross-Section Configuration of Chemical Waste Landfill and Sanitary Sewer Monitoring Subsystem
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Figure 44: Hazardous Waste Handling Unit Emergency Response and Access Information
Figure 45: Thermal Treatment Unit (TTU) Evacuation Route
Figure 46: Radioactive and Mixed Waste Management Unit, Evacuation Routes
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Figure 48: Auxiliary Hot Cell Unit (AHCU), Evacuation Routes
Figure 49: Auxiliary Hot Cell Unit (AHCU), Emergency Response and Access Information
Figure 50: Manzano Storage Bunkers, Evacuation Routes
Figure 51: Local Area Map of Corrective Action Management Unit Containment Cell Evacuation Routes
Figure 52: Solid Waste Management Units and Areas of Concern Sandia National Laboratories Albuquerque, New Mexico

Appendices with Figures

Appendix A-1: Photographs of the Hazardous and Mixed Waste Management Areas at the HWHU

Appendix A-2: Photographs of the Hazardous Waste Management Areas at the TTU

Appendix A-3: Photographs of the Hazardous and Mixed Waste Management Areas at the RMWMU

Appendix A-4: Photographs of the Hazardous and Mixed Waste Management Areas at the AHCU

Appendix A-5: Photographs of the Hazardous and Mixed Waste Management Areas at the MSB

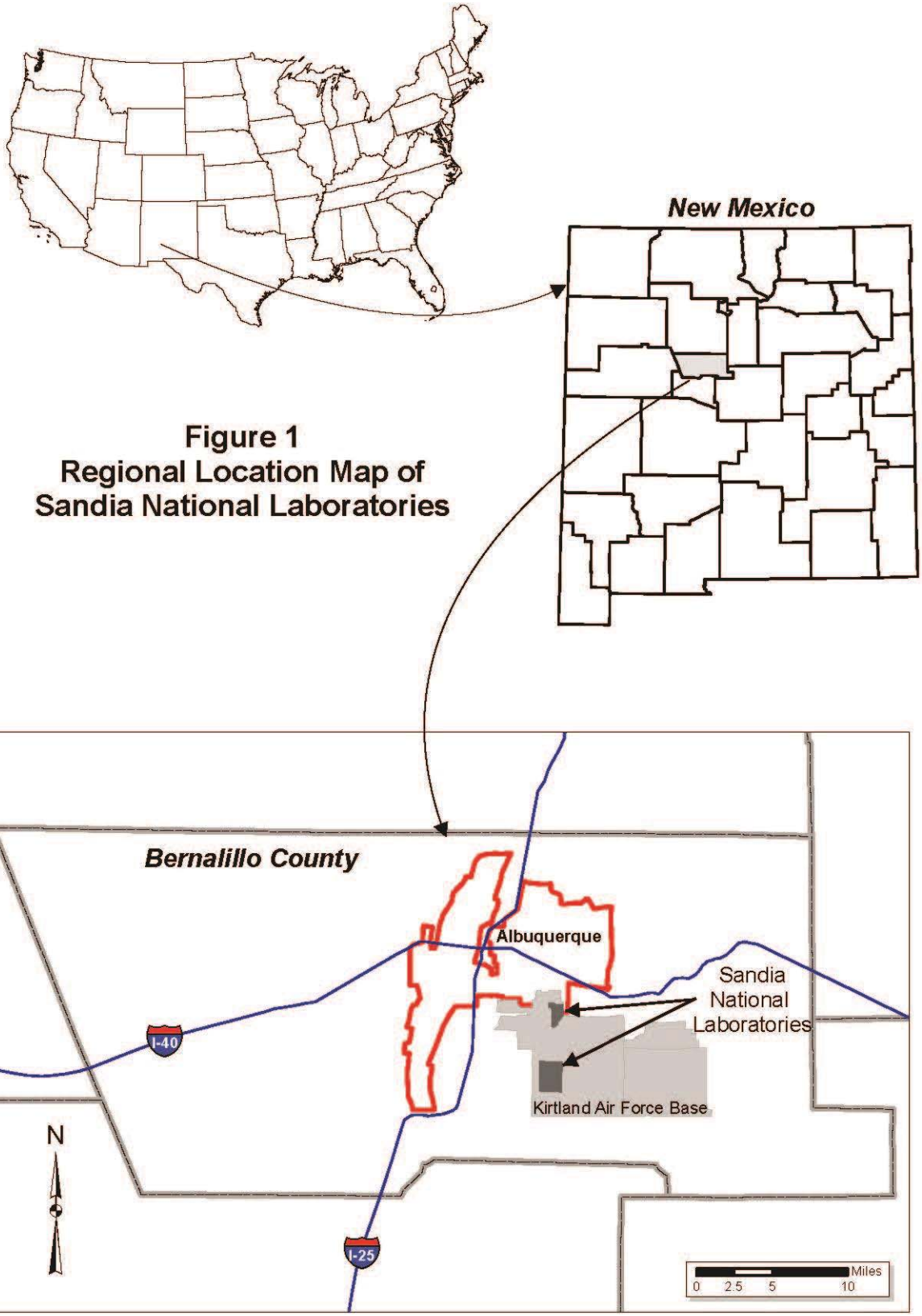


Figure 1
Regional Location Map of
Sandia National Laboratories

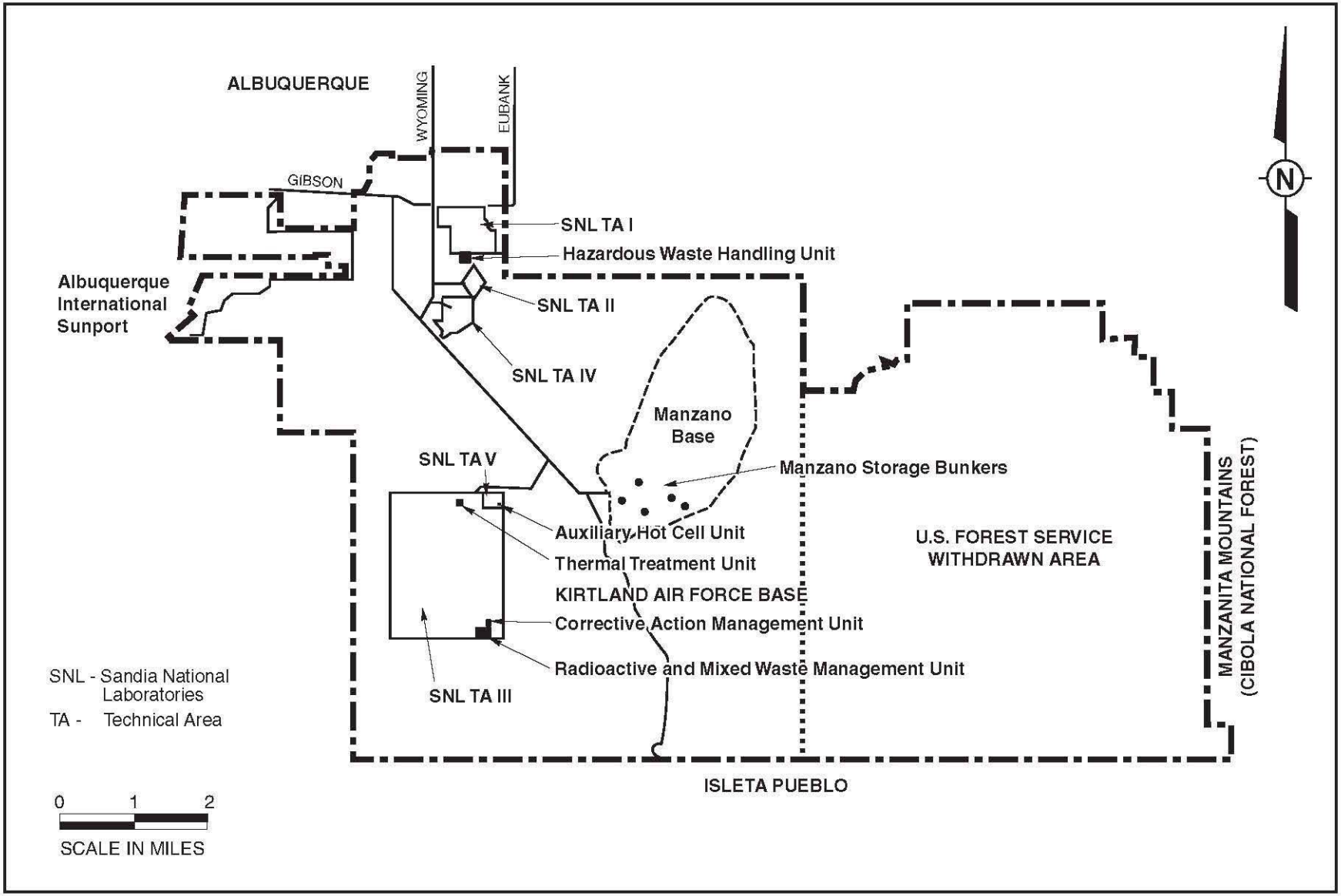


Figure 2

Technical Areas and Permitted Hazardous and Mixed Waste Management Units at the Facility

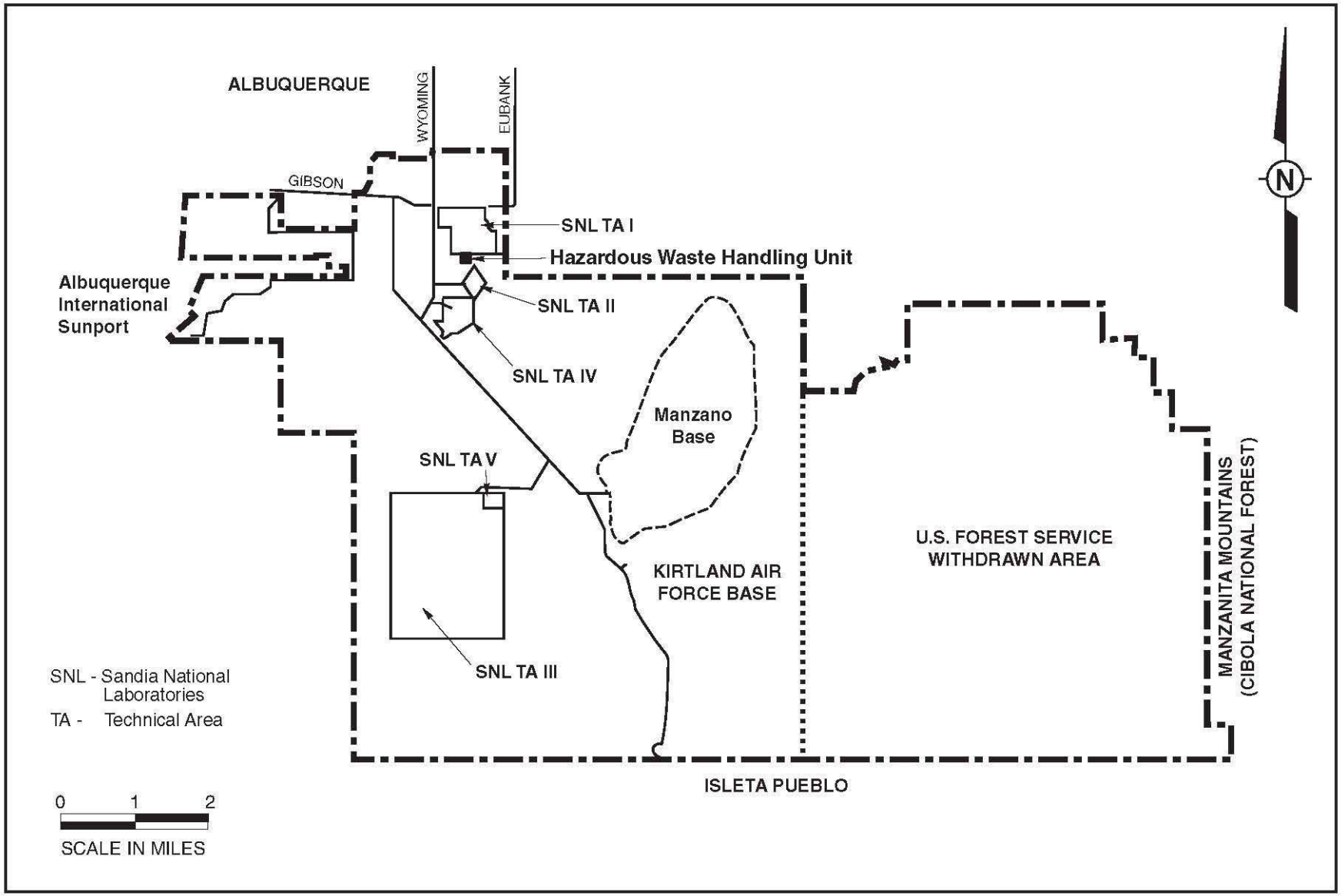


Figure 3
Location of the Hazardous Waste Handling Unit at the Facility

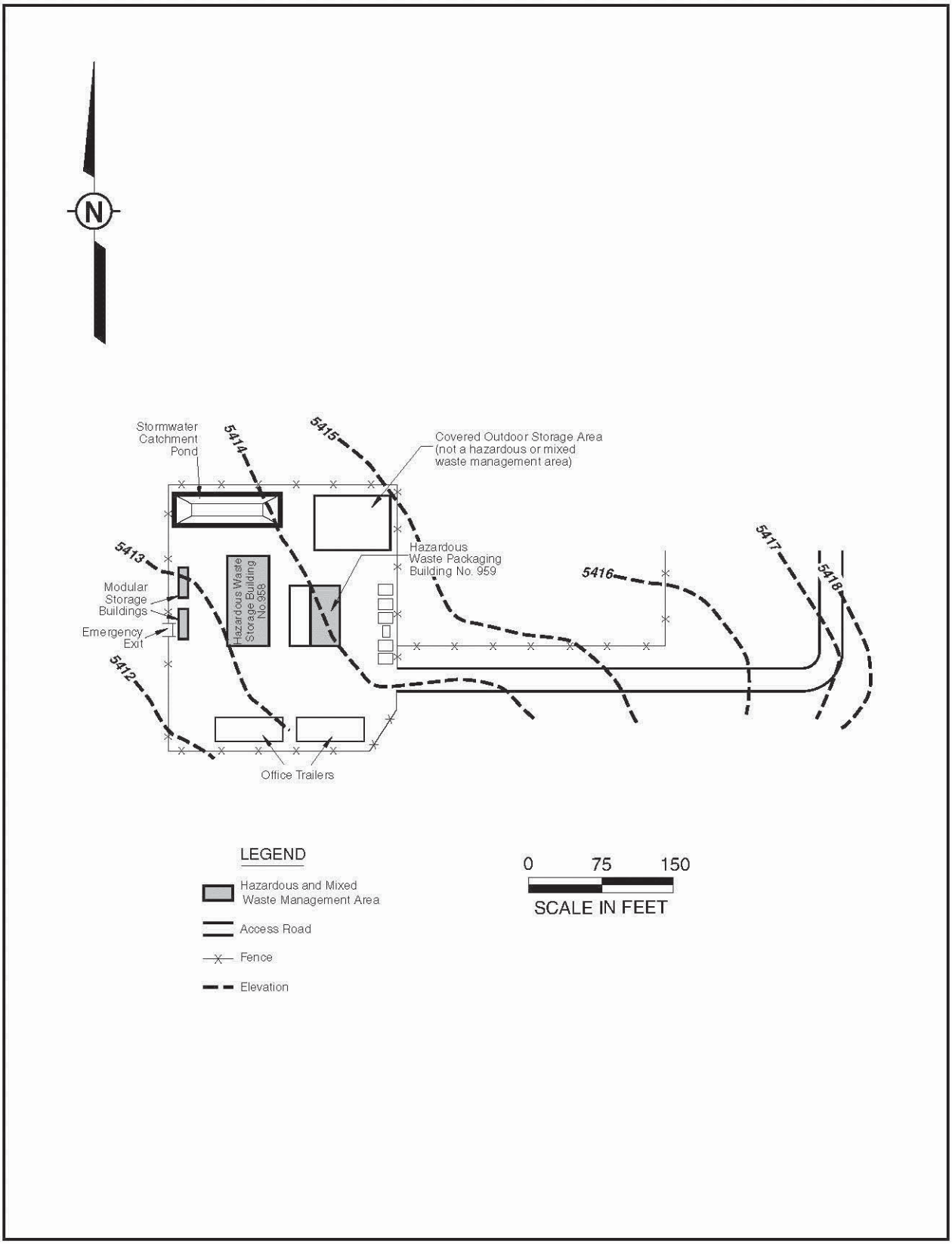
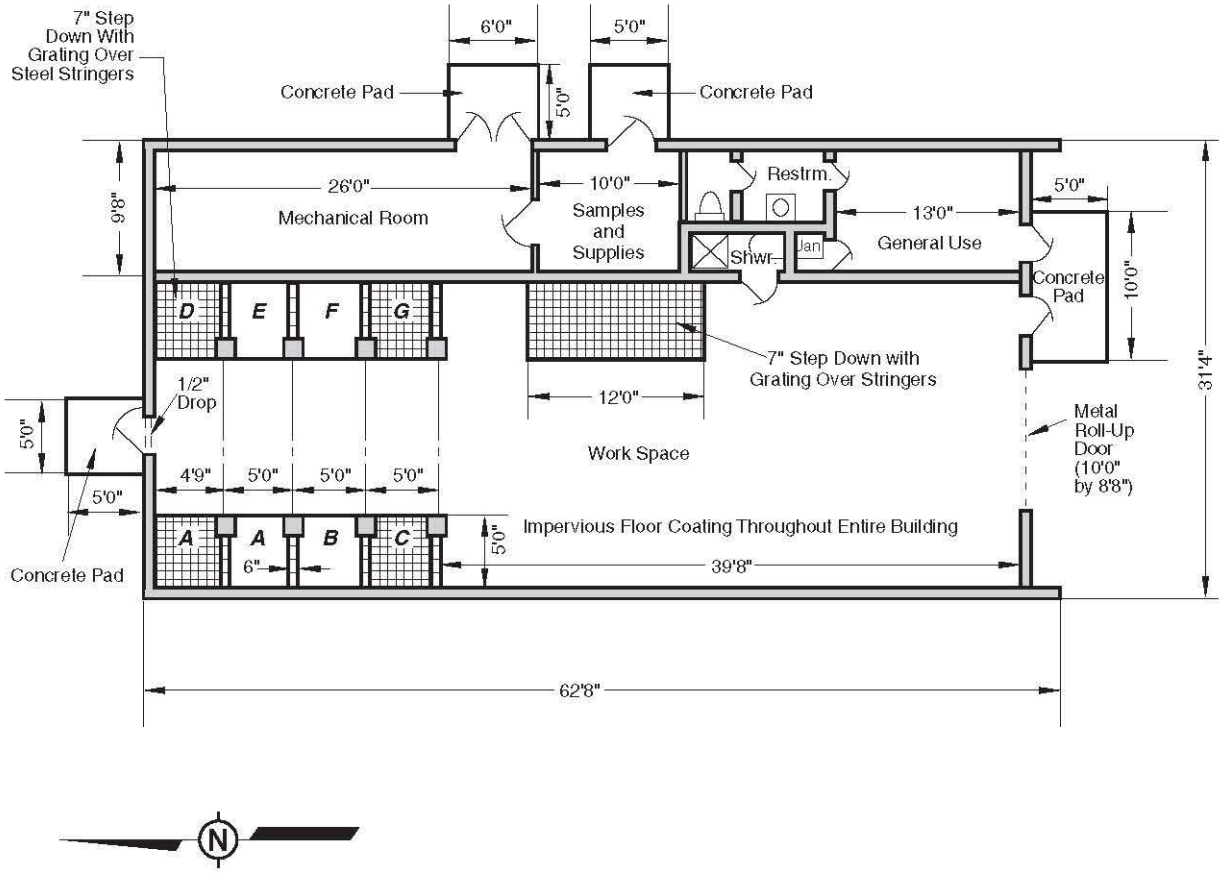


Figure 4

Hazardous Waste Handling Unit, Hazardous and Mixed Waste Management Areas



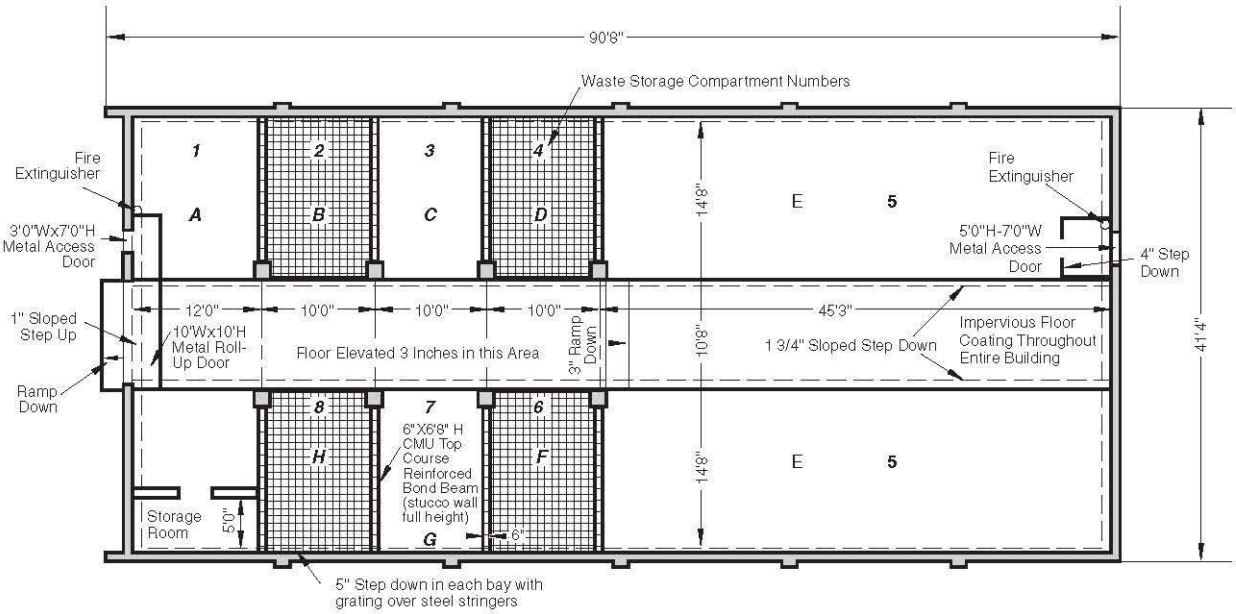
Typical Waste Segregation Groups

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 5

Hazardous Waste Handling Unit 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 6

Hazardous Waste Handling Unit Building 958 Floor Plan

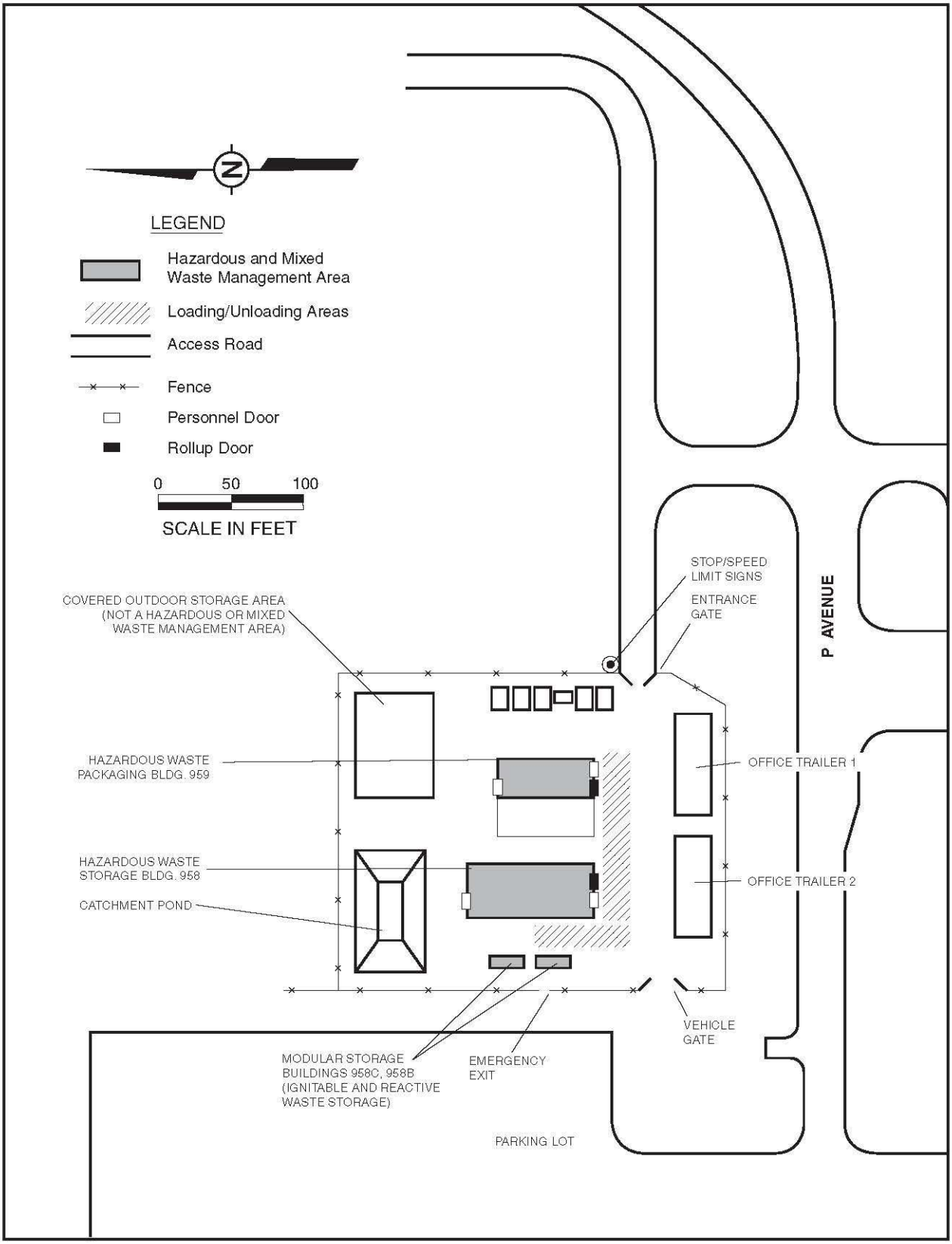


Figure 7

Hazardous Waste Handling Unit Access Control Features and Loading/Unloading Areas

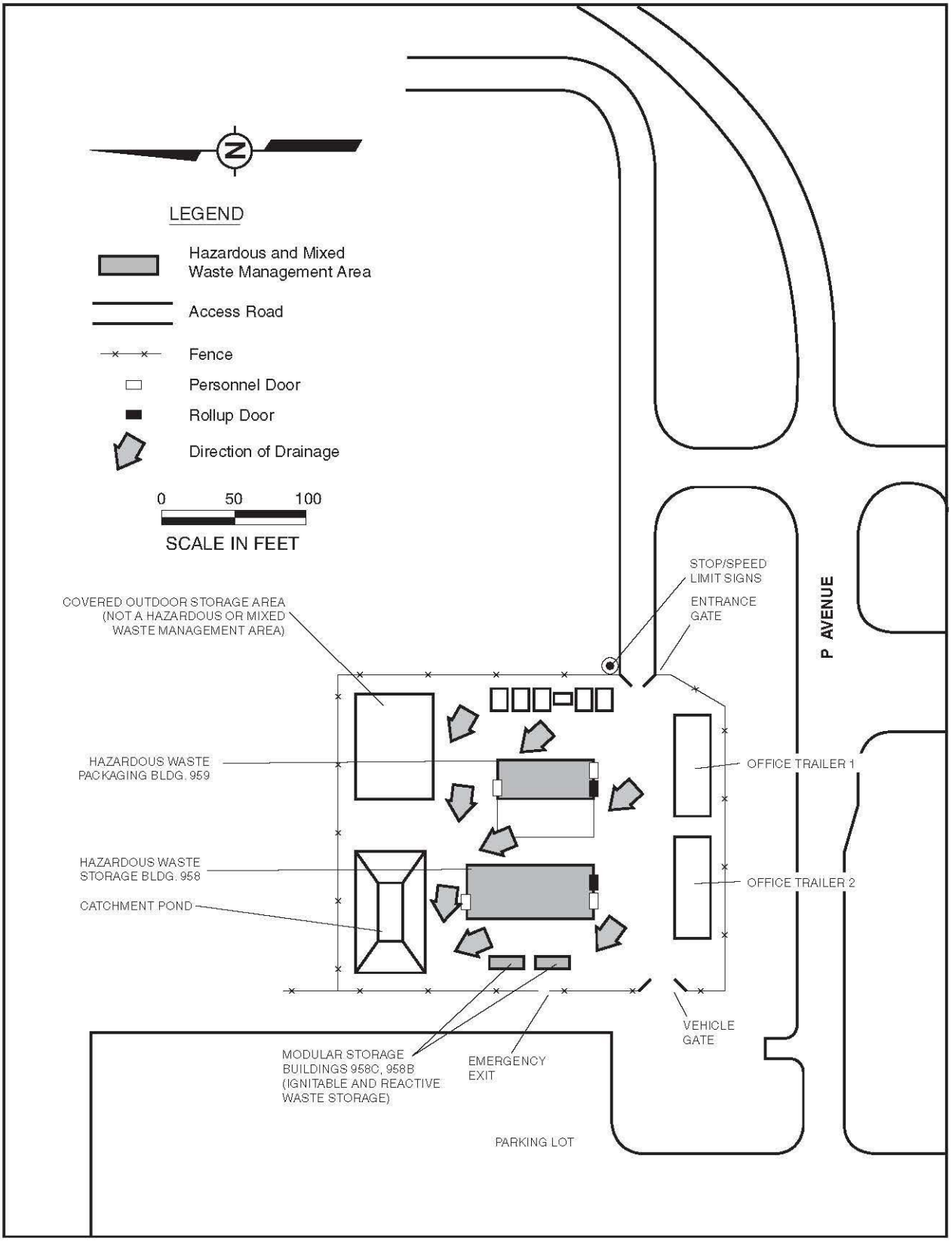


Figure 8

Hazardous Waste Handling Unit Drainage Control Features

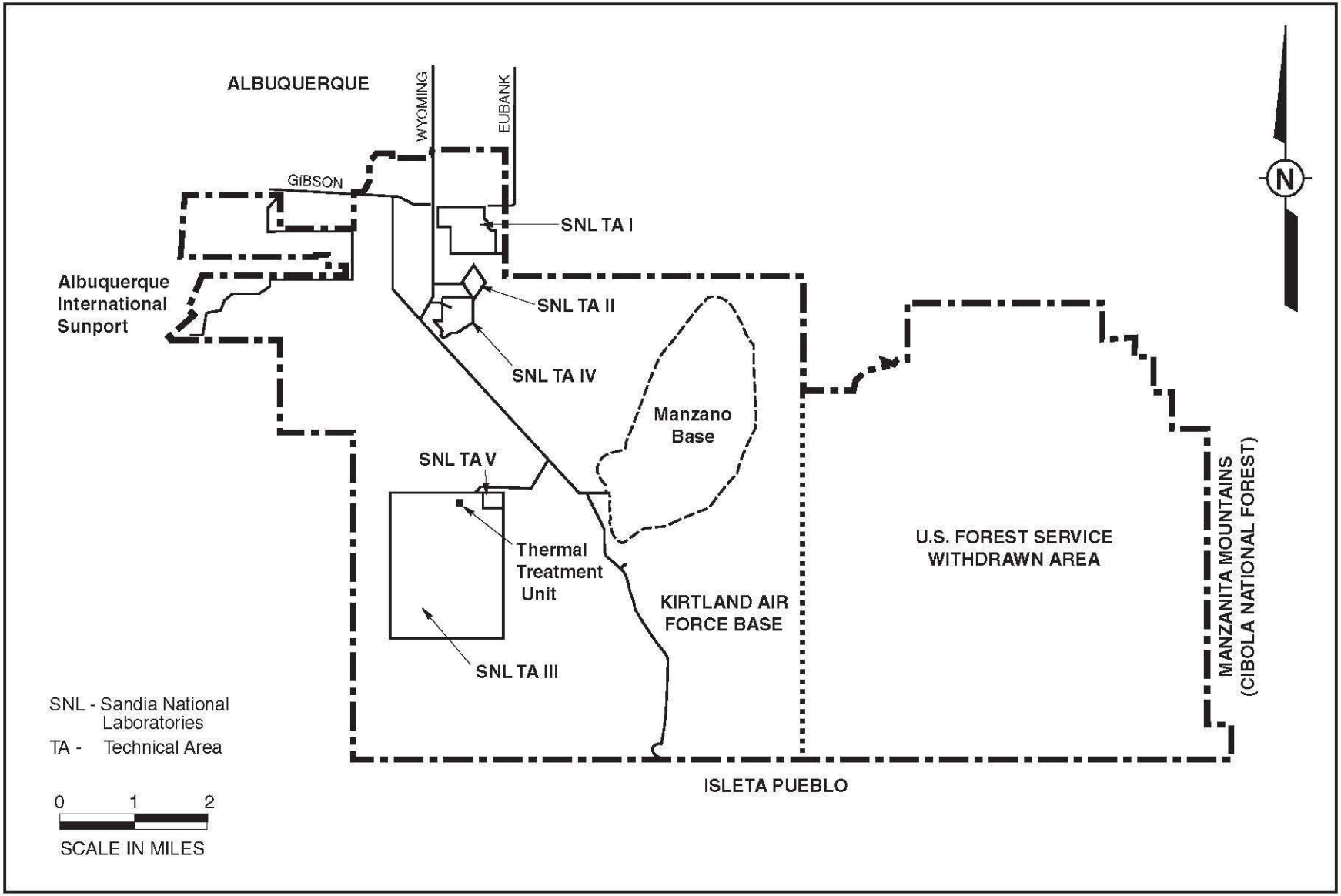


Figure 9
Location of the Thermal Treatment Unit at the Facility

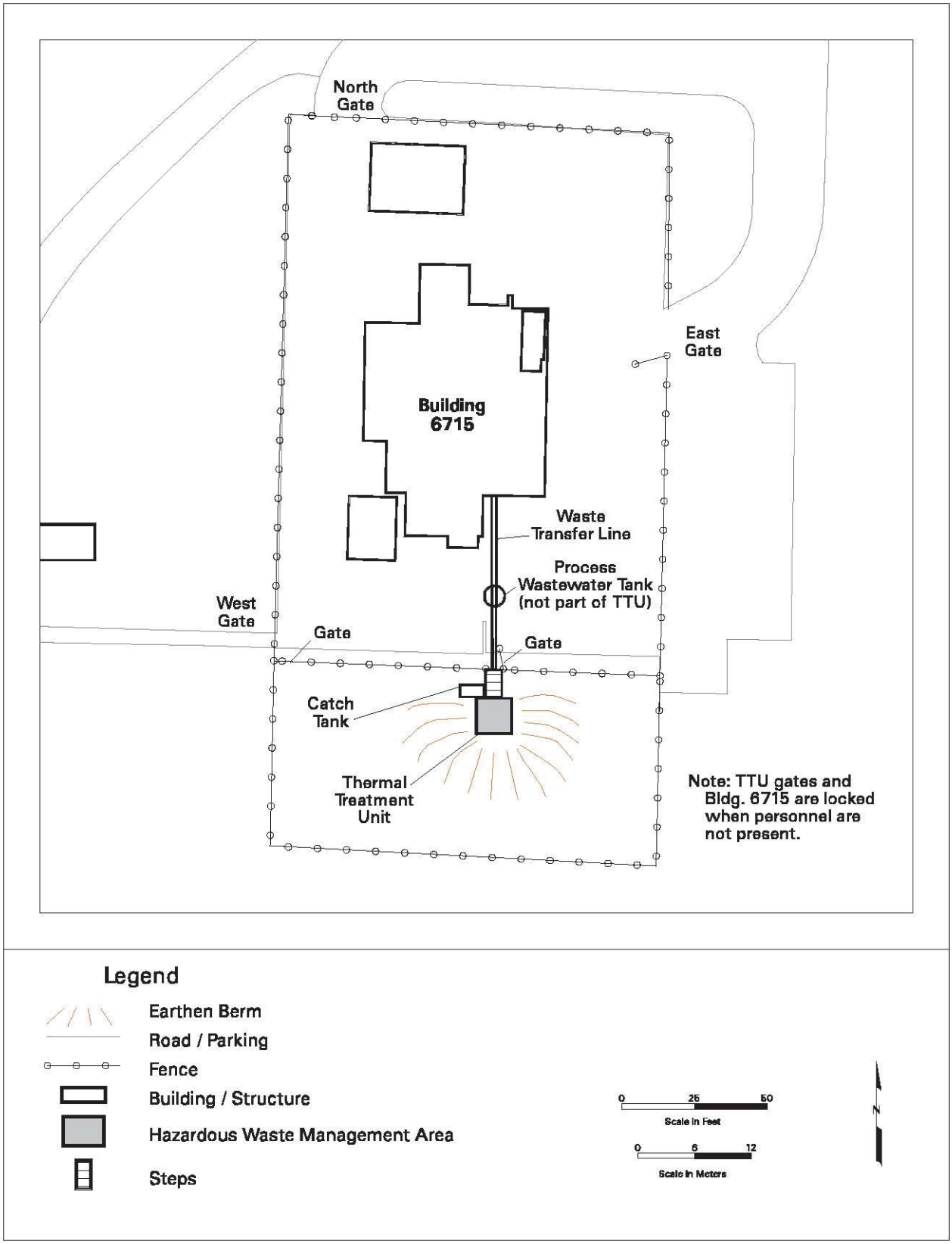


Figure 10
Thermal Treatment Unit (TTU)
Hazardous Waste Management Area

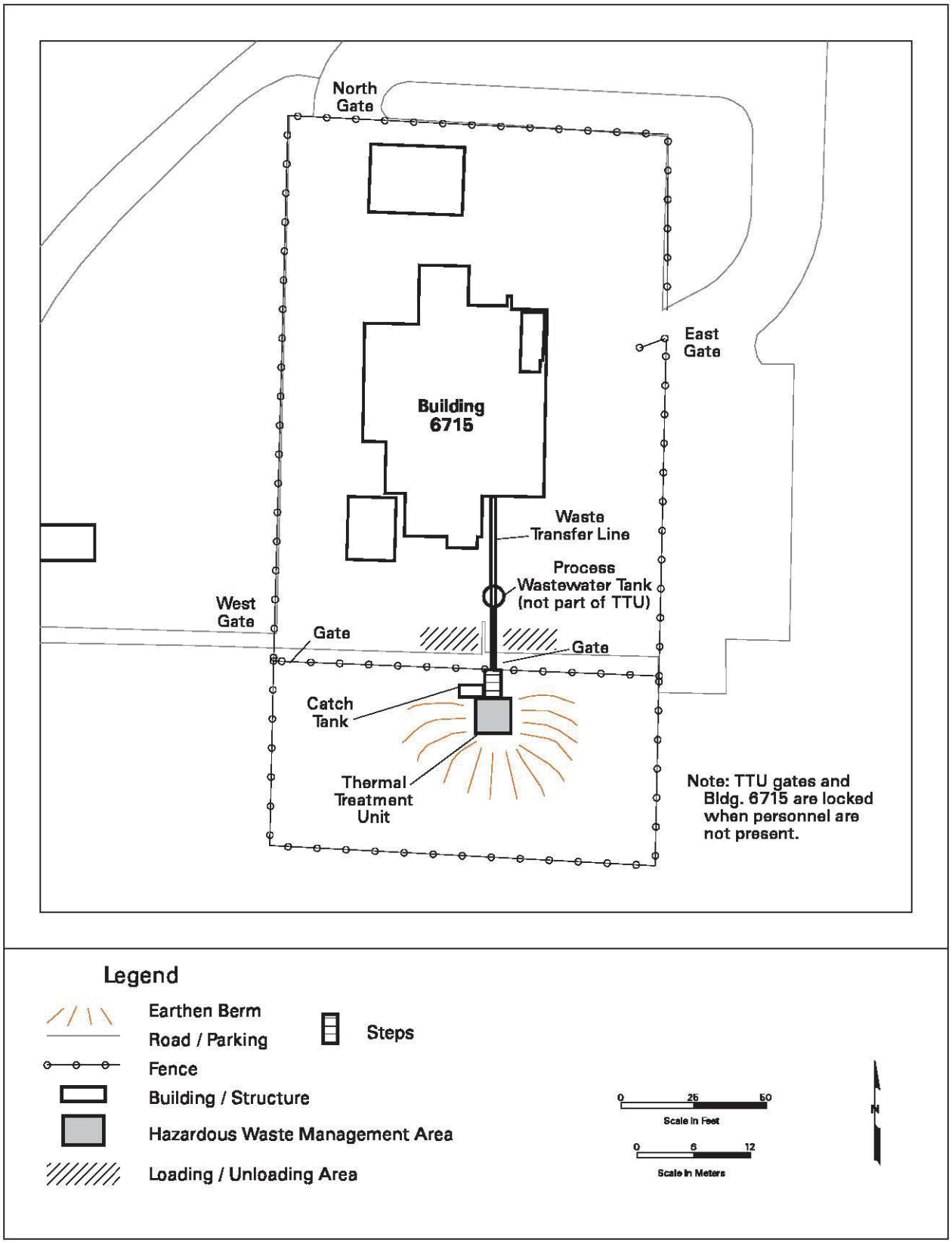


Figure 11
Thermal Treatment Unit Loading/Unloading Area

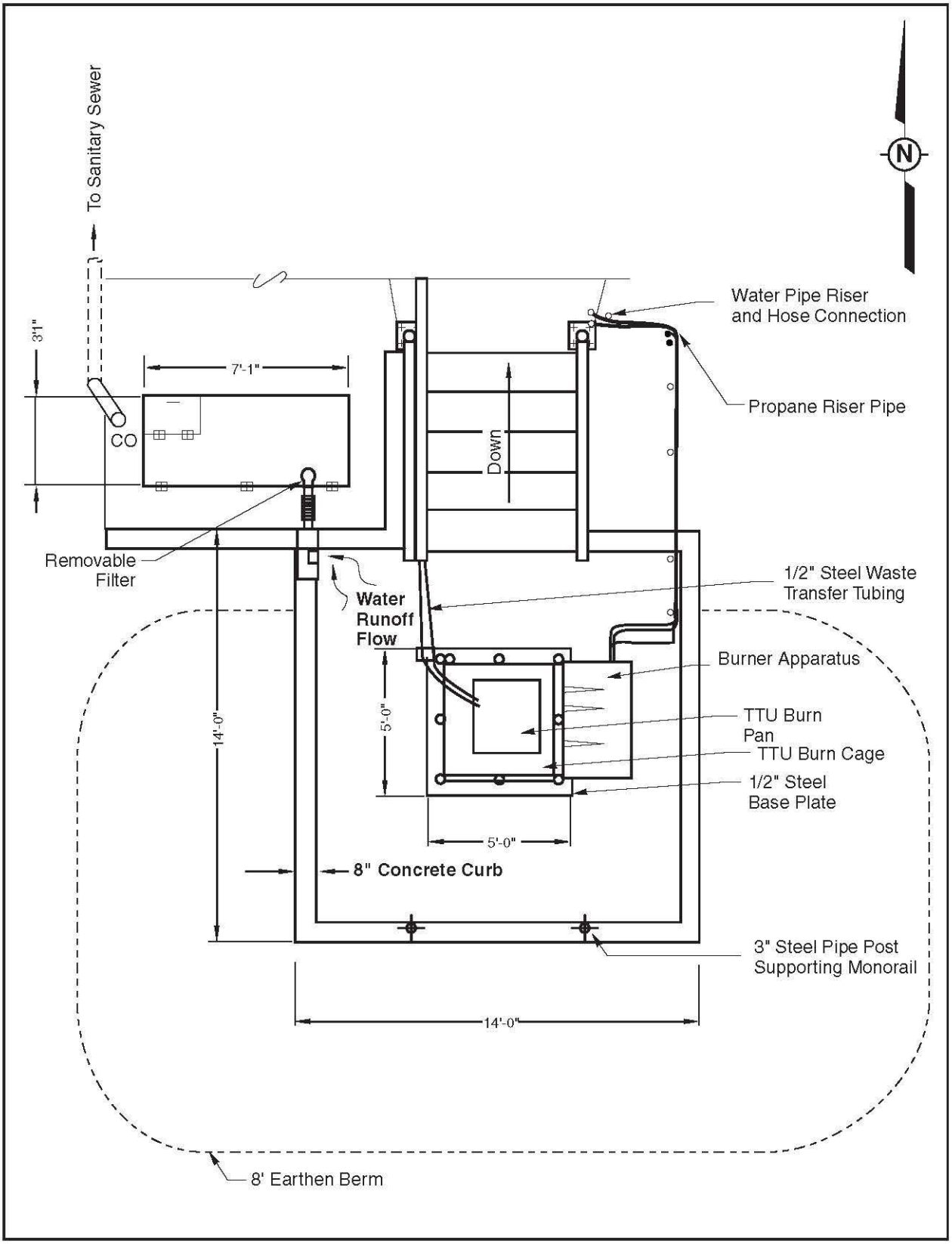


Figure 12
Thermal Treatment Unit Drainage Control Features

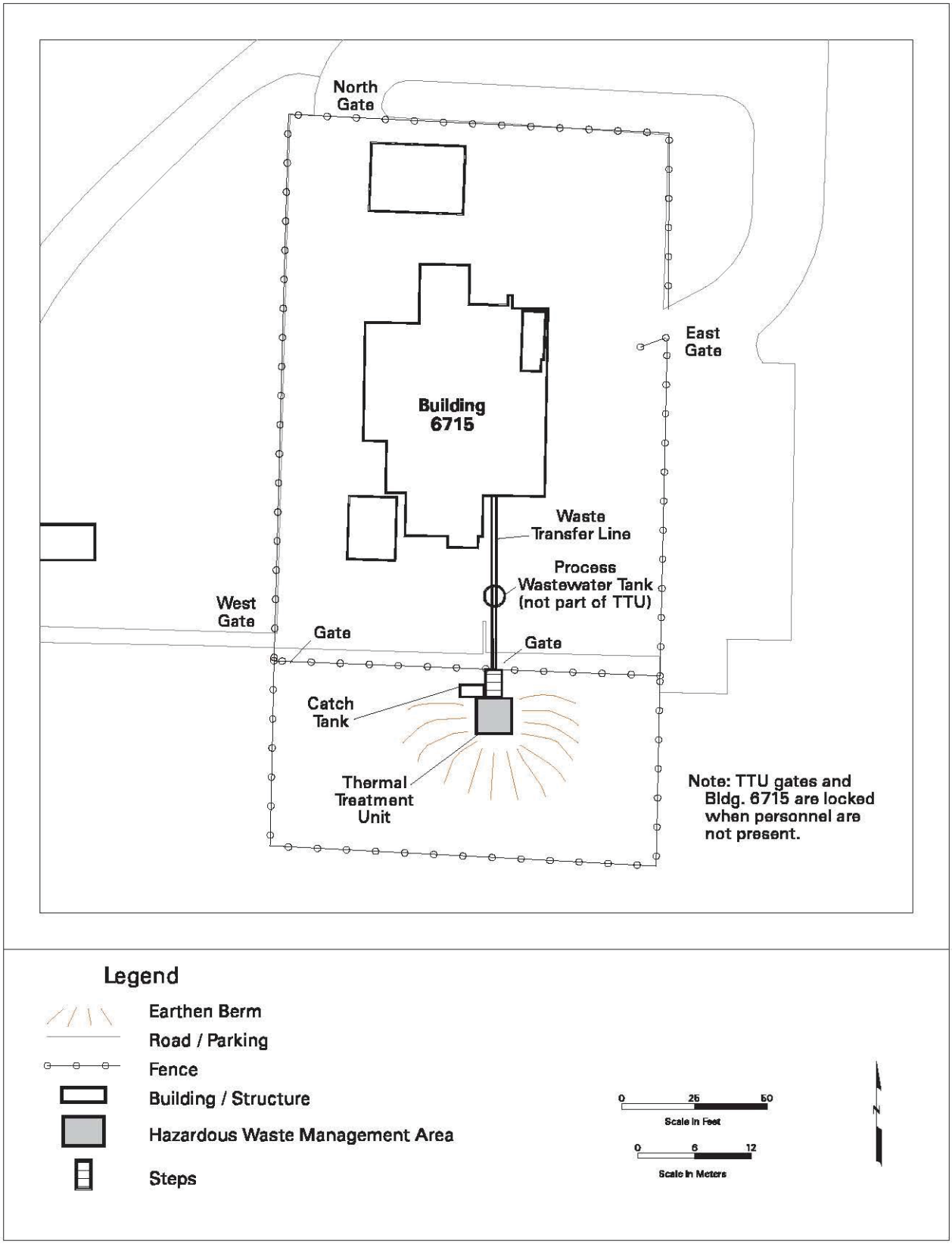


Figure 13
Thermal Treatment Unit Access Control Features

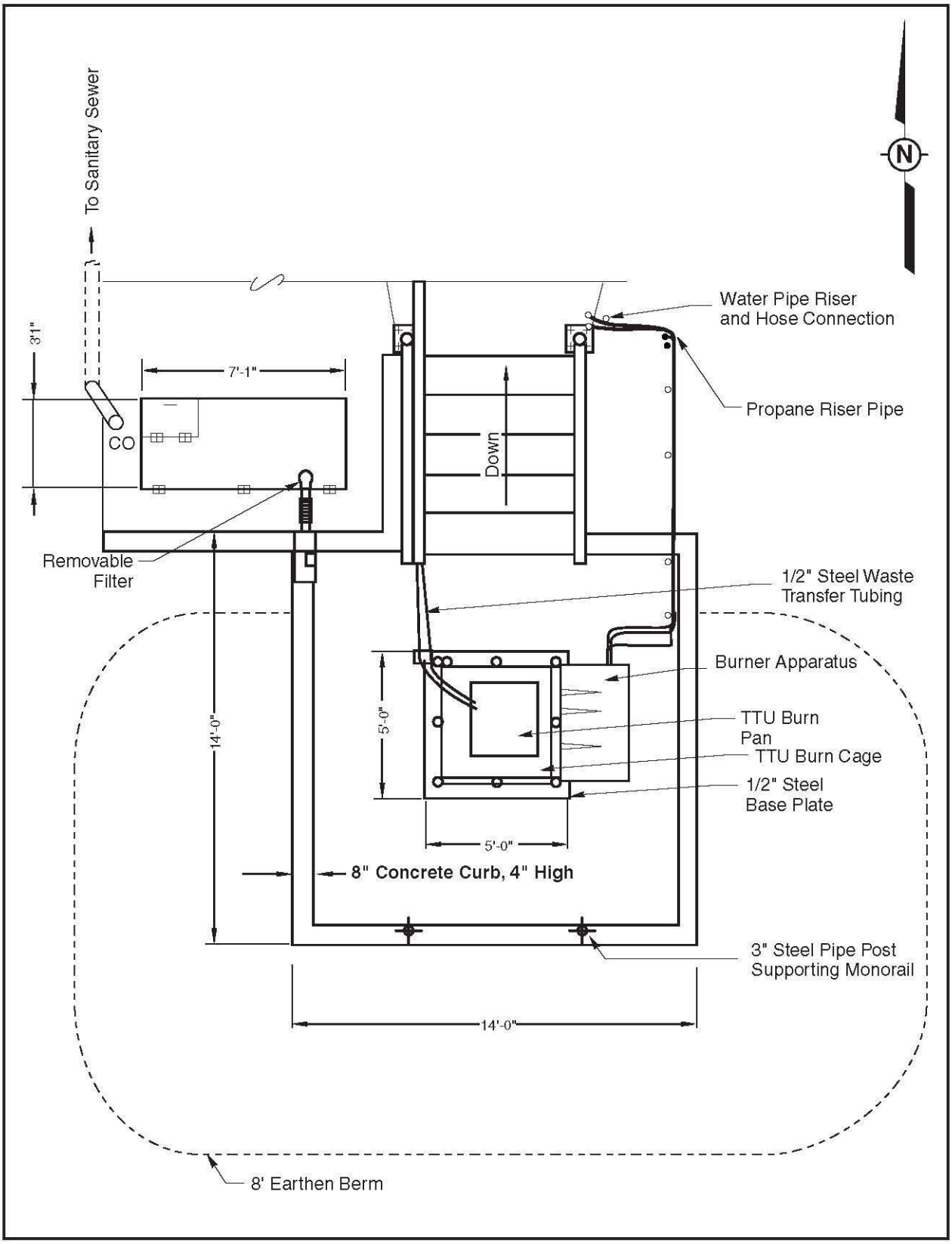


Figure 14
Thermal Treatment Unit Plan View with Dimensions

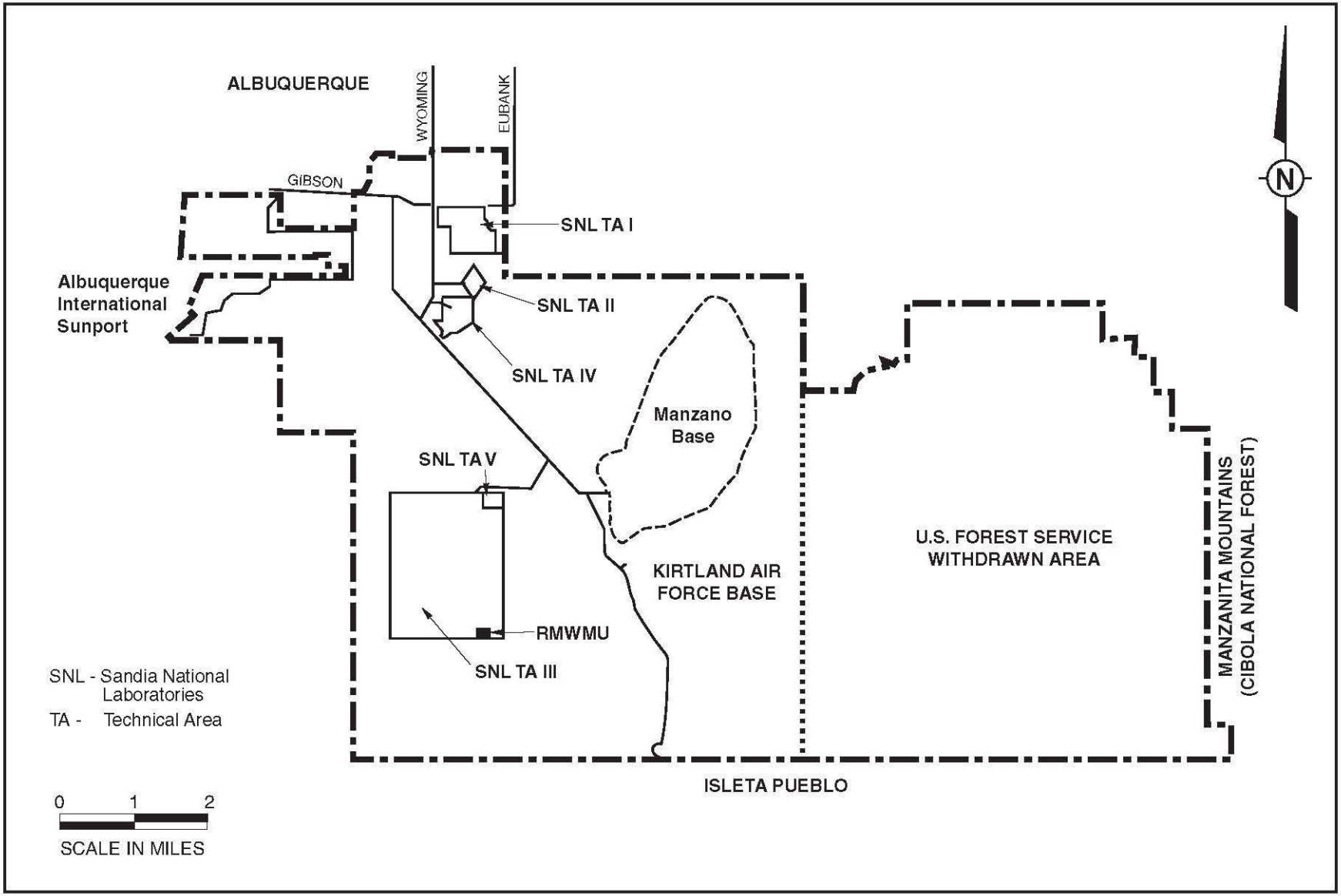


Figure 15

Location of the Radioactive and Mixed Waste Management Unit (RMWMU) at the Facility

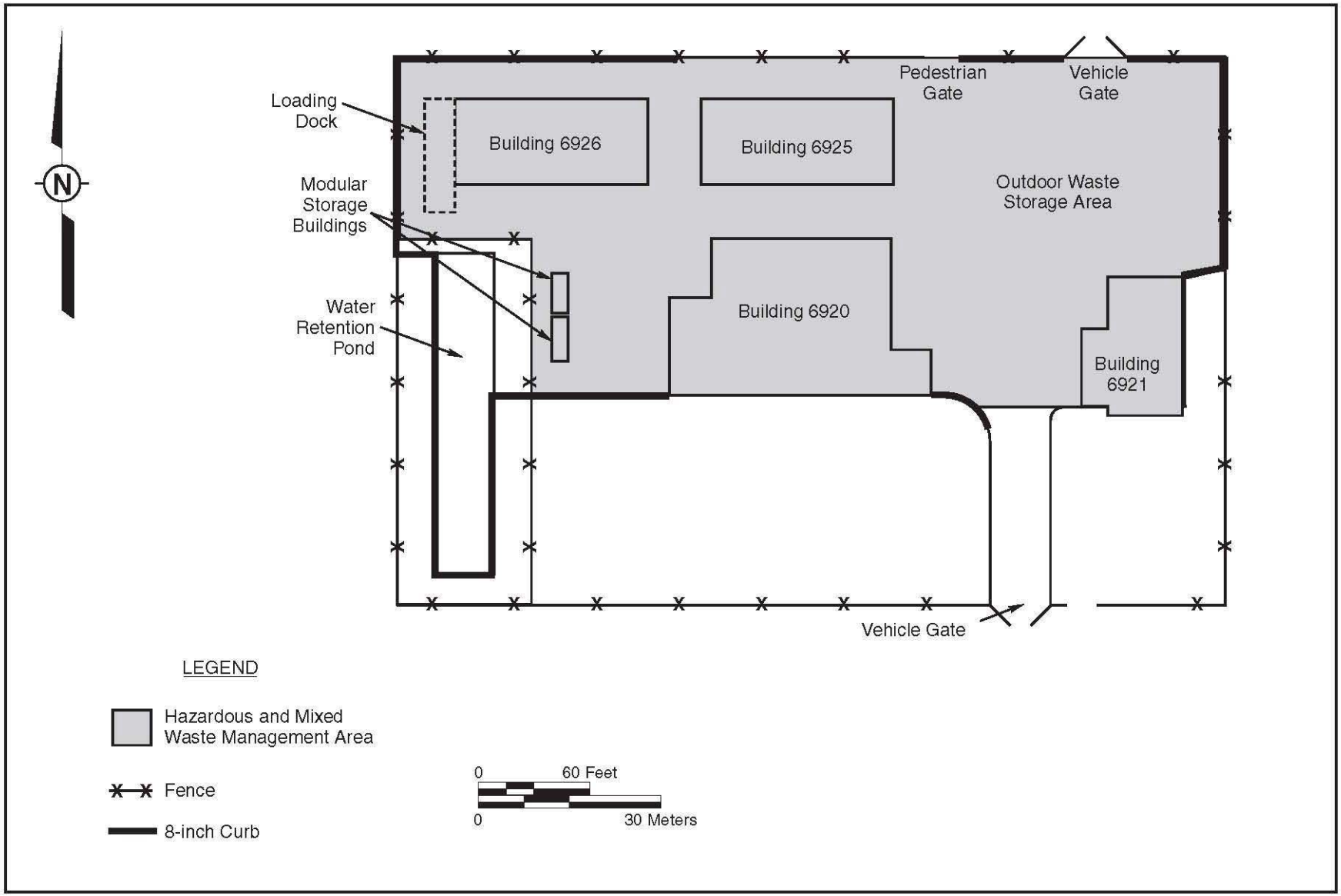


Figure 16

Radioactive and Mixed Waste Management Unit Hazardous and Mixed Waste Management Areas

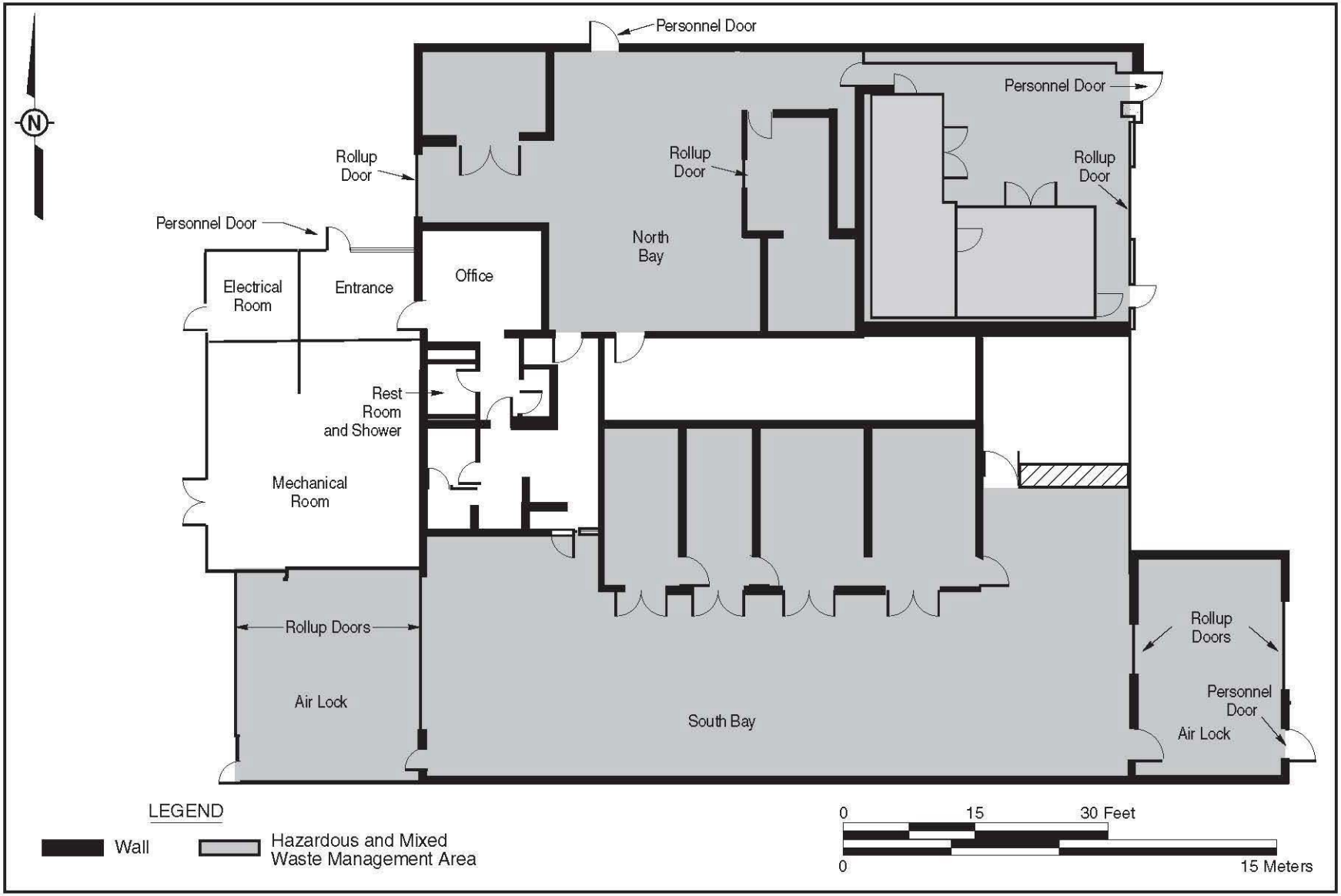


Figure 17

Radioactive and Mixed Waste Management Unit, Building 6920, Hazardous and Mixed Waste Management Areas

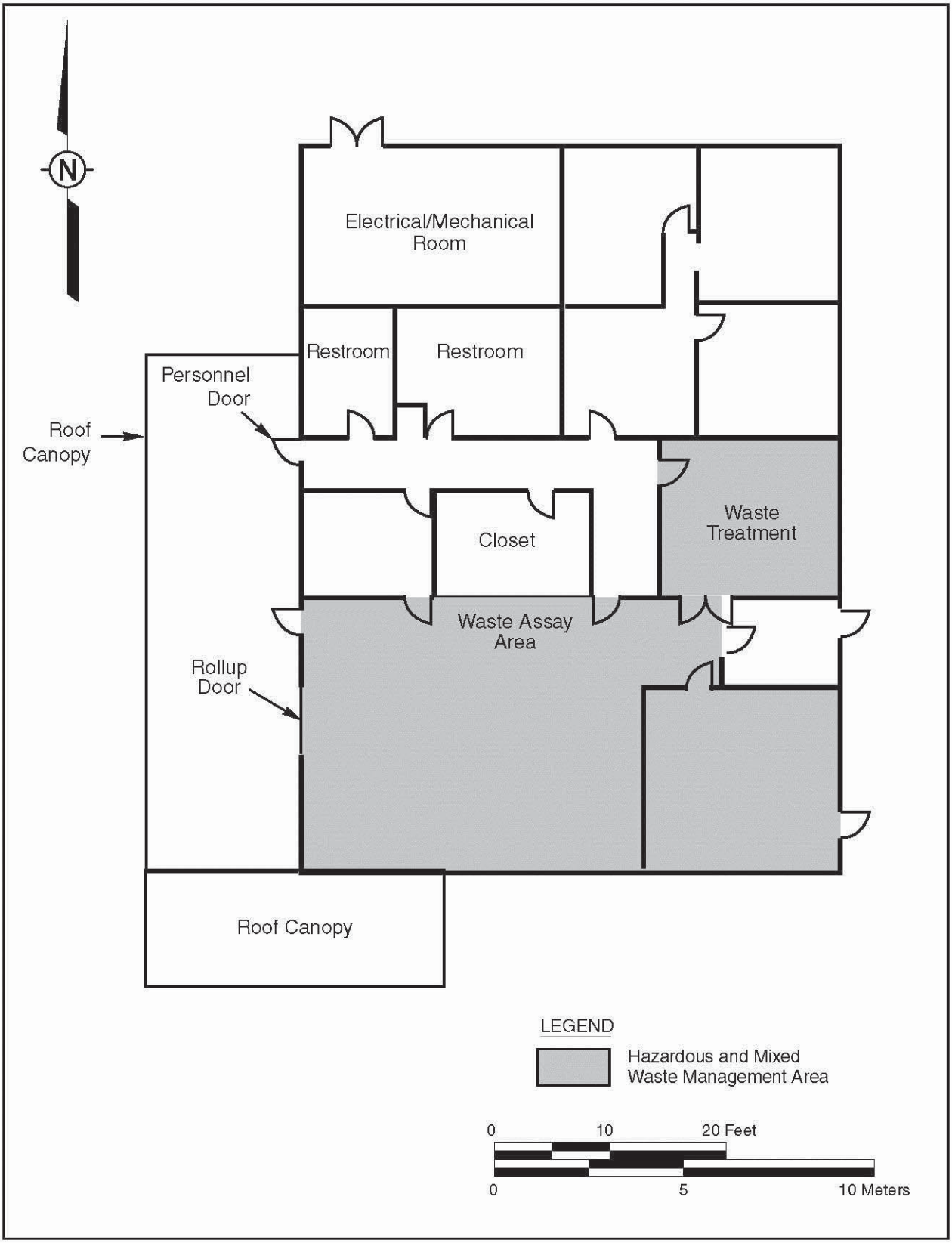


Figure 18

Radioactive and Mixed Waste Management Unit, Building 6921, Hazardous and Mixed Waste Management Areas

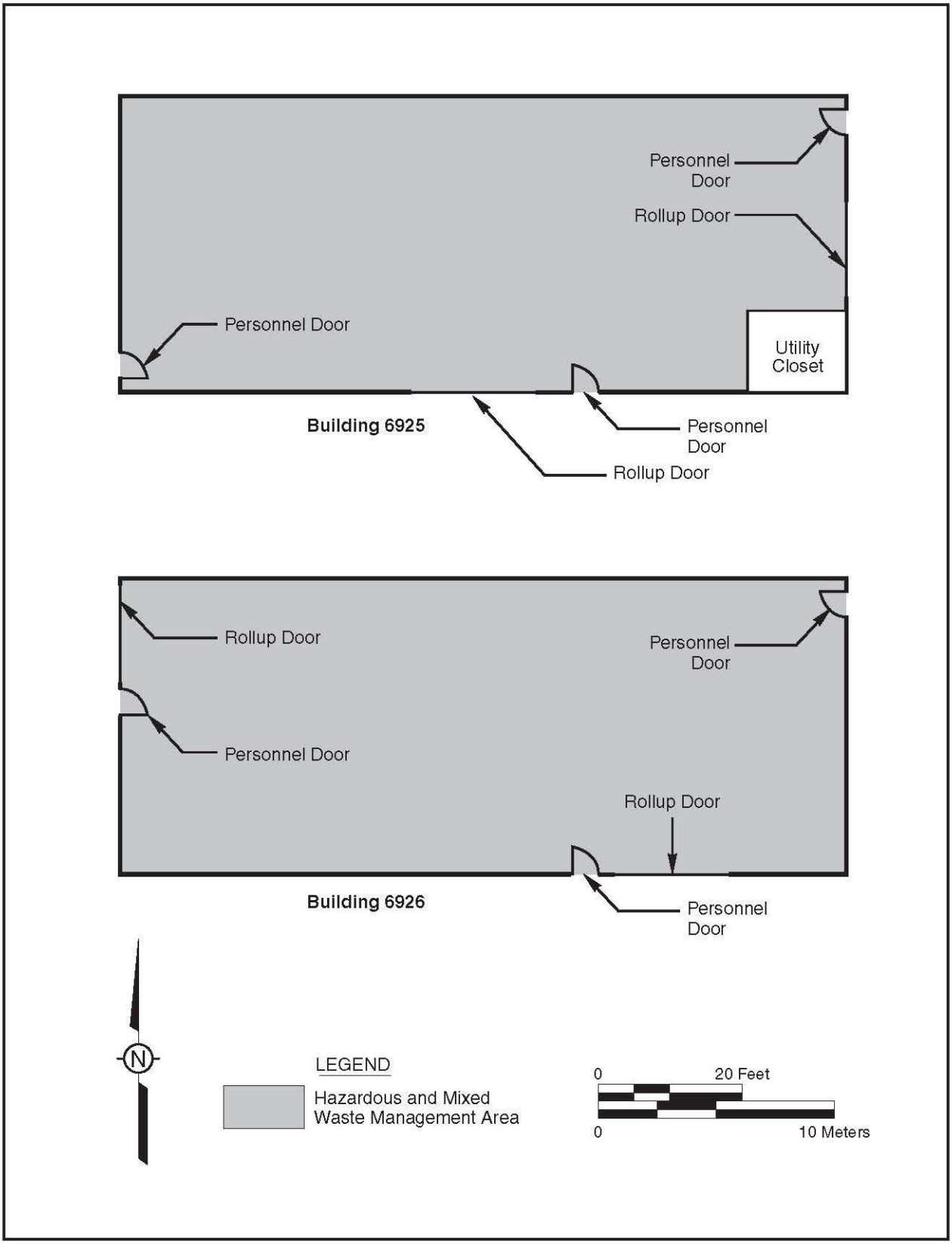


Figure 19-A

Radioactive and Mixed Waste Management Unit, Buildings 6925 and 6926, Hazardous and Mixed Waste Management Areas

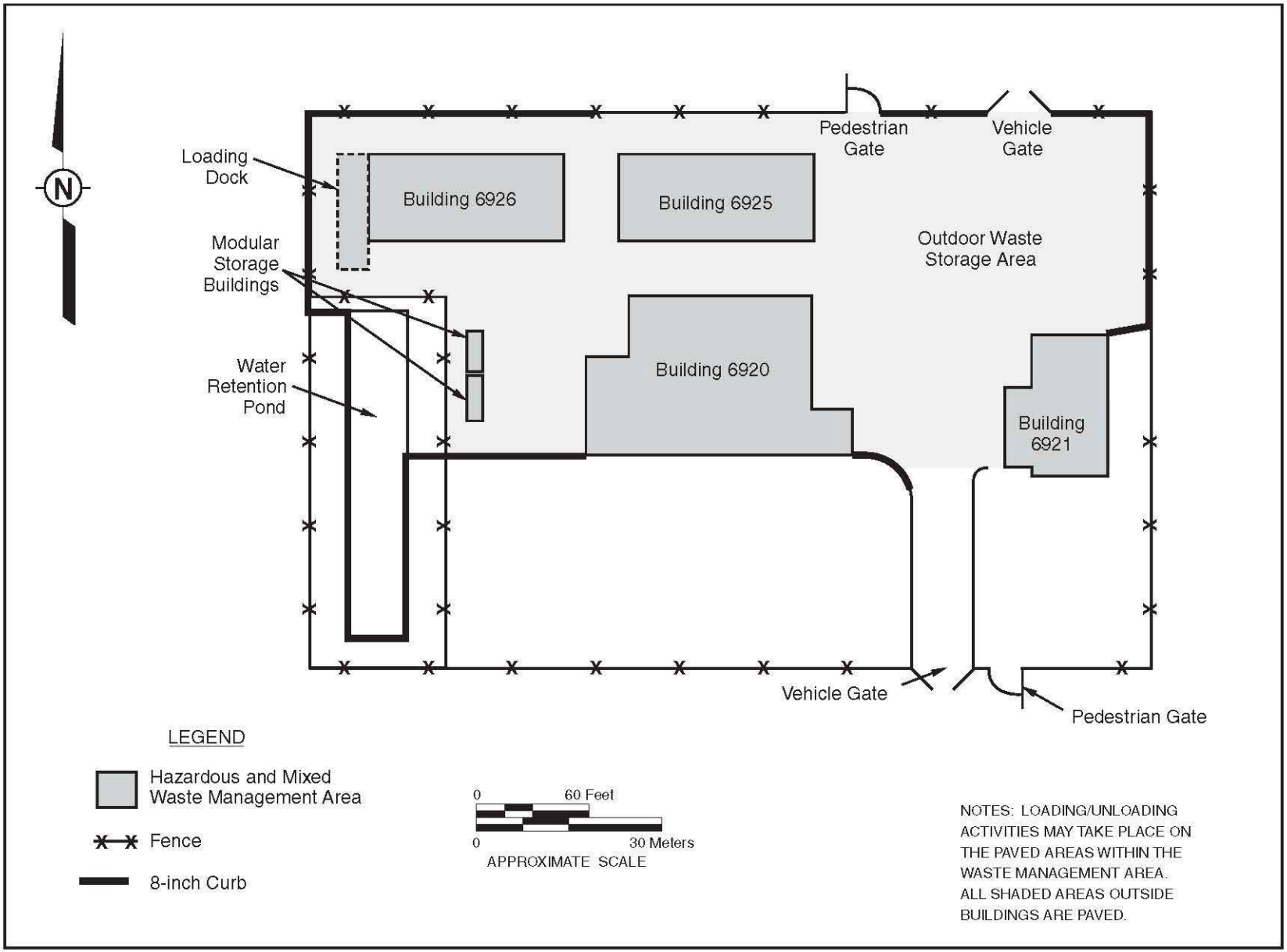


Figure 19-B
Radioactive and Mixed Waste Management Unit, Loading/Unloading and Access Control Features

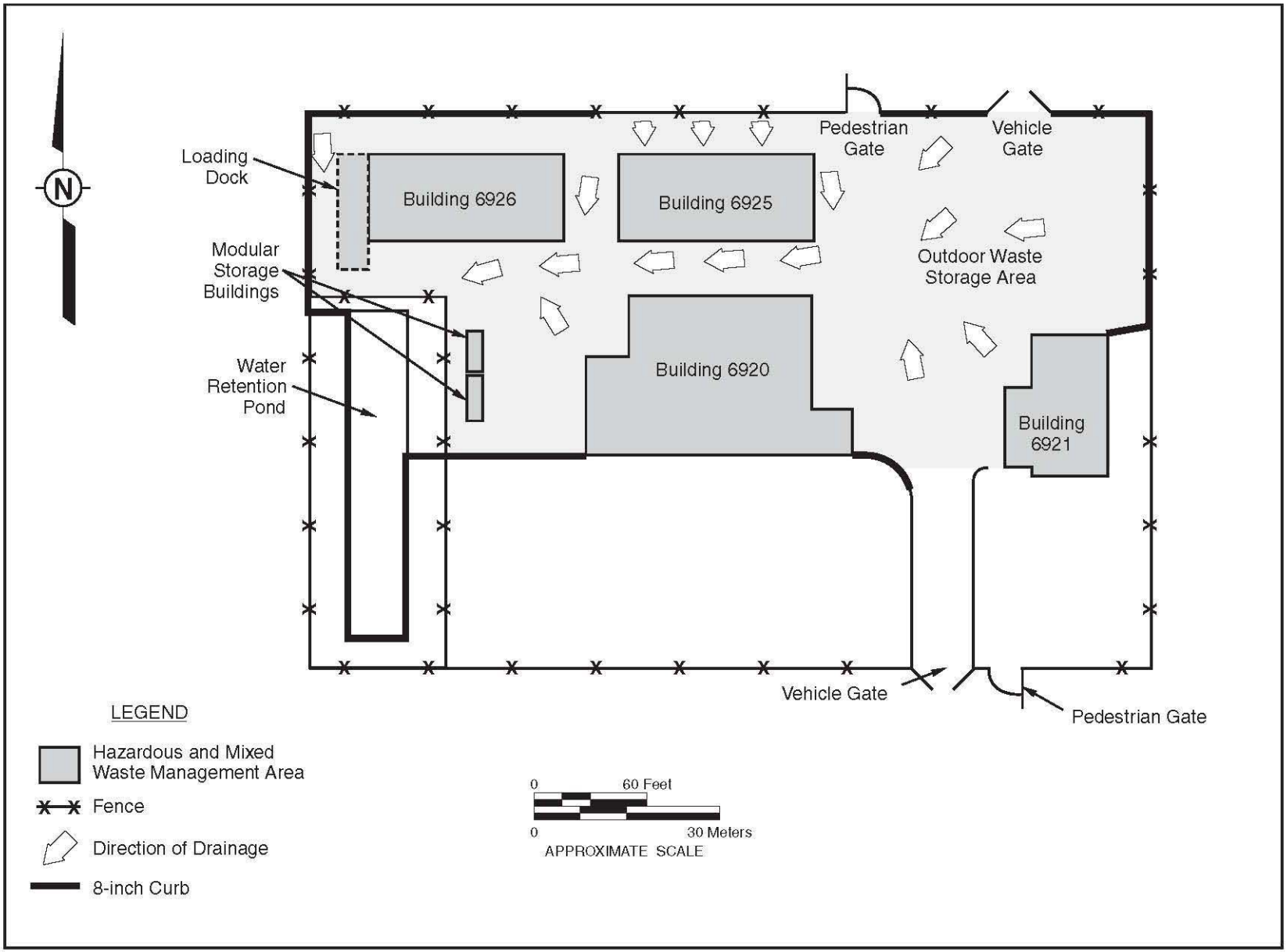


Figure 19-C
Radioactive and Mixed Waste Management Unit,
Drainage Control Features

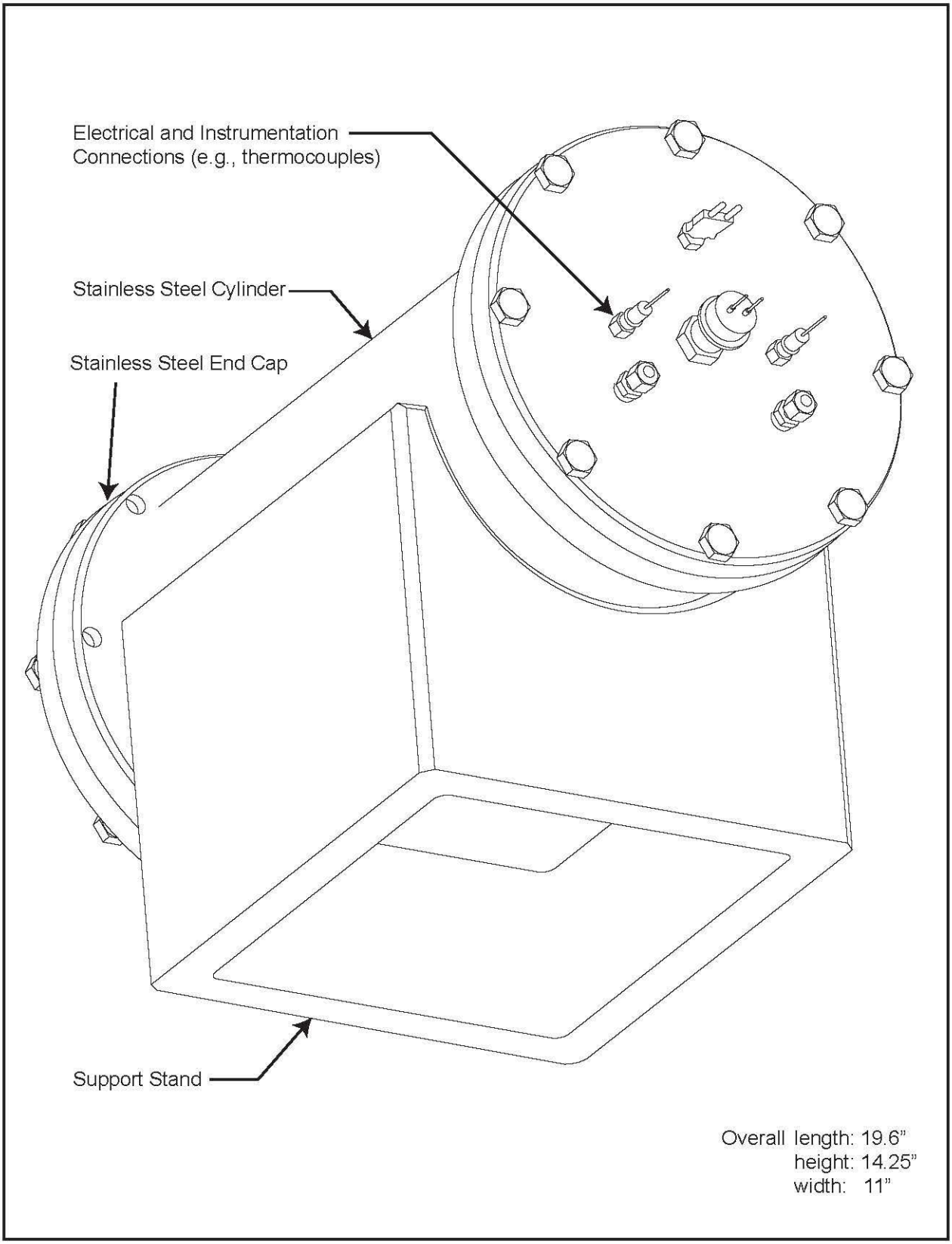


Figure 20

Radioactive and Mixed Waste Management Unit
Thermal Deactivation Device, Exterior Bottom View

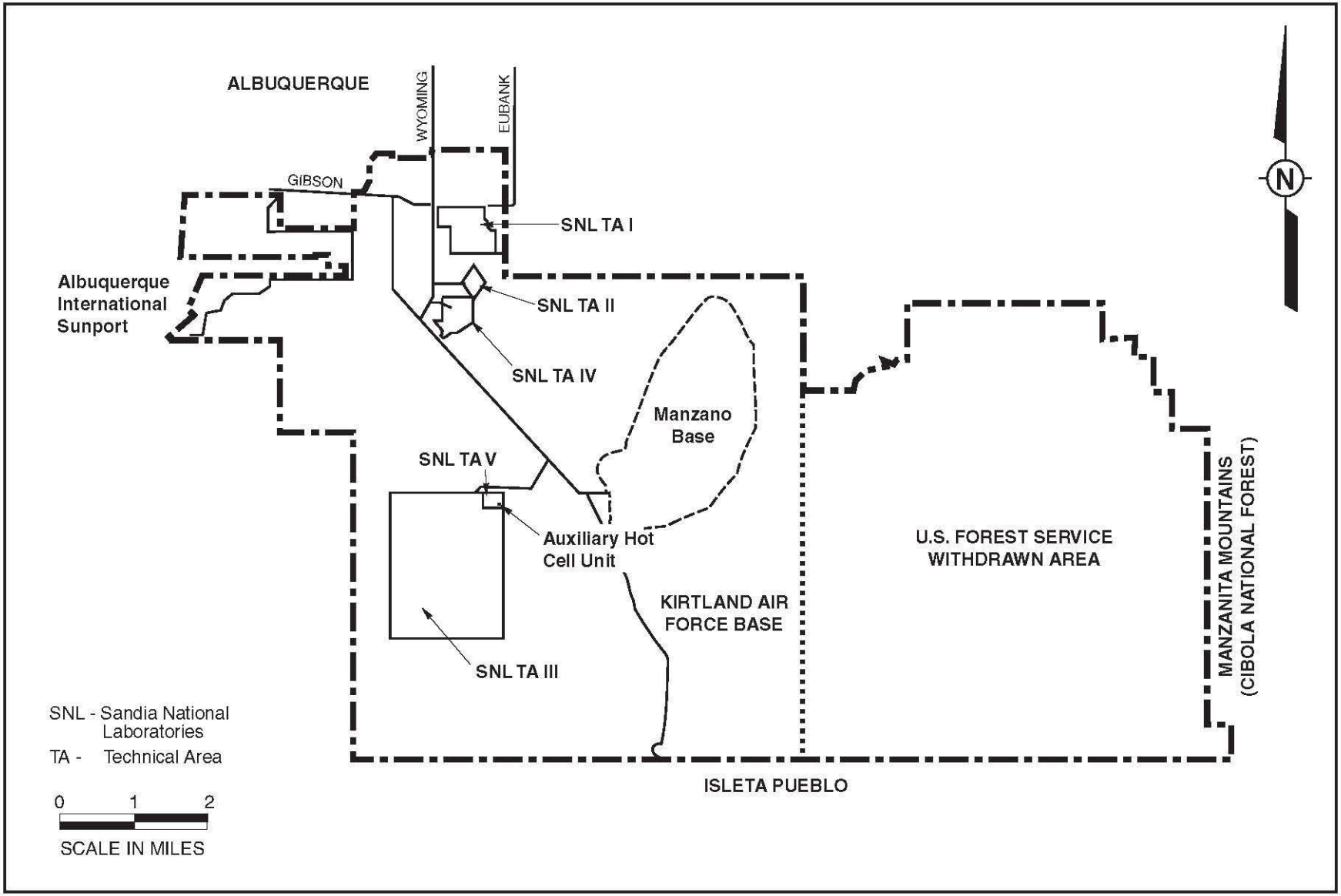


Figure 21-A
Location of the Auxiliary Hot Cell Unit at the Facility

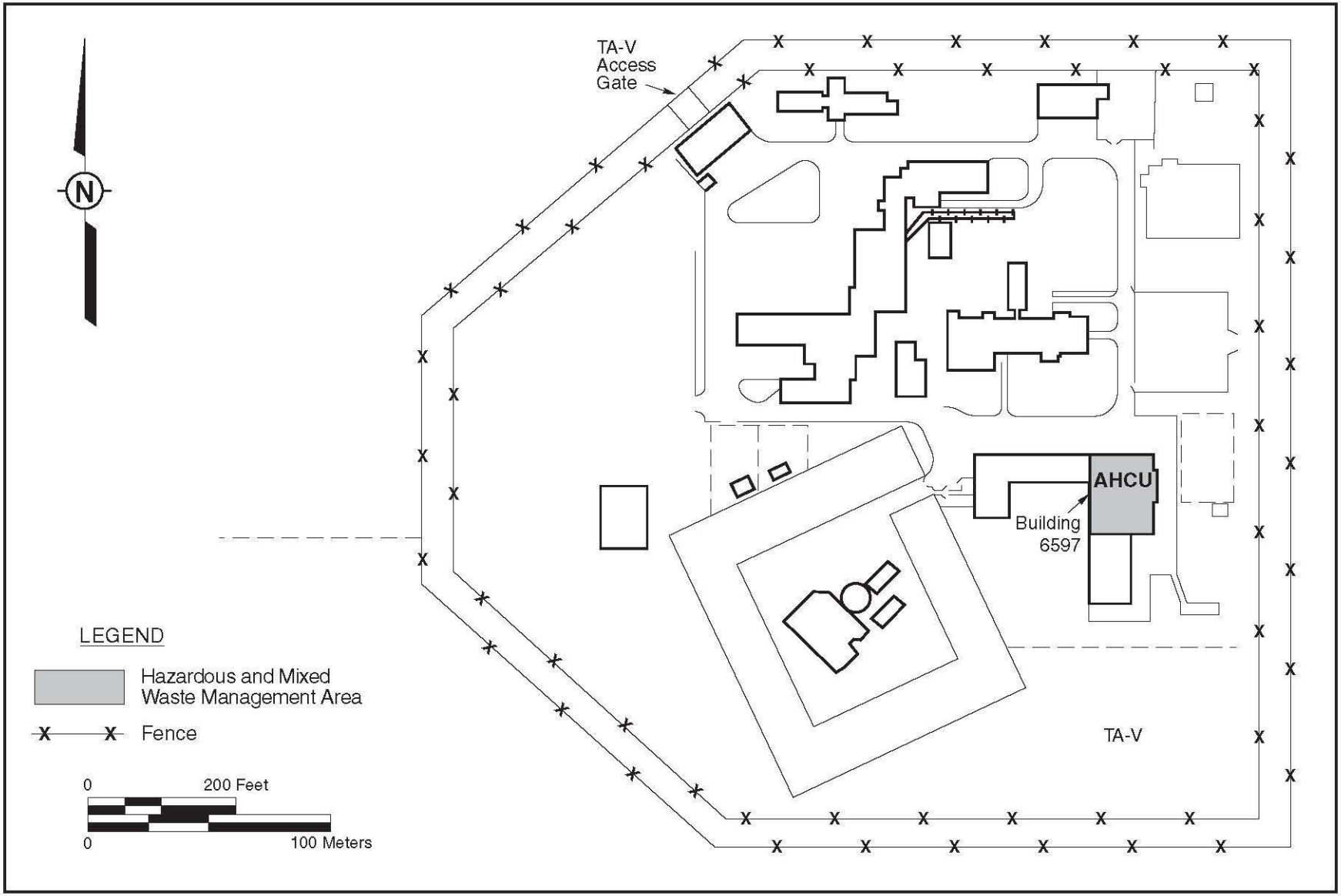


Figure 21-B
Location of the Auxiliary Hot Cell Unit (AHCU) in Technical Area (TA) V

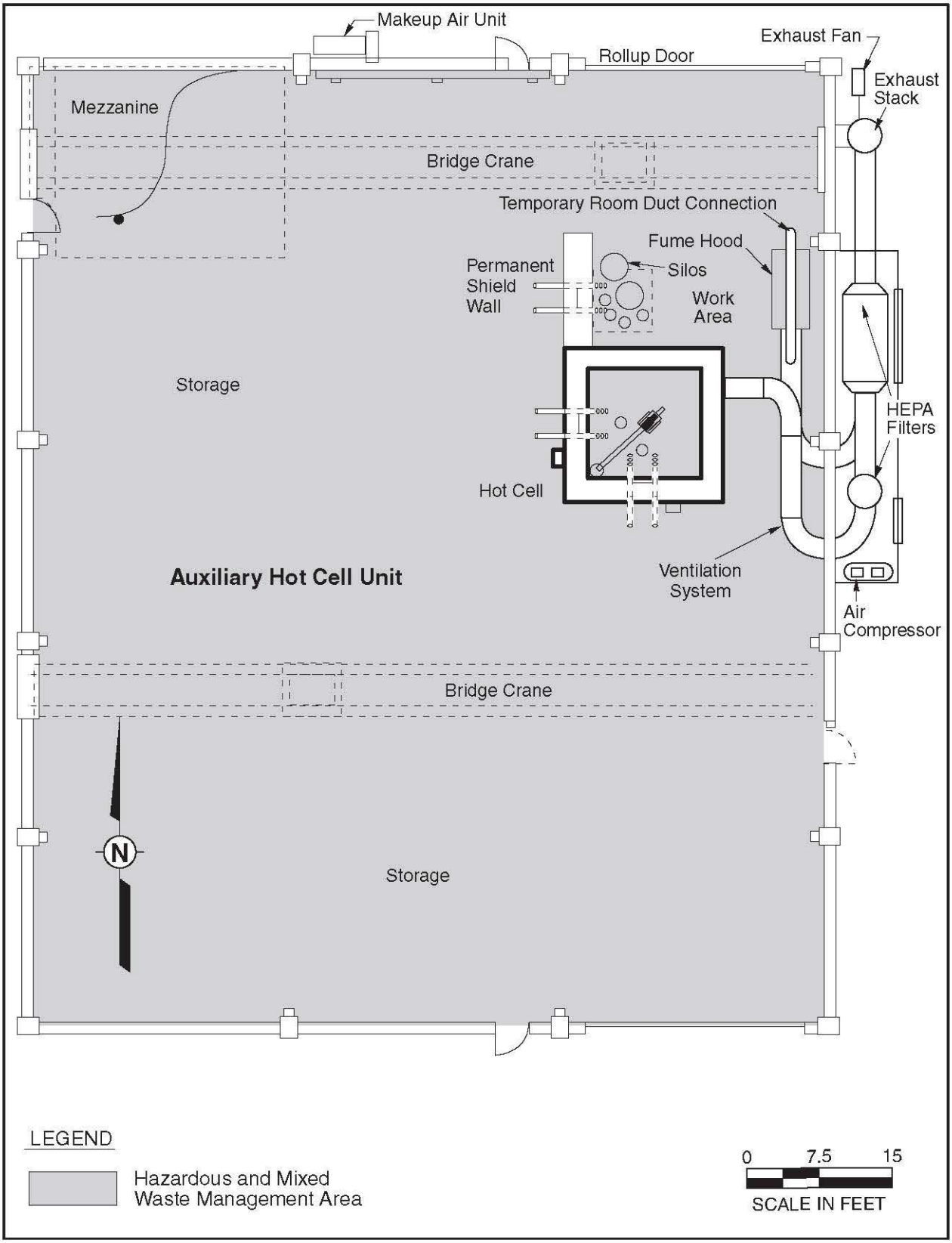


Figure 22

Auxiliary Hot Cell Unit, Hazardous and Mixed Waste Management Areas

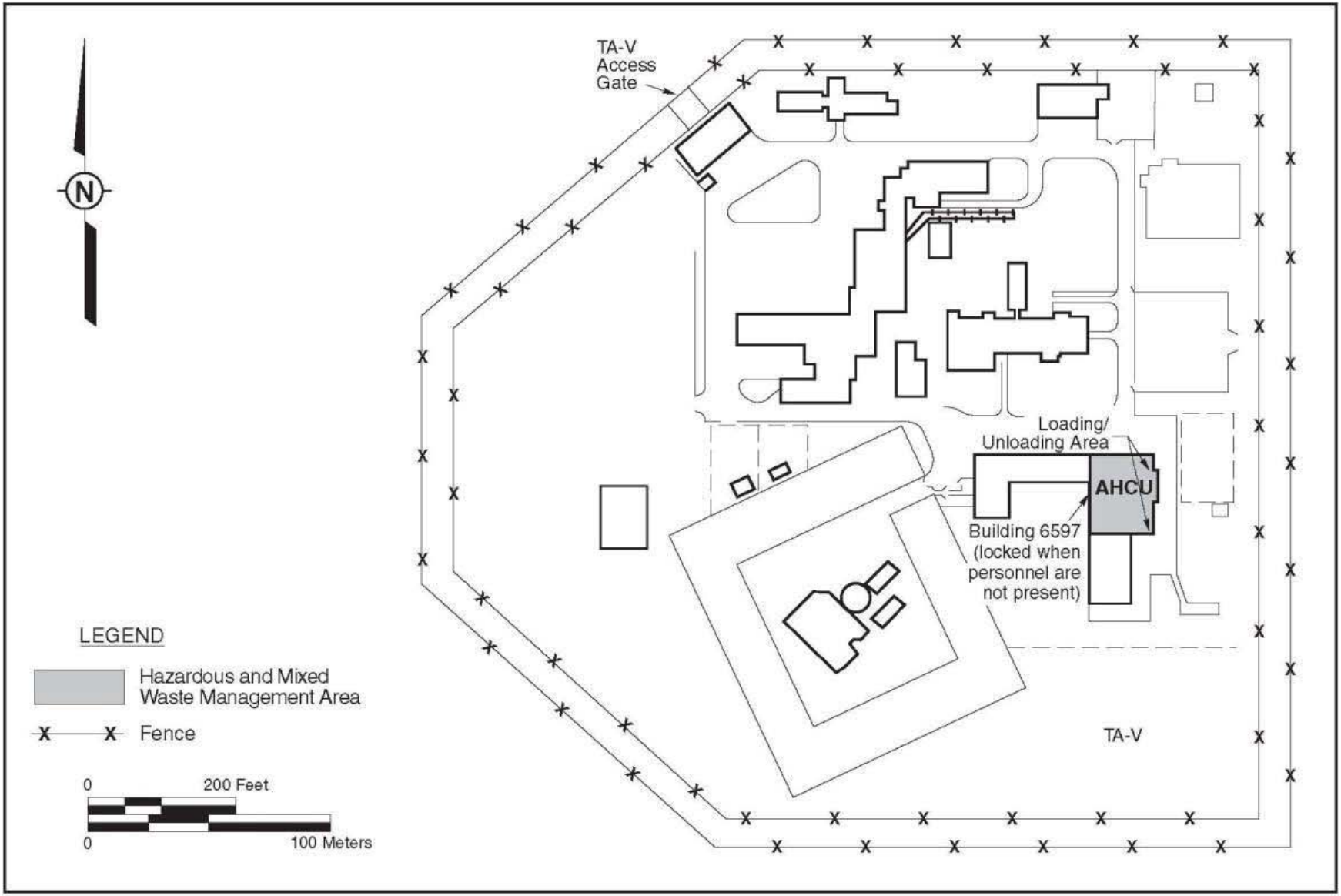


Figure 23

Auxiliary Hot Cell Unit Loading/Unloading and Access Control Features

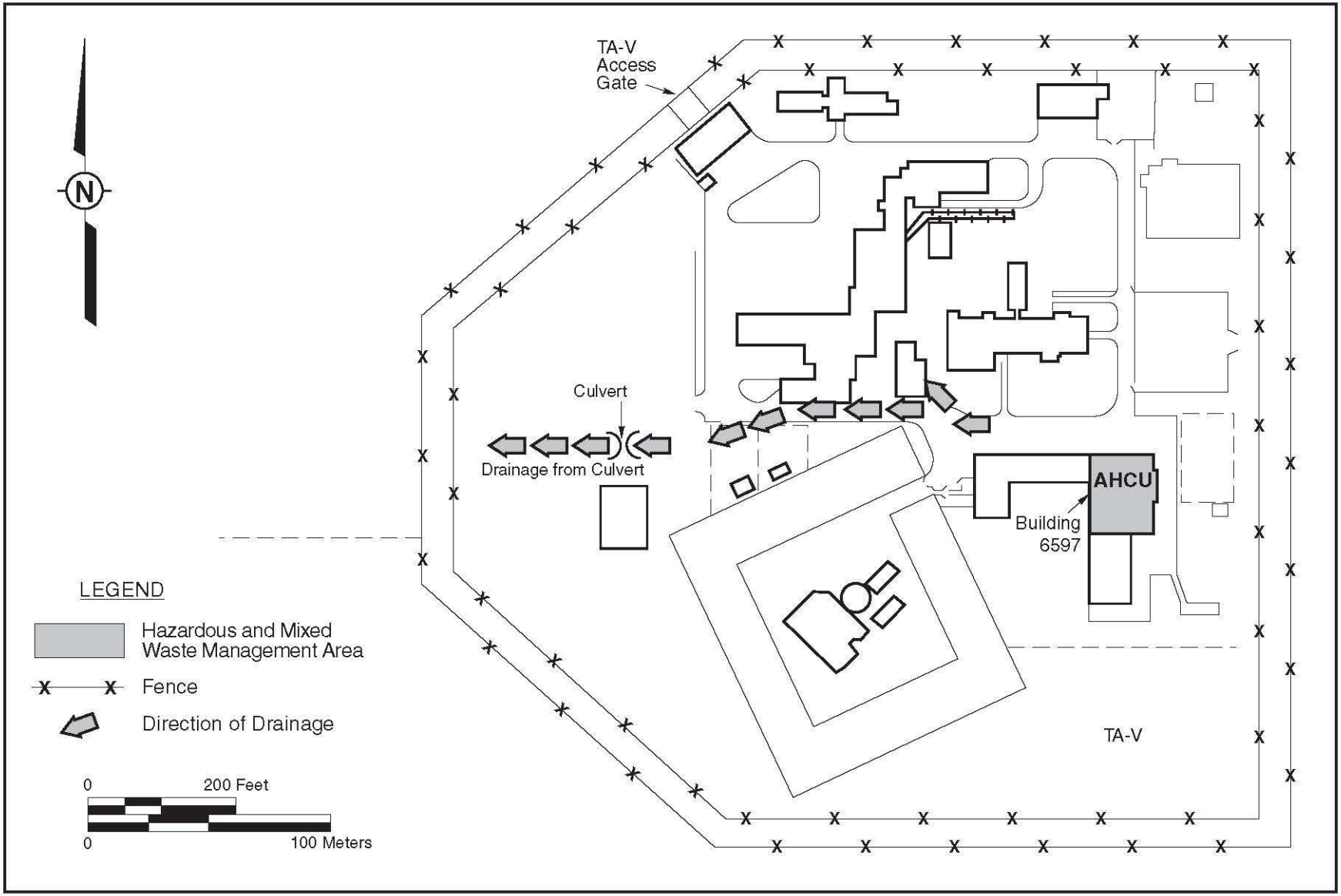


Figure 24
Auxiliary Hot Cell Unit (AHCU), Drainage Control Features

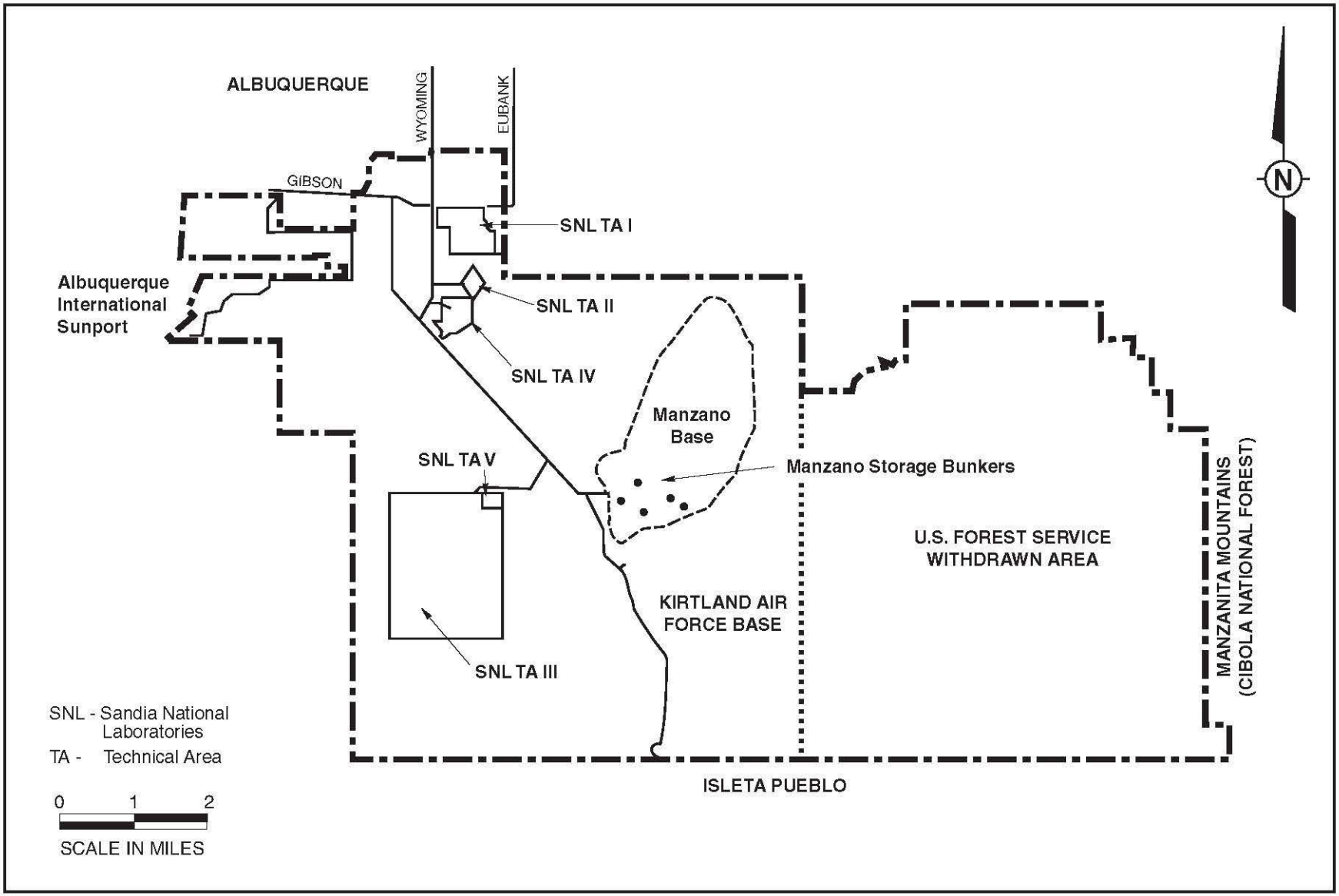


Figure 25
Location of the Manzano Storage Bunkers at the Facility

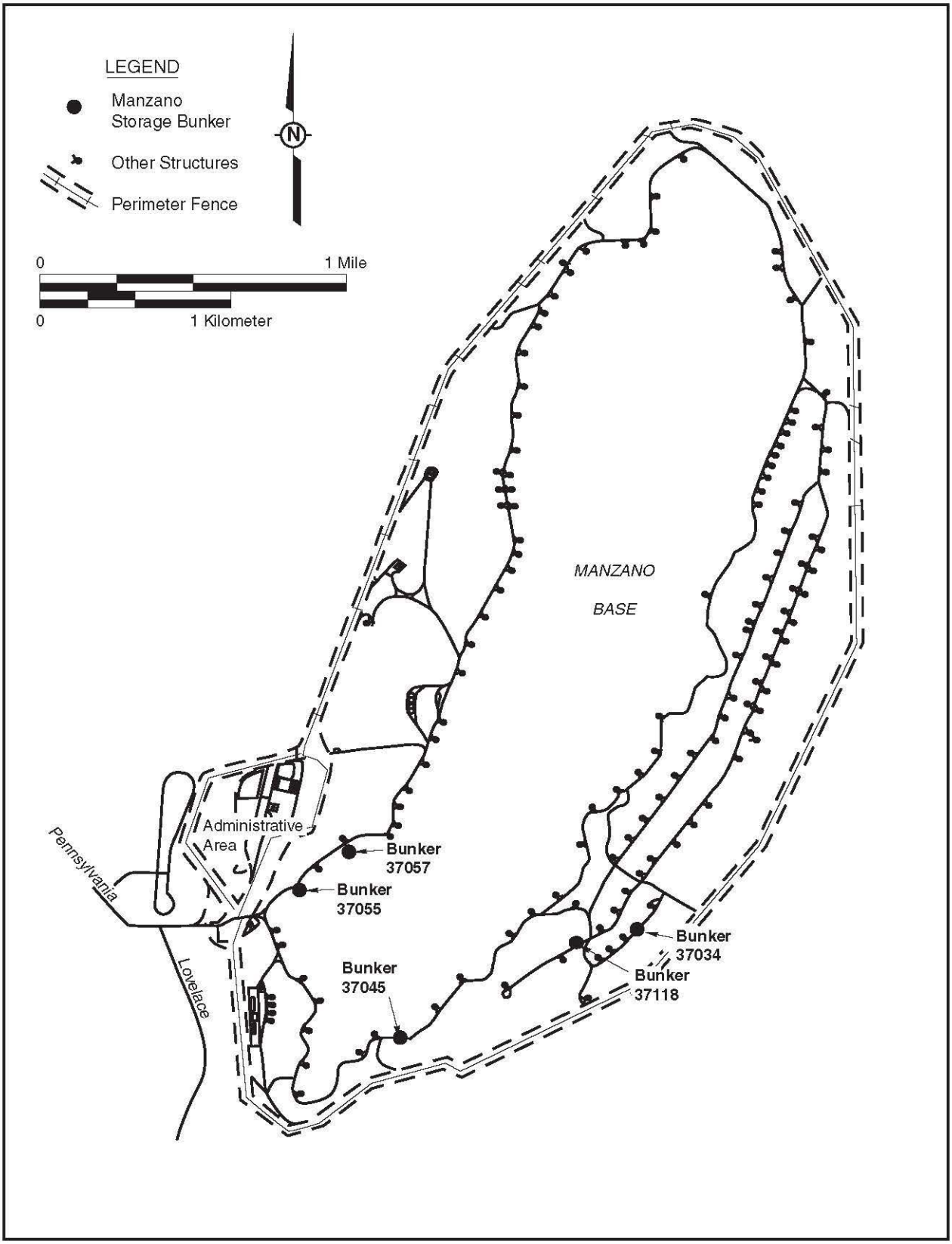


Figure 26
Location of the Manzano Storage Bunkers at Manzano Base

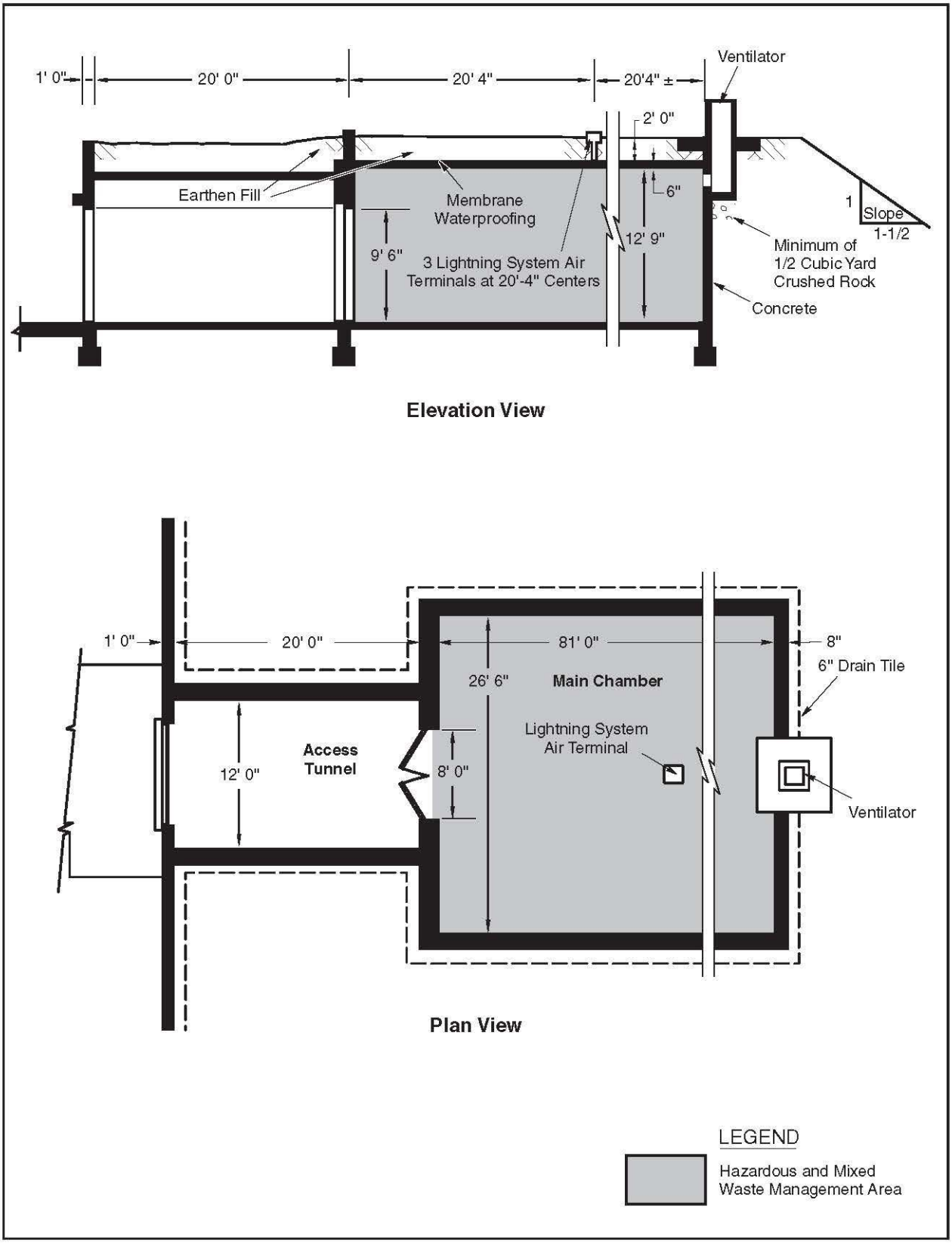


Figure 27
Views, Manzano Storage Bunker, Type B, Bunker 37034

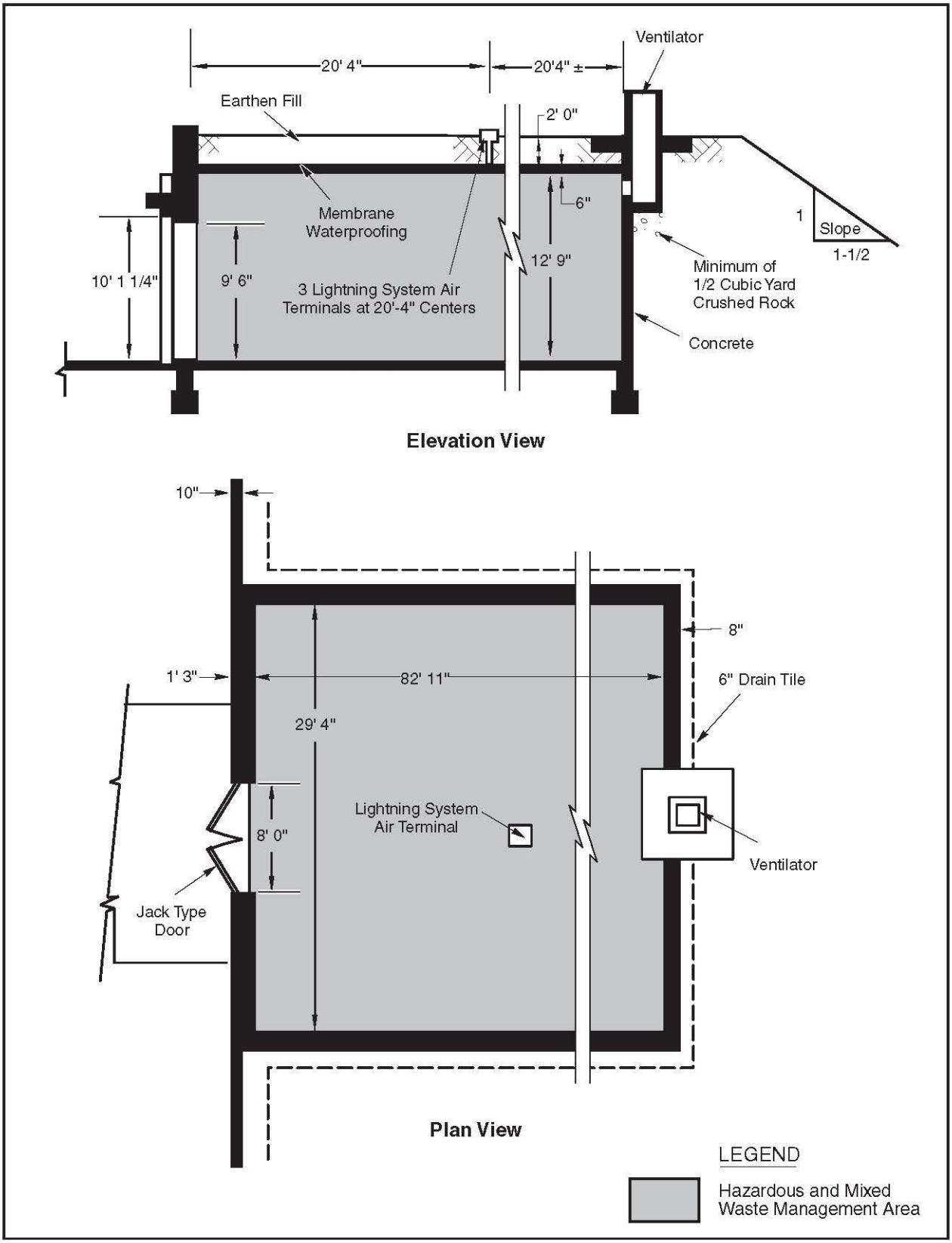


Figure 28

Views, Manzano Storage Bunker, Type C, Bunker 37118

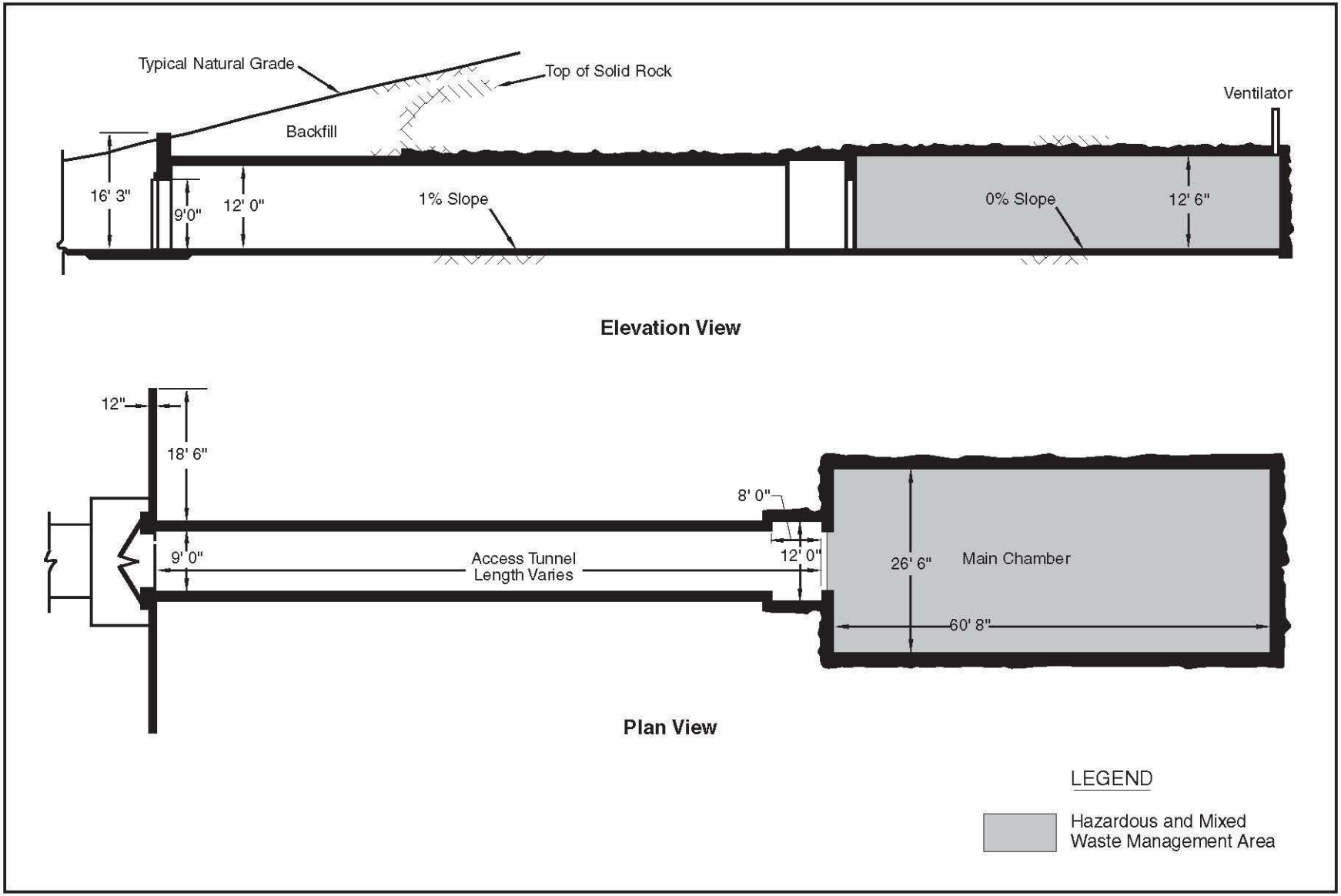


Figure 29

Views, Manzano Storage Bunkers, Type D Bunkers 37045, 37055, and 37057

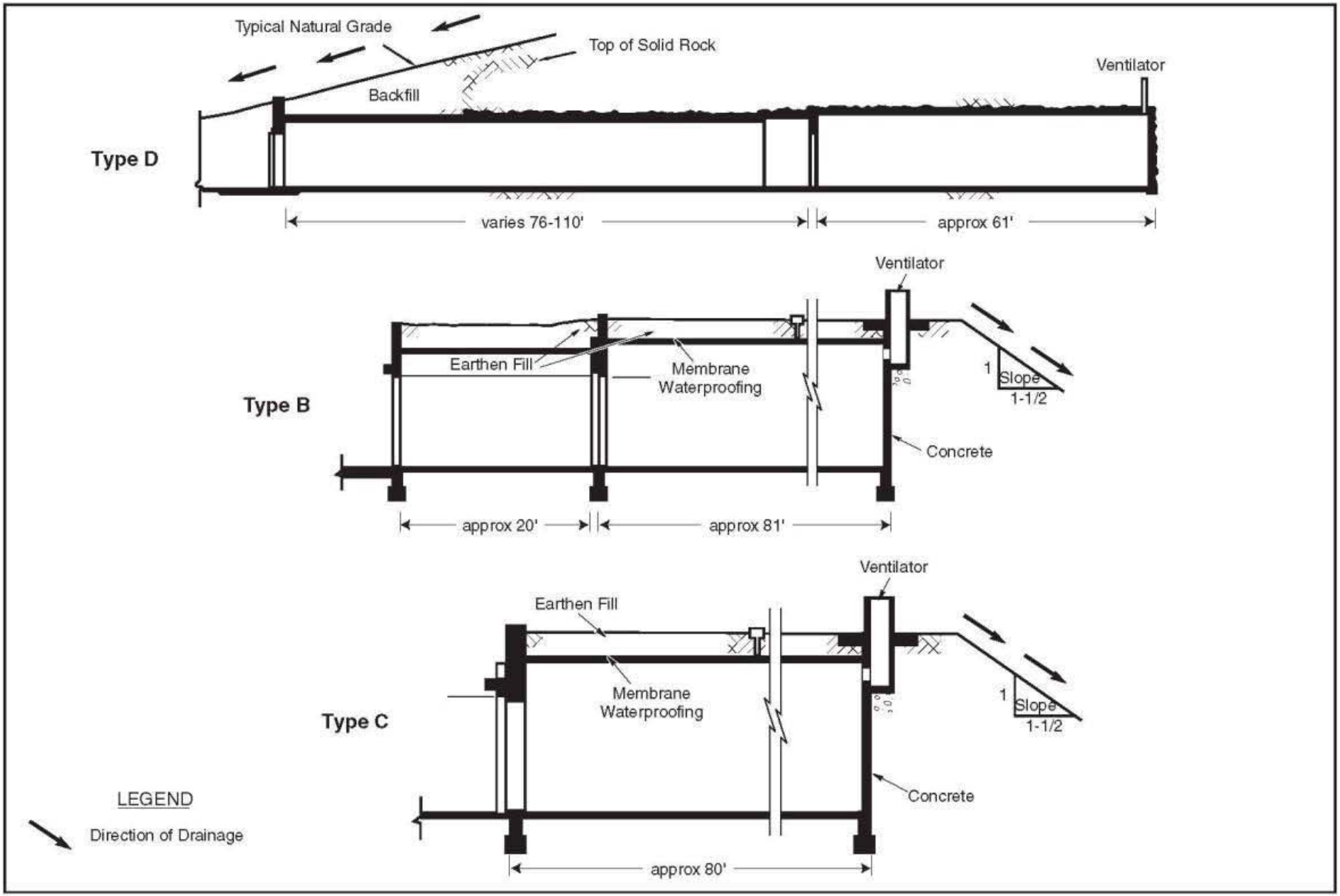


Figure 30

Manzano Storage Bunkers, Drainage Control Features

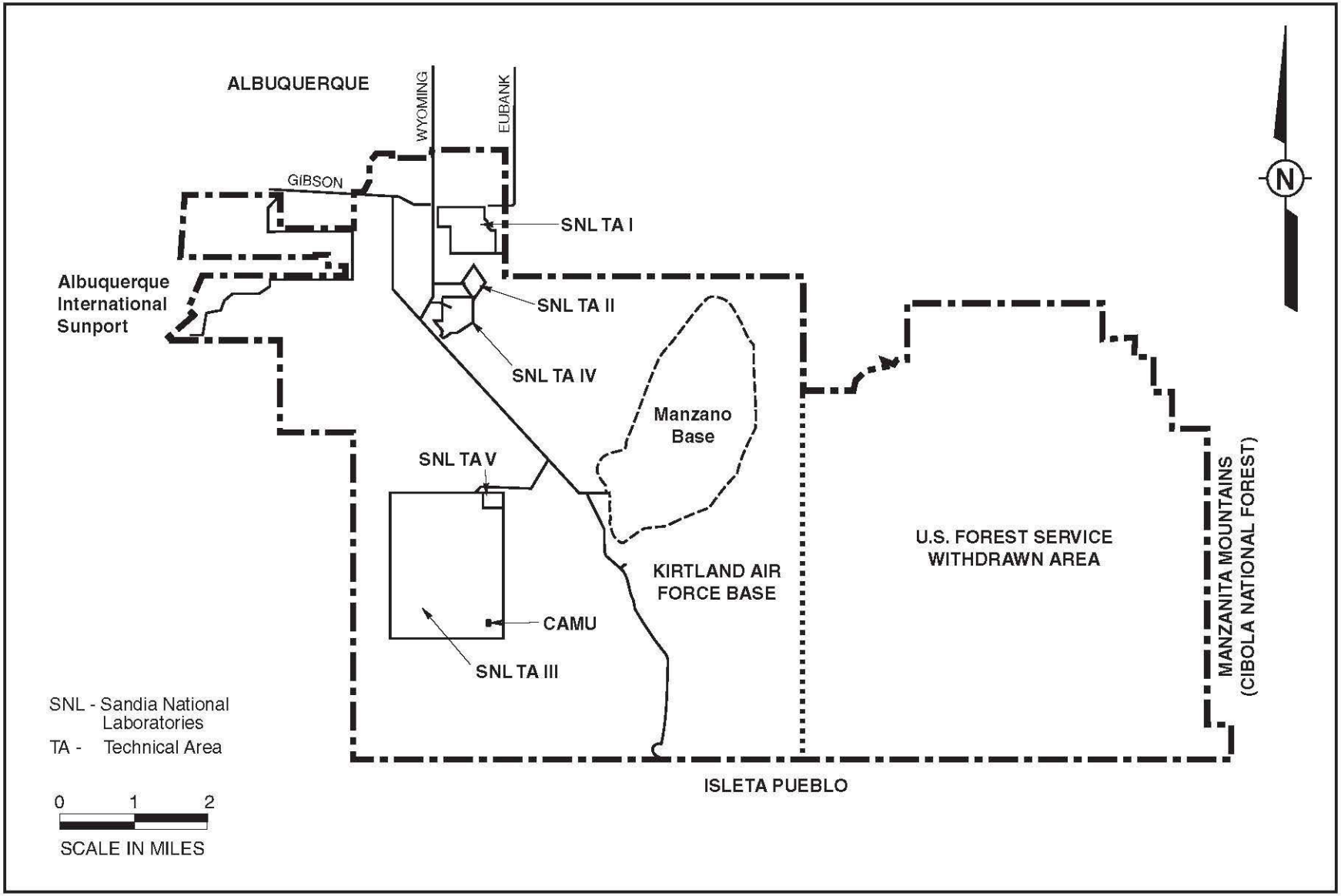


Figure 31
Location of the Corrective Action Management Unit (CAMU) at the Facility

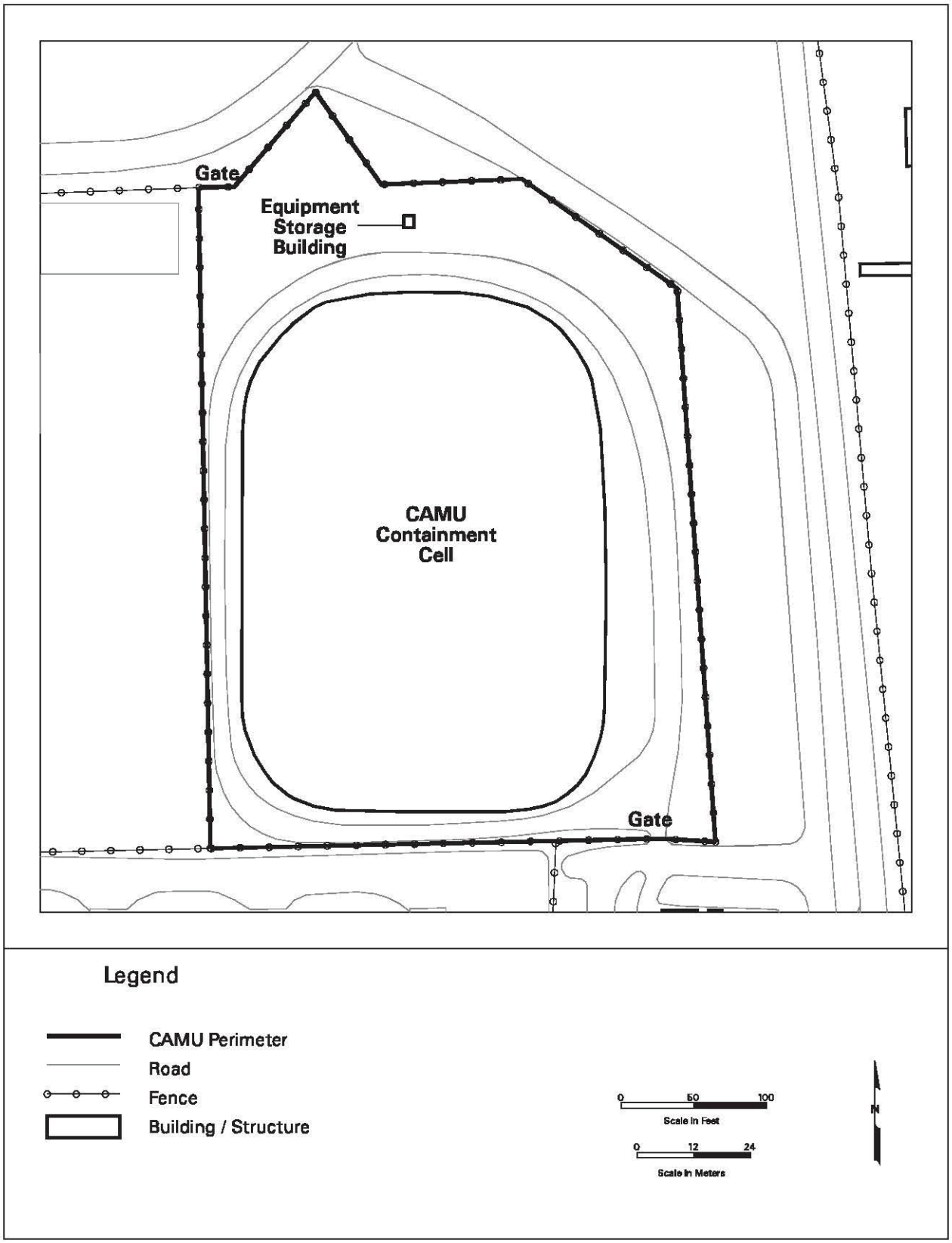


Figure 32
Post-Closure Perimeter
Corrective Action Management Unit (CAMU)

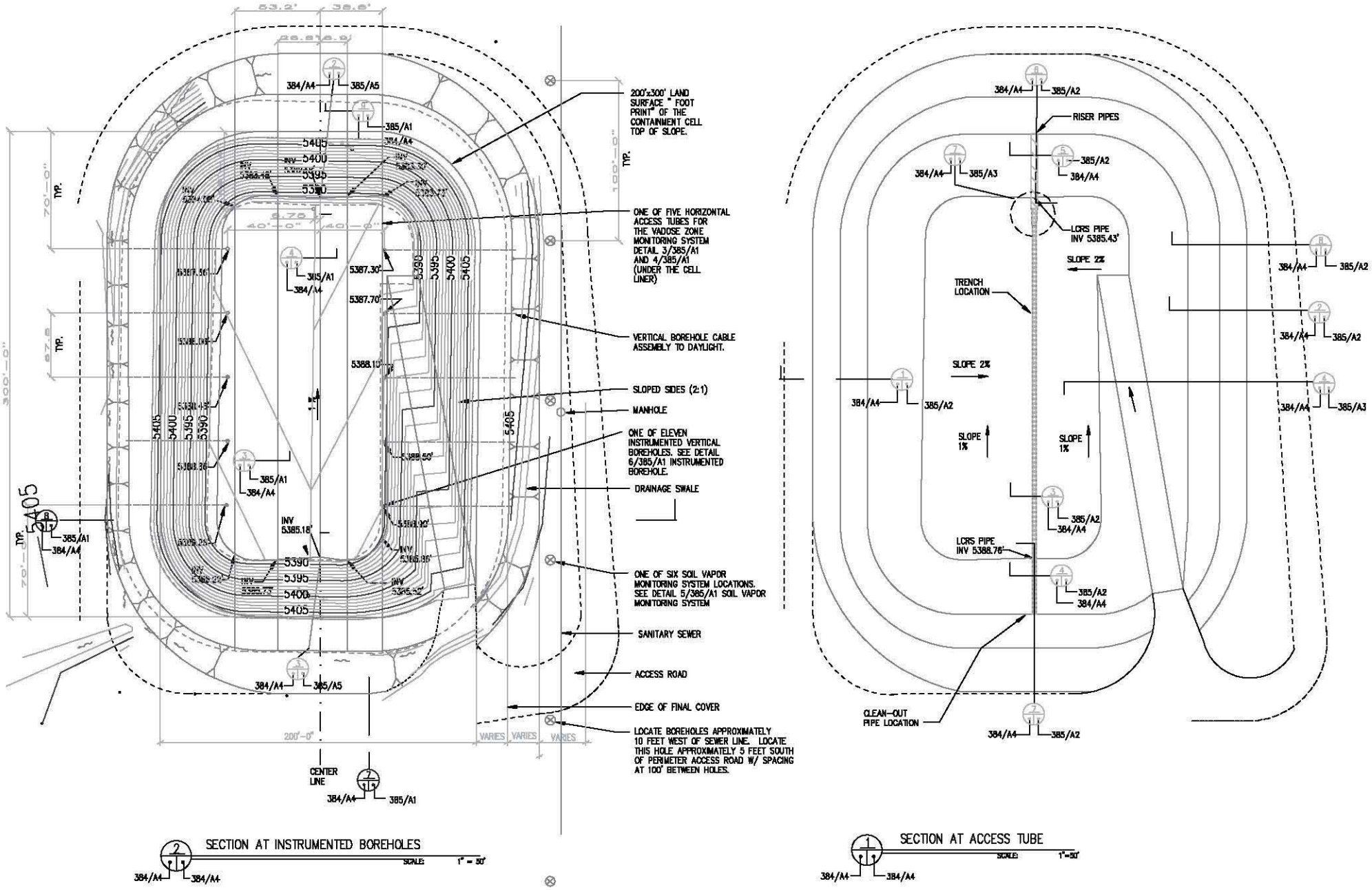


Figure 33
Corrective Action Management Unit
Containment Cell Site Plan

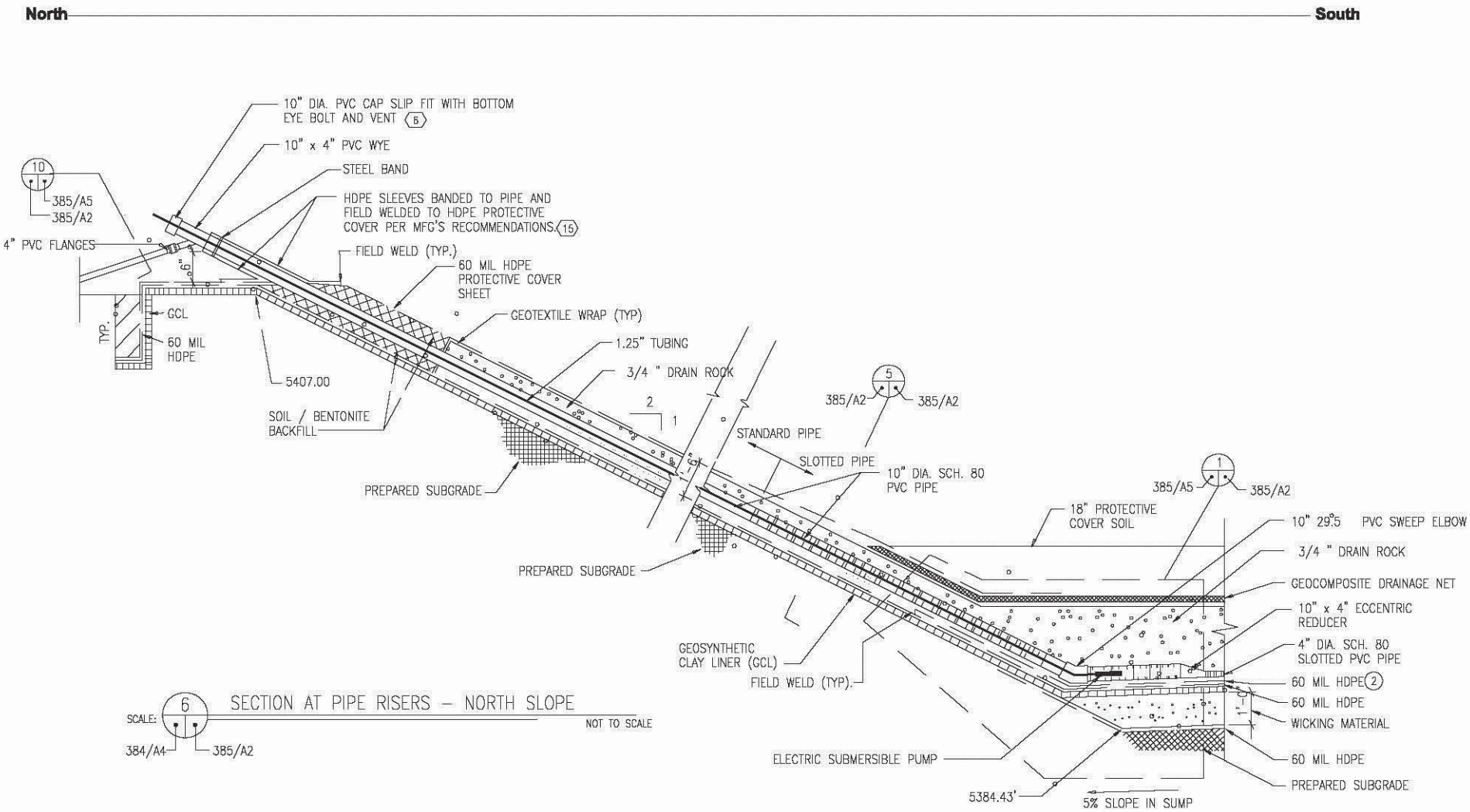


Figure 34
Corrective Action Management Unit
North-South Cross-Section of Leachate Collection and Removal System Sump

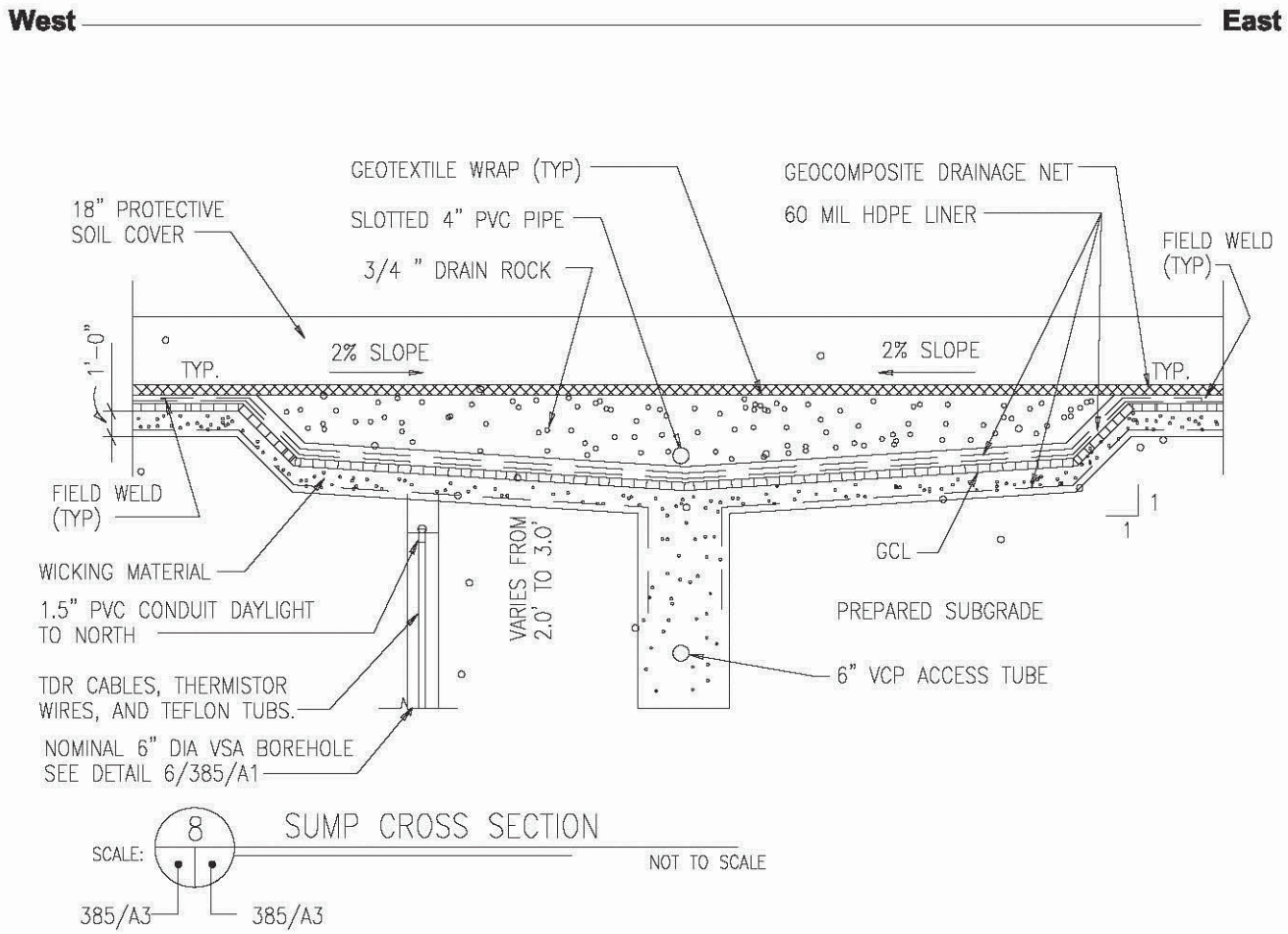


Figure 35
Corrective Action Management Unit
West-East Cross-Section of Containment Cell

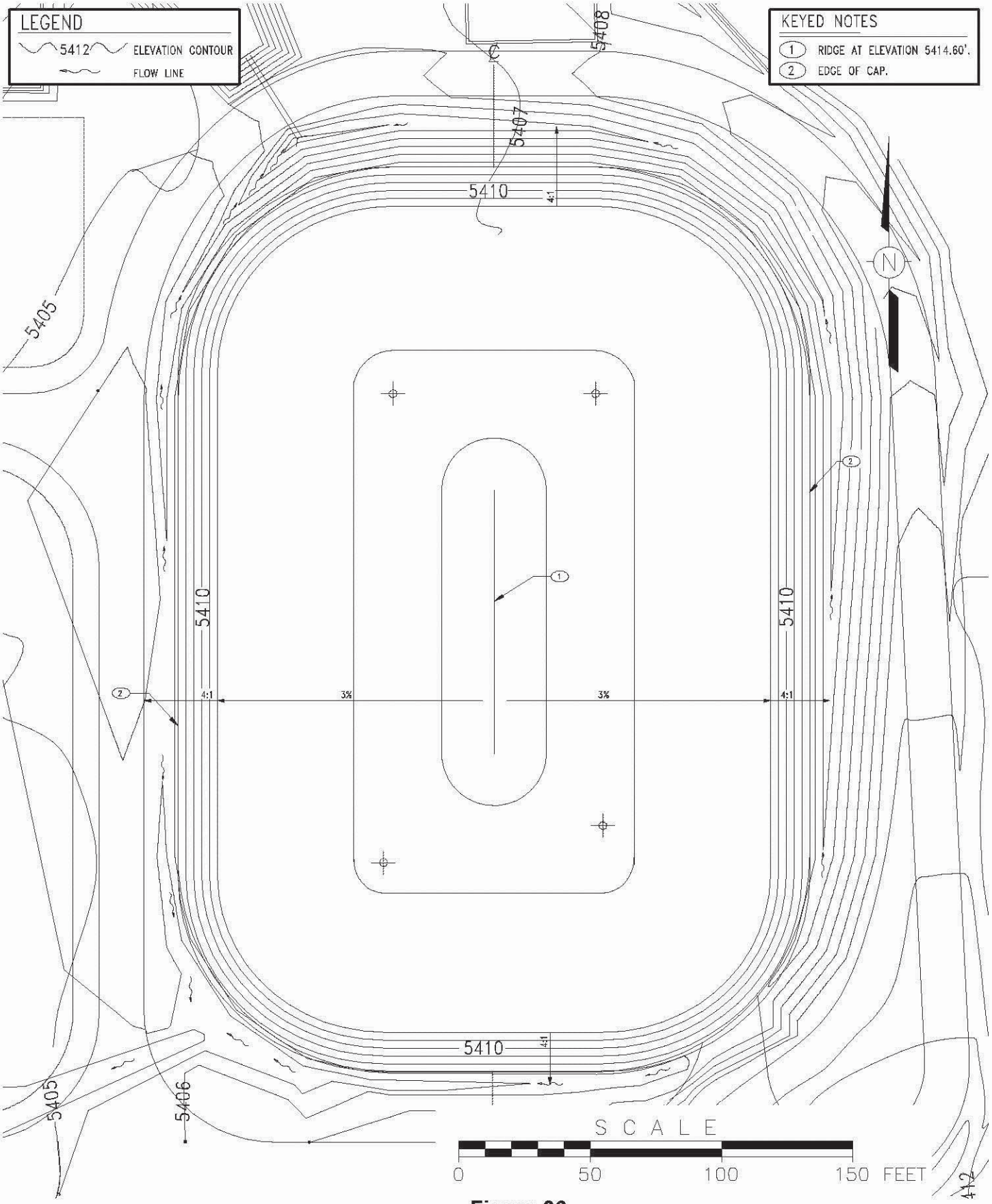


Figure 36
Plan View of Completed
Corrective Action Management Unit (CAMU) Containment
Cell Showing Final Cover Configuration and
Associated Perimeter Drainage Pathways

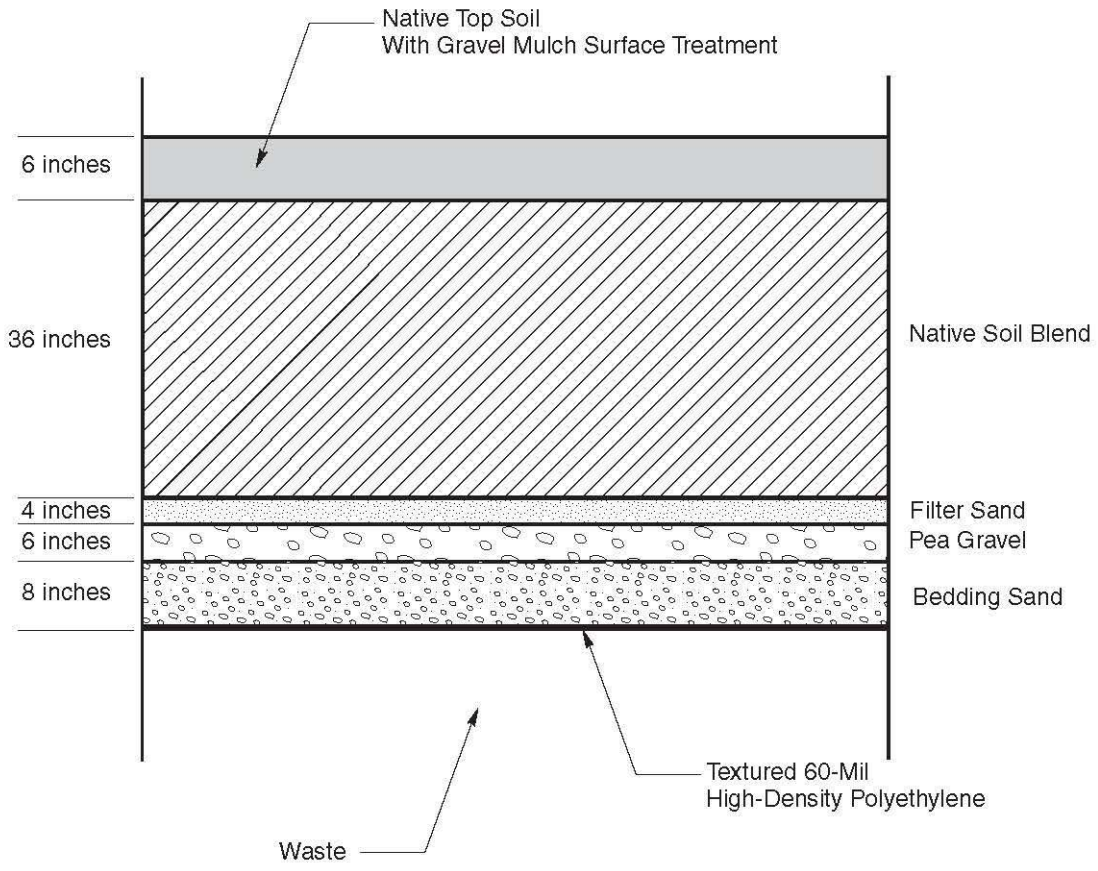


Figure 37

Schematic Cross-Section of Final Cover System, Corrective Action Management Unit Containment Cell

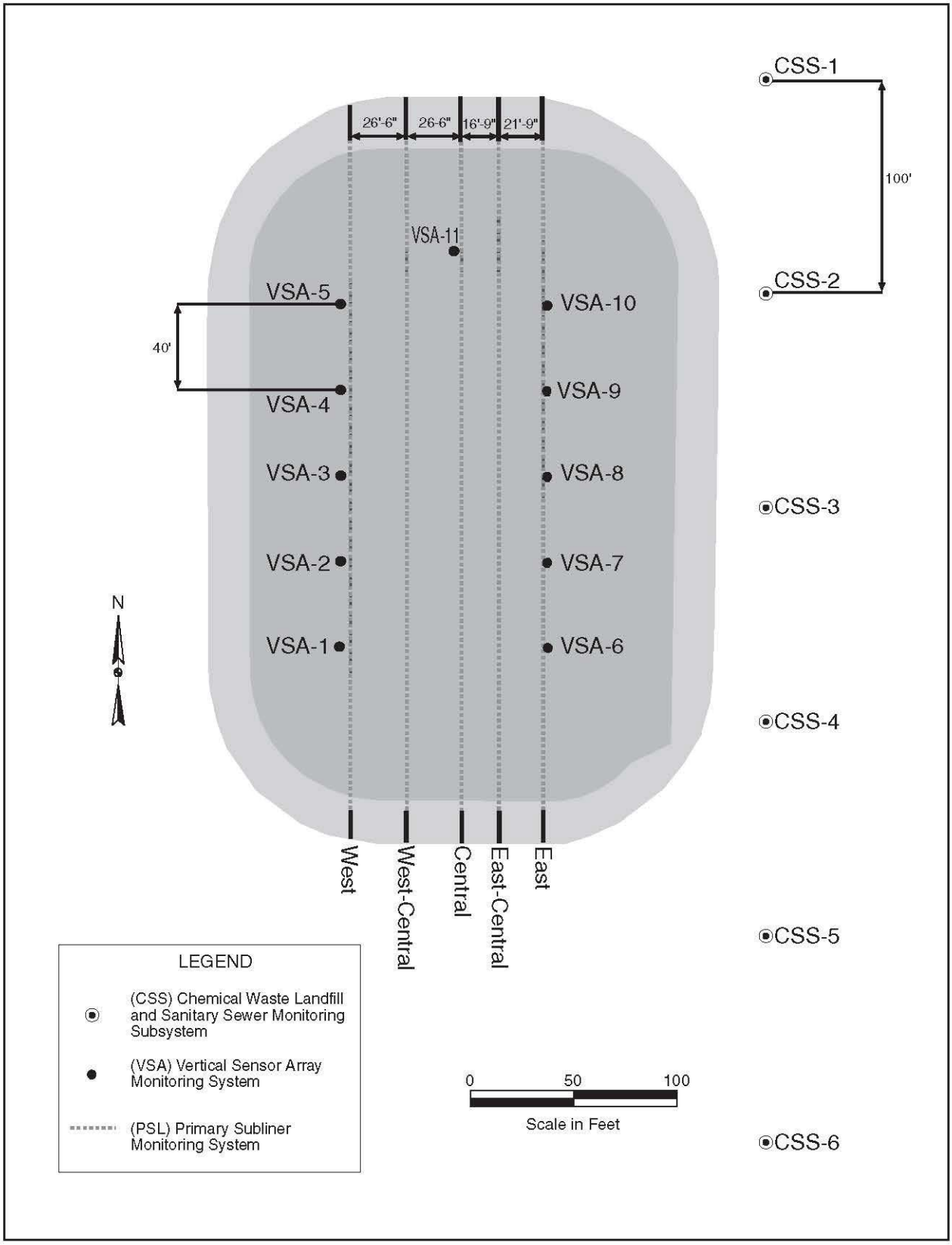


Figure 38

Plan View of Corrective Action Management Unit Containment Cell and Vadose Zone Monitoring System

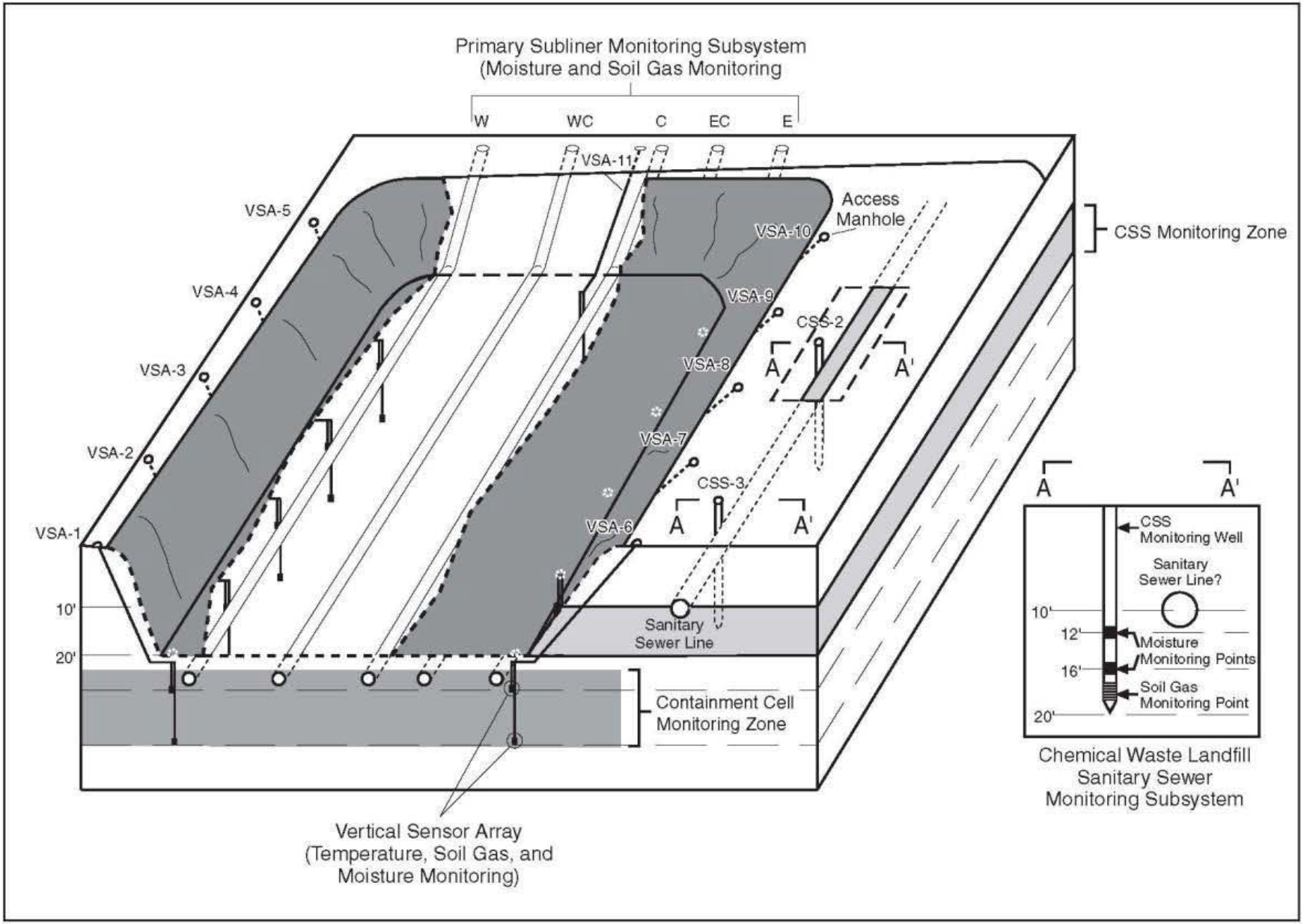


Figure 39

Block Diagram of Corrective Action Management Unit Containment Cell and Vadose Zone Monitoring System

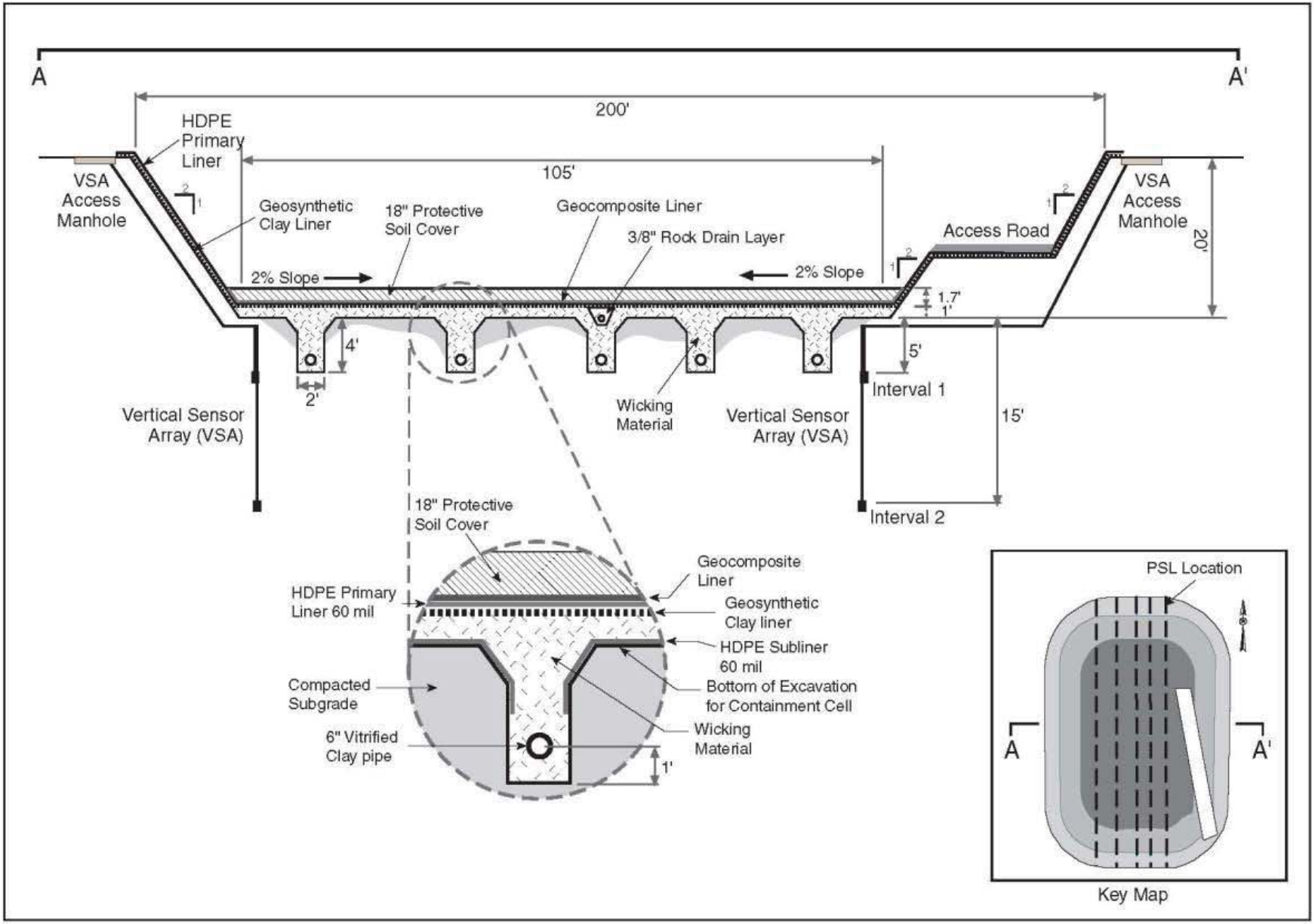


Figure 40

Cross-Section View of Corrective Action Management Unit Containment Cell and Primary Subliner Monitoring Subsystem

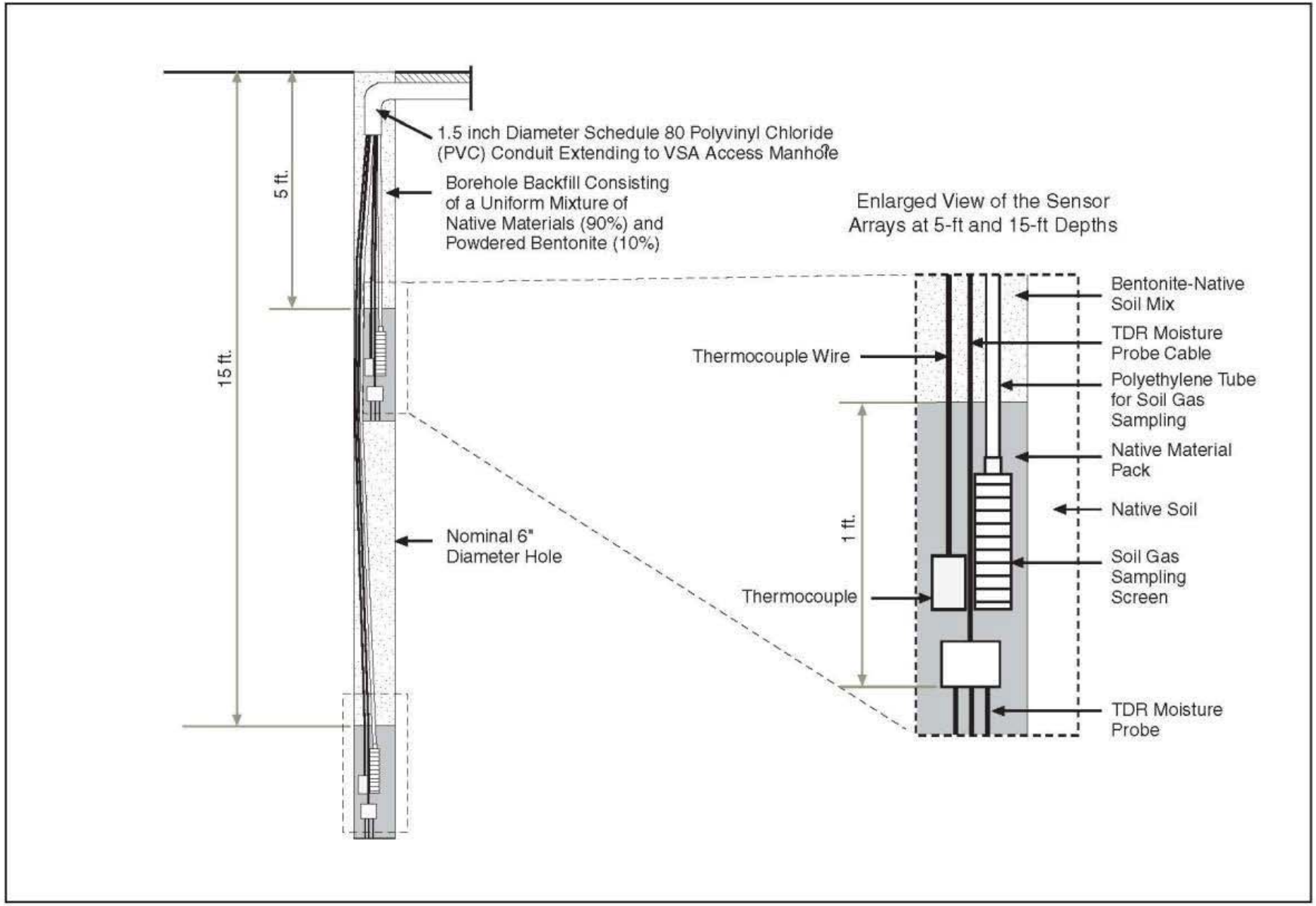


Figure 41
Configuration of Vertical Sensor Array Monitoring Subsystem

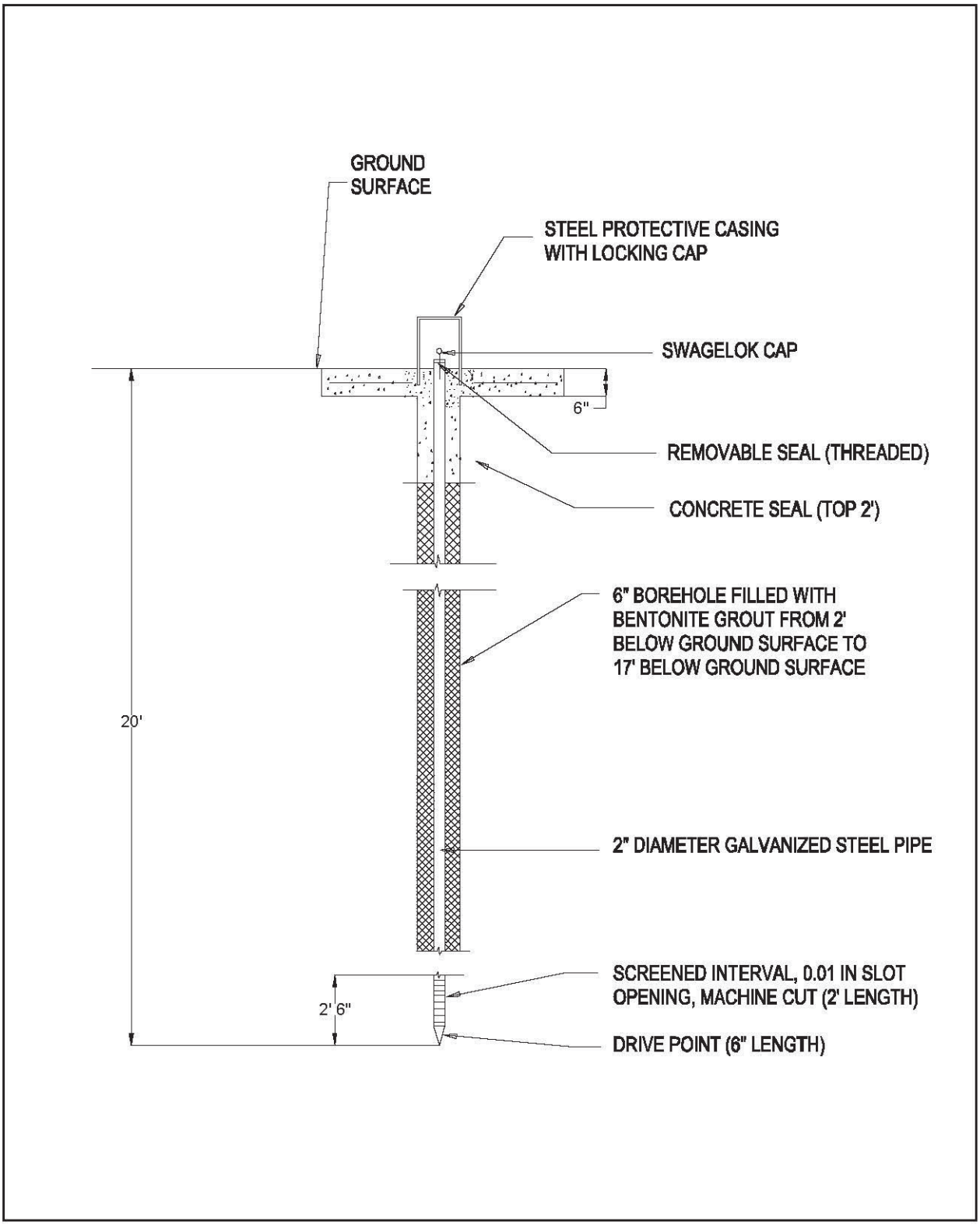


Figure 42

Cross-Section Configuration of Chemical Waste Landfill and Sanitary Sewer Monitoring Subsystem

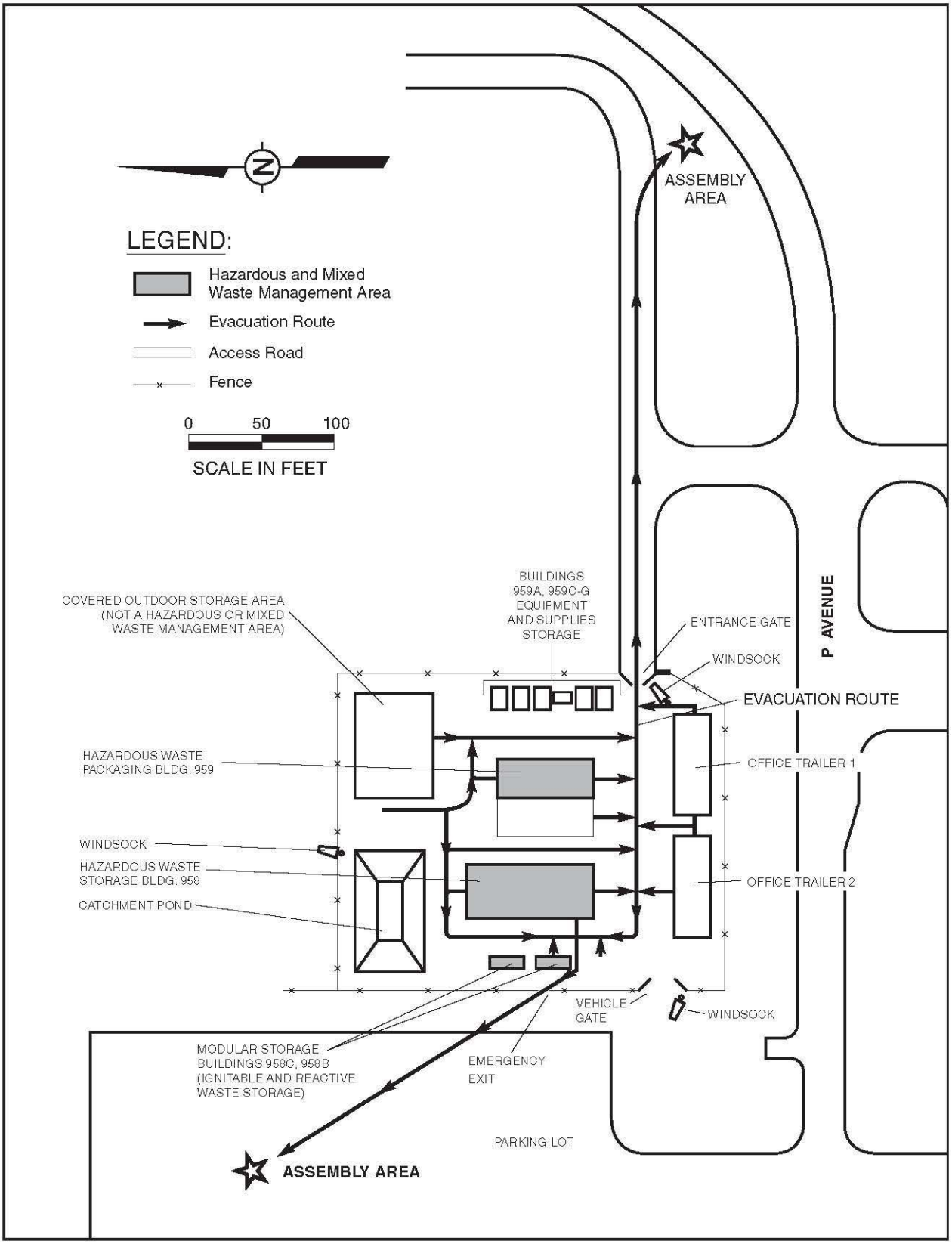


Figure 43

Hazardous Waste Handling Unit Evacuation Routes

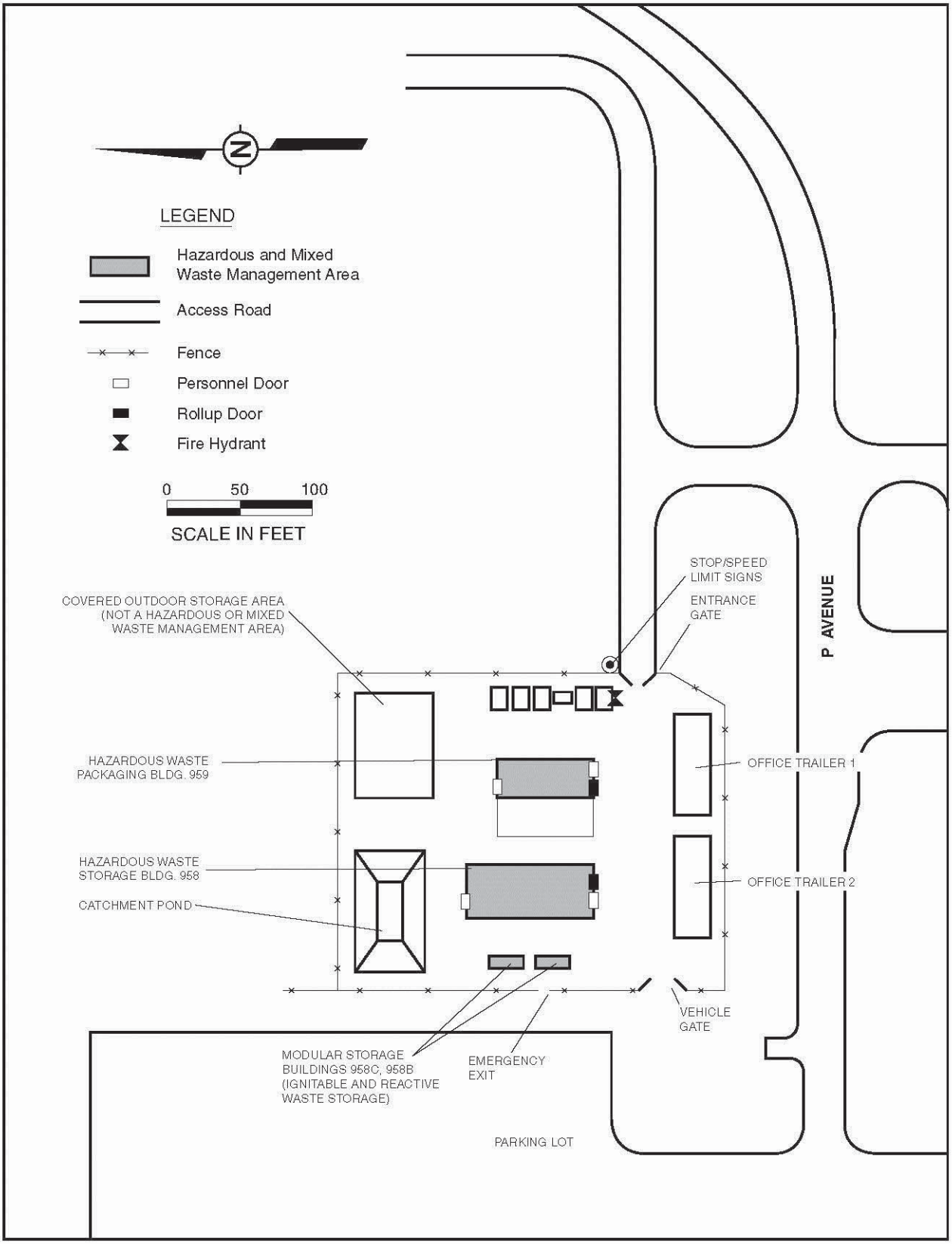


Figure 44

Hazardous Waste Handling Unit Emergency Response and Access Information

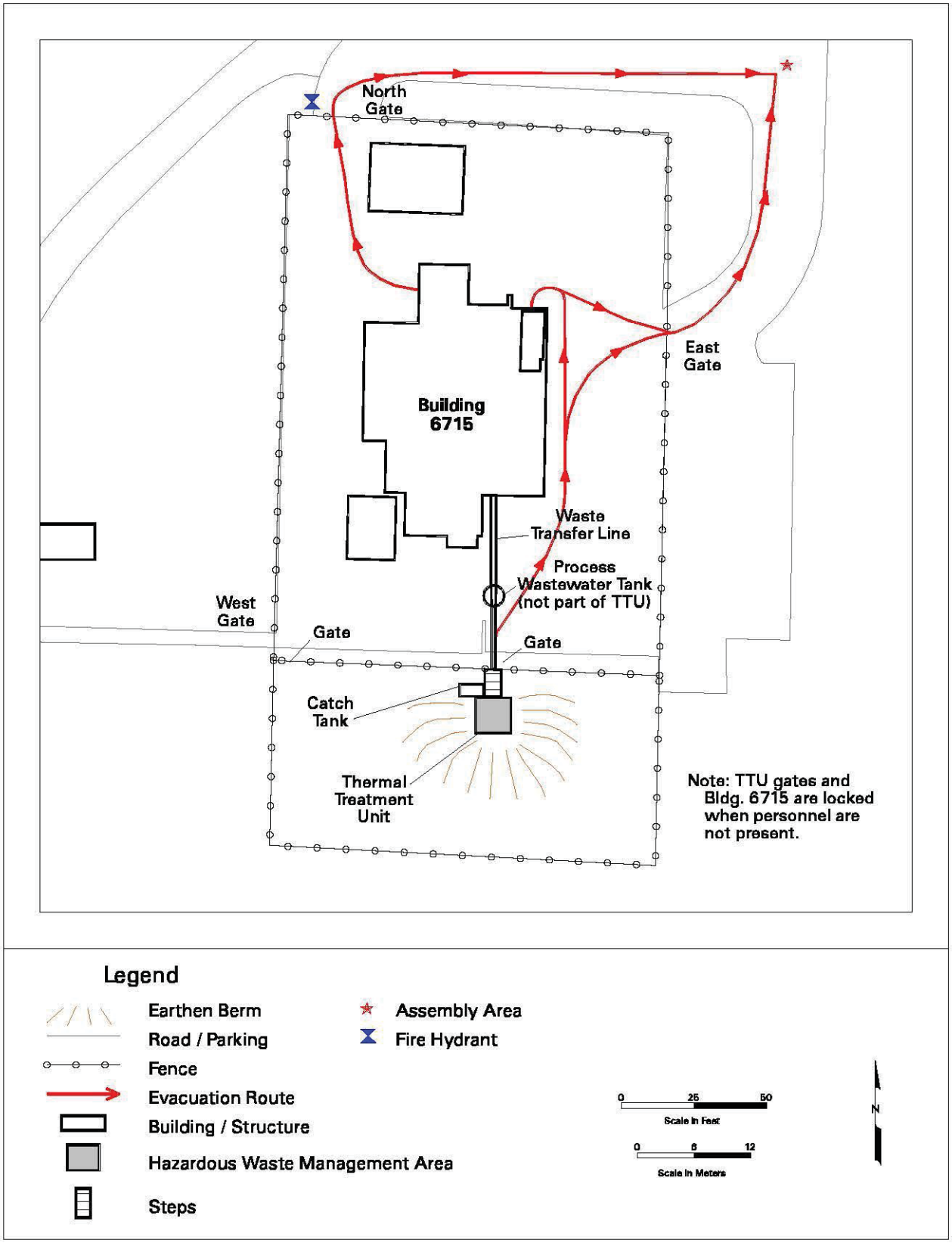


Figure 45
Thermal Treatment Unit (TTU)
Evacuation Route

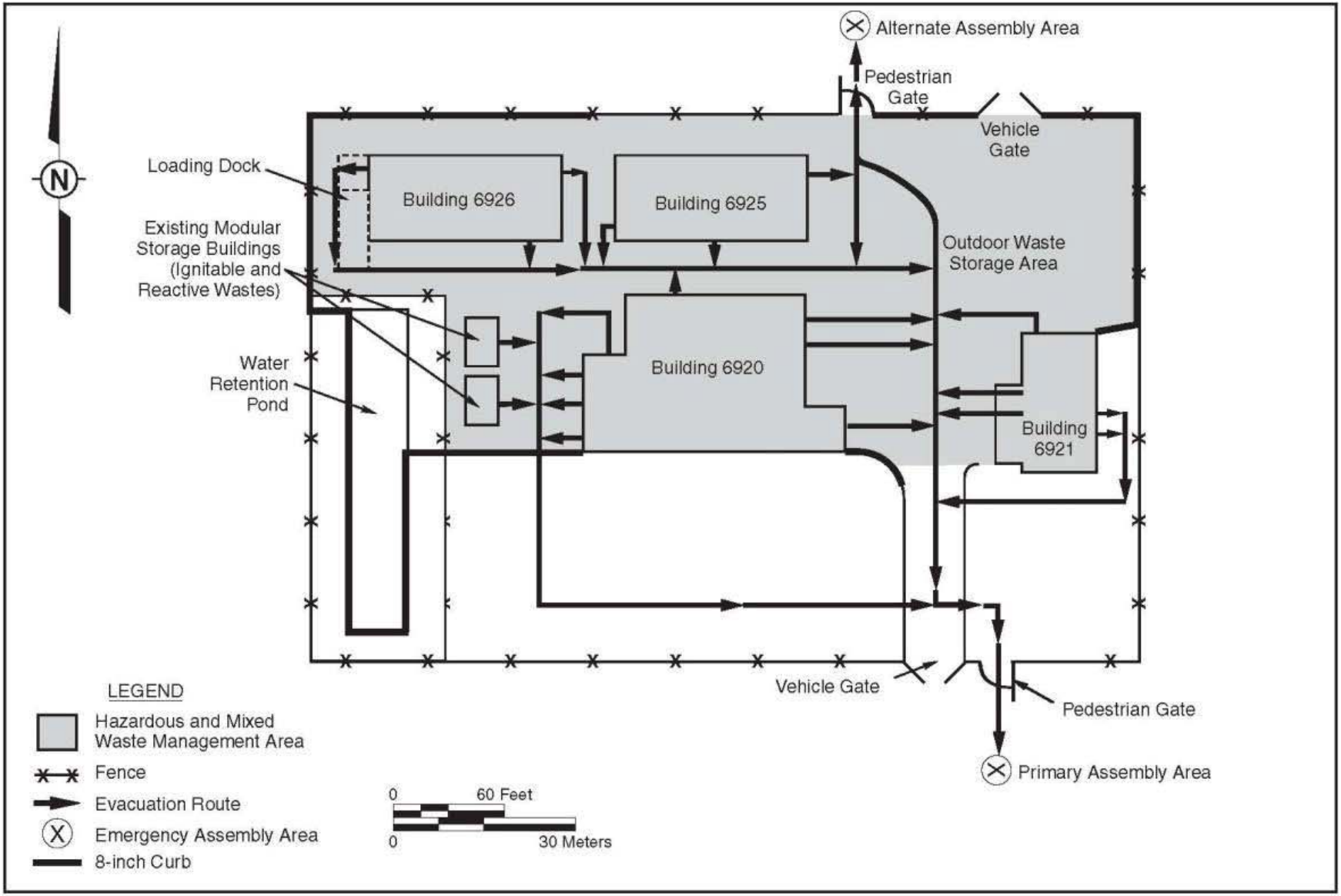


Figure 46

Radioactive and Mixed Waste Management Unit, Evacuation Routes

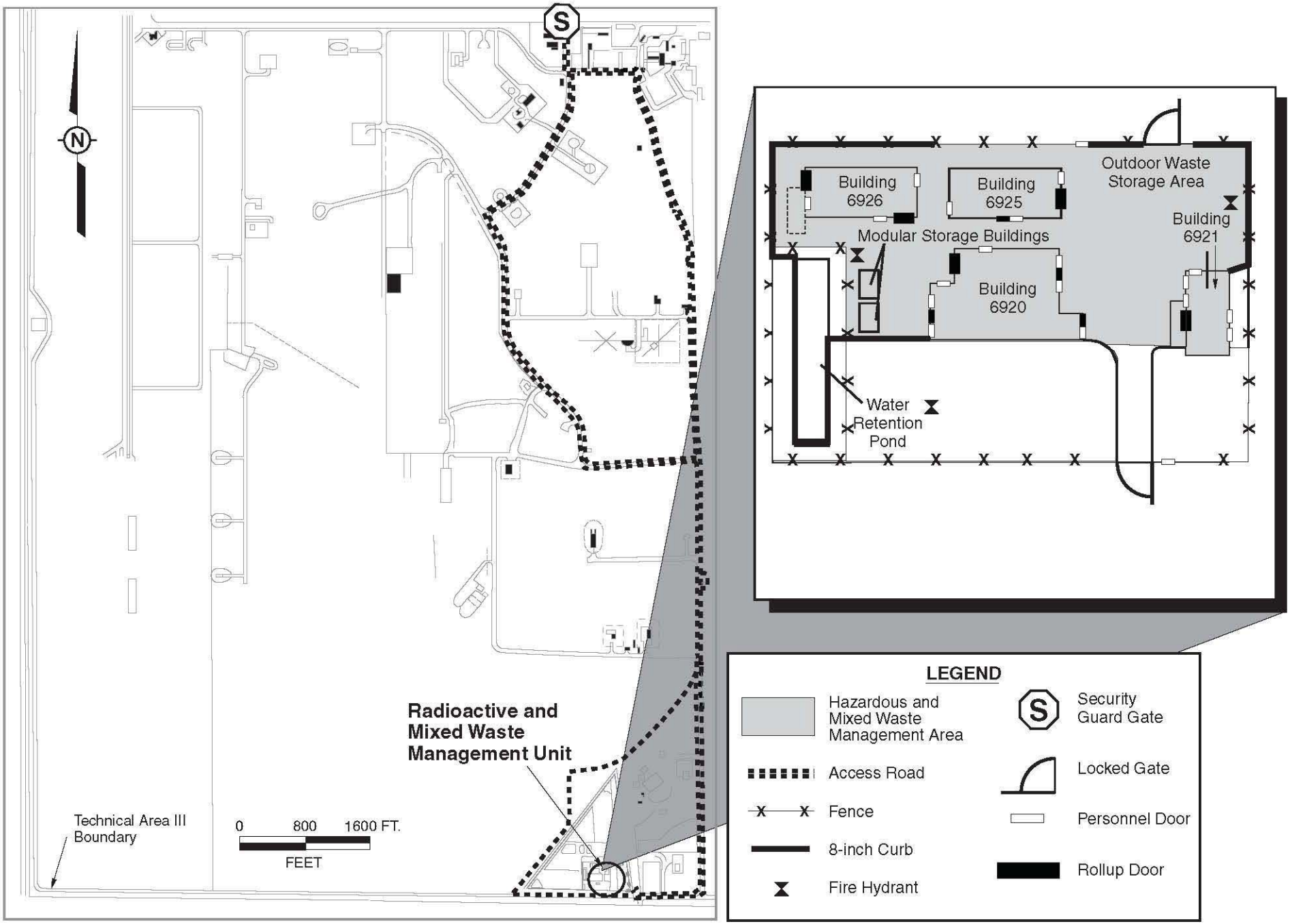


Figure 47

Radioactive and Mixed Waste Management Unit, Emergency Response and Access Information

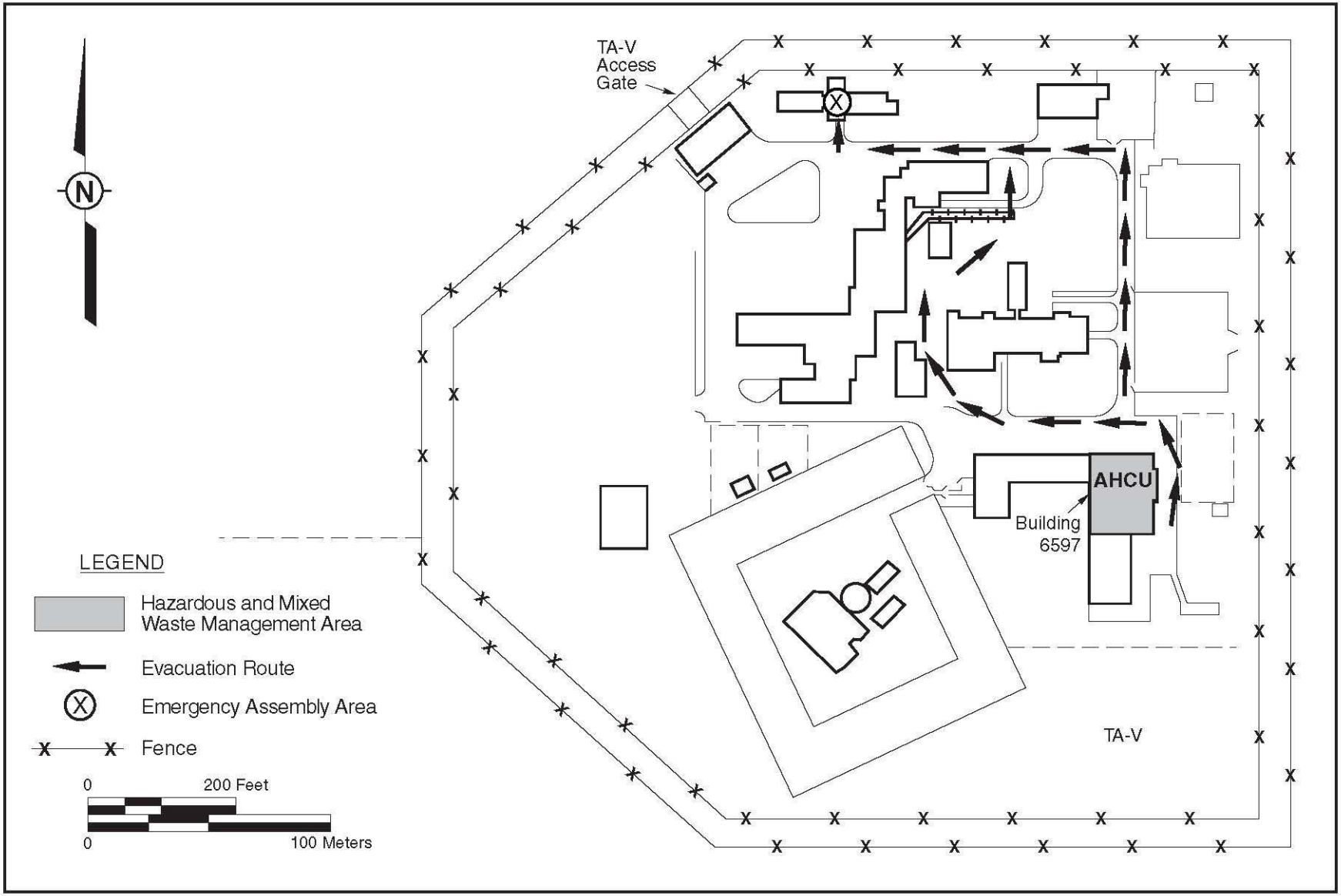


Figure 48
Auxiliary Hot Cell Unit (AHCU), Evacuation Routes

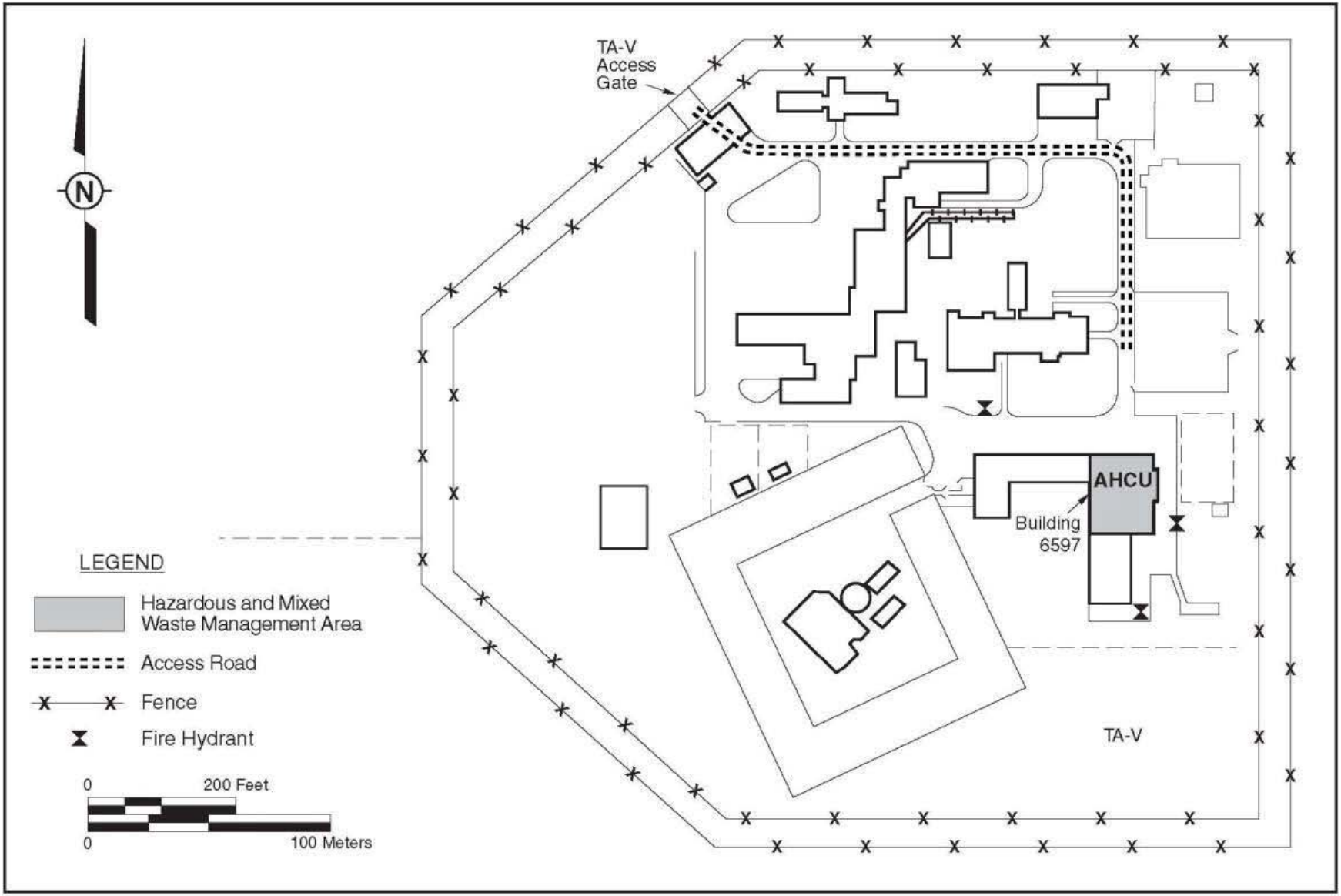


Figure 49

Auxiliary Hot Cell Unit (AHCU), Emergency Response and Access Information

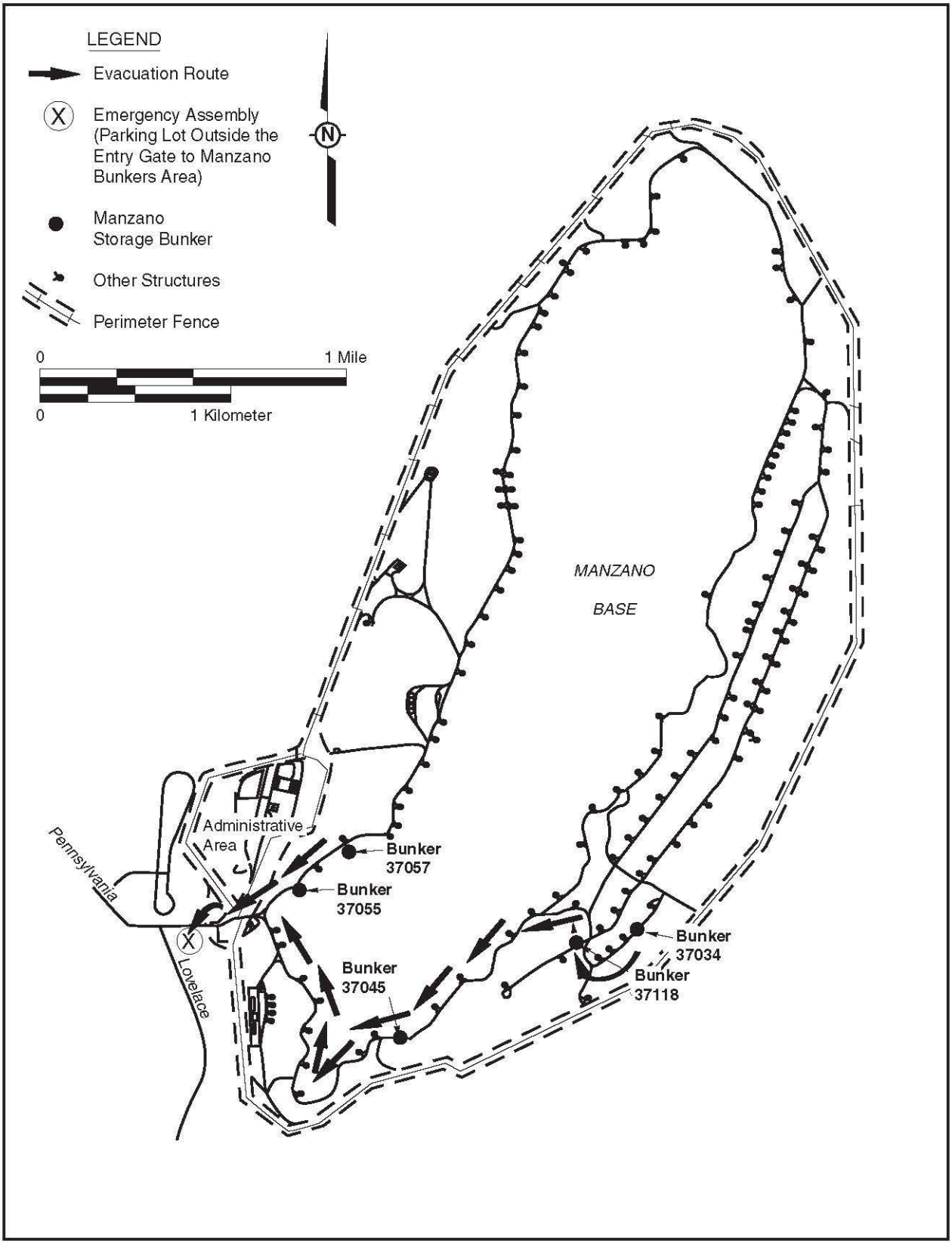


Figure 50
Manzano Storage Bunkers, Evacuation Routes

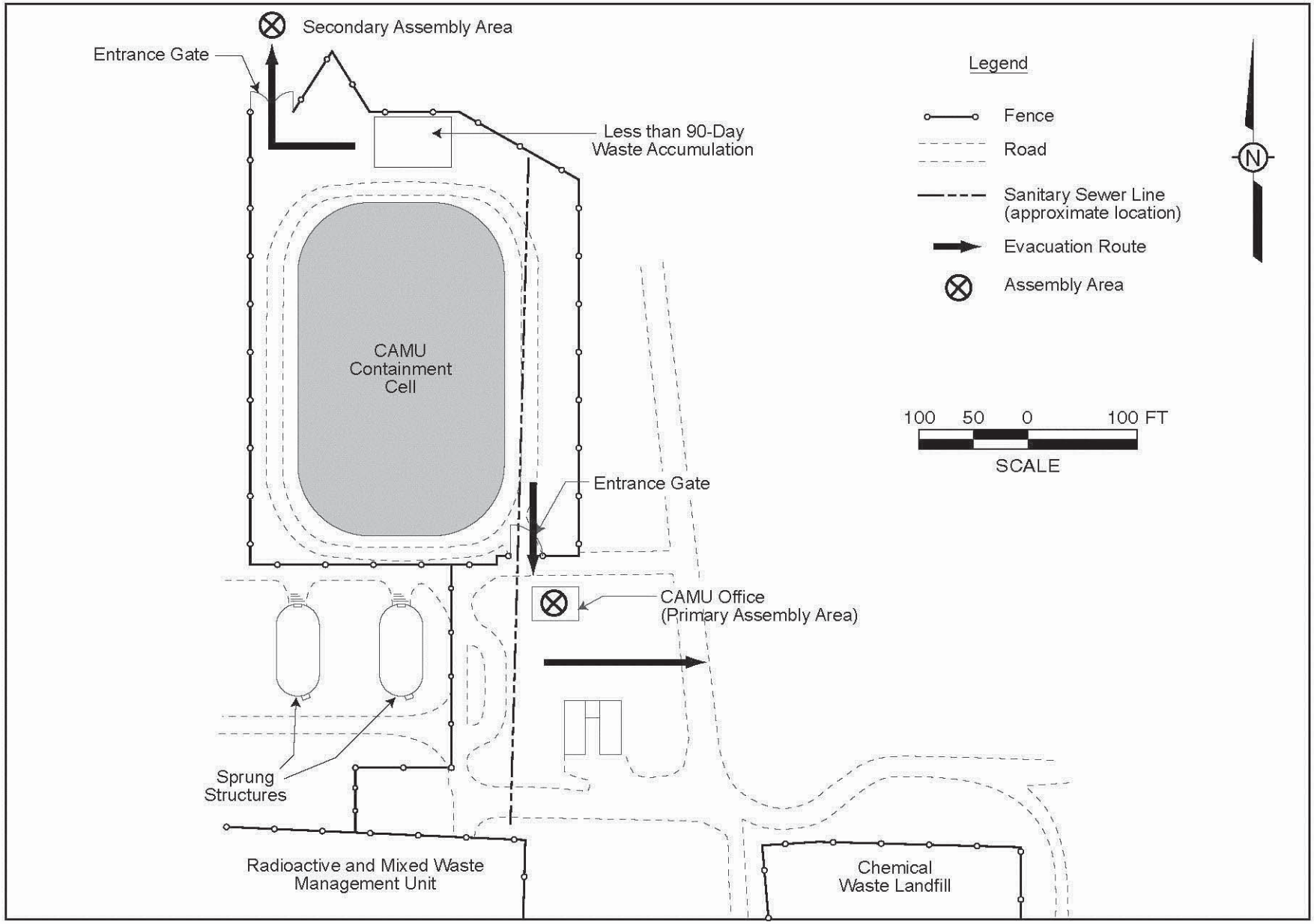
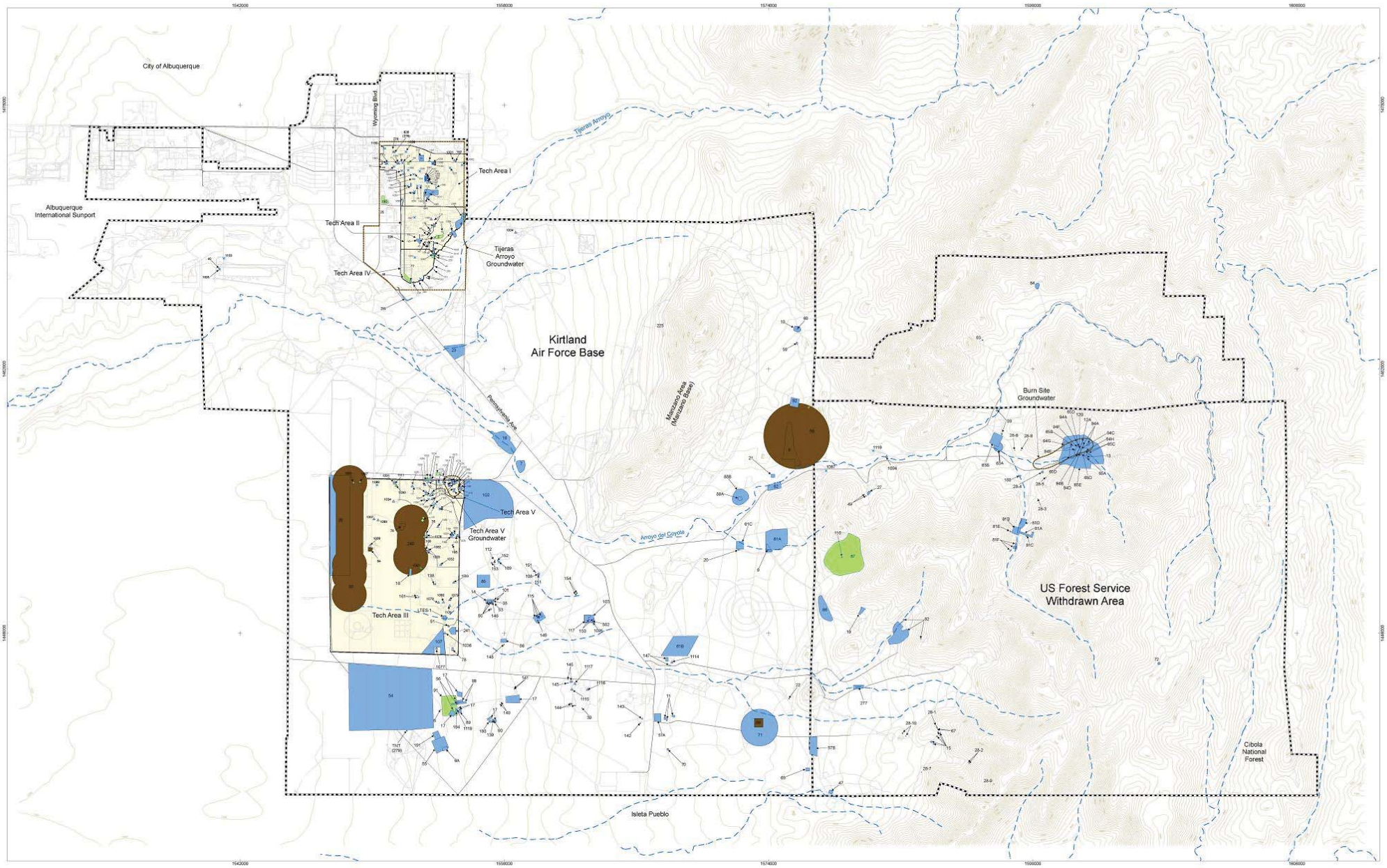


Figure 51

Local Area Map of Corrective Action Management Unit Containment Cell Evacuation Routes



Legend

SWMU or AOC Requiring Corrective Action Under the Consent Order (See Table K-1)

- SWMU or AOC
- Groundwater Investigation

SWMU or AOC for which Corrective Action is Complete with Controls (See Table K-3)

- SWMU or AOC
- Miscellaneous drain or septic system

Note: SWMU, 96 and 187 not shown

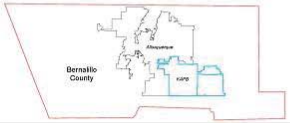
SWMU or AOC for which Corrective Action is Complete without Controls (See Table K-4)

- SWMU or AOC
- Miscellaneous drain or septic system
- Miscellaneous drain or septic system: no investigation needed

- SNL Technical Areas
- KAFB boundary
- Major road
- Road
- 40-foot elevation contour
- Drainage feature

AOC	Area of Concern
DOE	US Department of Energy
KAFB	Kirtland Air Force Base
SNL	Sandia National Laboratories
SWMU	Solid Waste Management Unit

Scale in Feet: 0 – 2,000 – 4,000
Scale in Meters: 0 – 450 – 900
Scale in Kilometers: 0 – 0.5 – 1
Scale in Miles: 0 – 0.5 – 1



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 52
Solid Waste Management Units and Areas of Concern
Sandia National Laboratories
Albuquerque, New Mexico
October 2014

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1983 North American Horizontal Datum
1988 North American Vertical Datum

Mapid = mb14165 09/30/14 SNL EGIS ORG 4142 MBarthel

9/30/14

Appendix A-1: Photographs of the Hazardous and Mixed Waste Management Areas at the HWHU

Hazardous Waste Handling Unit, 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 Handling Unit, Flammable Waste Storage Bay in Building 958
Photograph Taken on January 3, 2002
Process Code: S01

Hazardous Waste Handling Unit, 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 hazardous and mixed wastes (solids and liquids) are segregated into the bays by compatibility and are stored on shelves over secondary containment in the bay

Hazardous Waste Handling Unit,
Modular Storage Buildings (958B and 958C)
Photograph Taken on January 3, 2002
Process Code: S01

Appendix A-2: Photographs of the Hazardous Waste Management Areas at the TTU

Thermal Treatment Unit
Viewed from Roof of Building 6715
Photograph Taken October 23, 2003
Process Code: X01

The sheet metal housing and propane lines for the propane burners are 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. The gate in the fence surrounding the TTU is open.

Thermal Treatment Unit
Rear View of Burn Cage from Top of Earthen Berm
Photograph Taken on October 23, 2003
Process Code: X01

The door of the burn cage is open on the left (front) side of the cage. The sheet metal housing for the propane burners is visible on the far side of the burn cage.

Thermal Treatment Unit
Front View of Burn Pan (with Lid Down) Inside Burn Cage
Photograph Taken on October 23, 2003
Process Code: X01

The base of the burn pan sits on the steel beams that run across in the front and back of the burn cage. The pan is 6 inches deep. The lid is lowered and covers the pan. During operation, the lid is raised using the attached cable, and hazardous wastes are placed inside the burn pan or liquid wastes are pumped into the pan. The liquid waste feed system is located on the right side of the cage and is not visible in this photograph. It is temporarily out of service.

The burn cage door is open. 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.

Appendix A-3: Photographs of the Hazardous and Mixed Waste Management Areas at the RMWMU

Radioactive and Mixed Waste Management Unit, East Side of Building 6920
Photograph Taken on December 5, 2001
Process Codes: S01, T04

Radioactive and Mixed Waste Management Unit, West Side of Building 6920
Photograph Taken on December 5, 2001
Process Codes: S01, T04

Radioactive and Mixed Waste Management Unit, Building 6920, South Bay
Photograph Taken on December 20, 2001
Process Codes: S01, T04

The south bay is used for storage of hazardous and mixed wastes in containers and for treatment. The doors to three of the four rooms in the south bay are visible at the left edge of the picture. Treatment operations typically occur in these rooms. The roll-up door at the far (east) end of the room leads to an additional storage/work area. A secondary containment sump is shown on the right in the photograph.

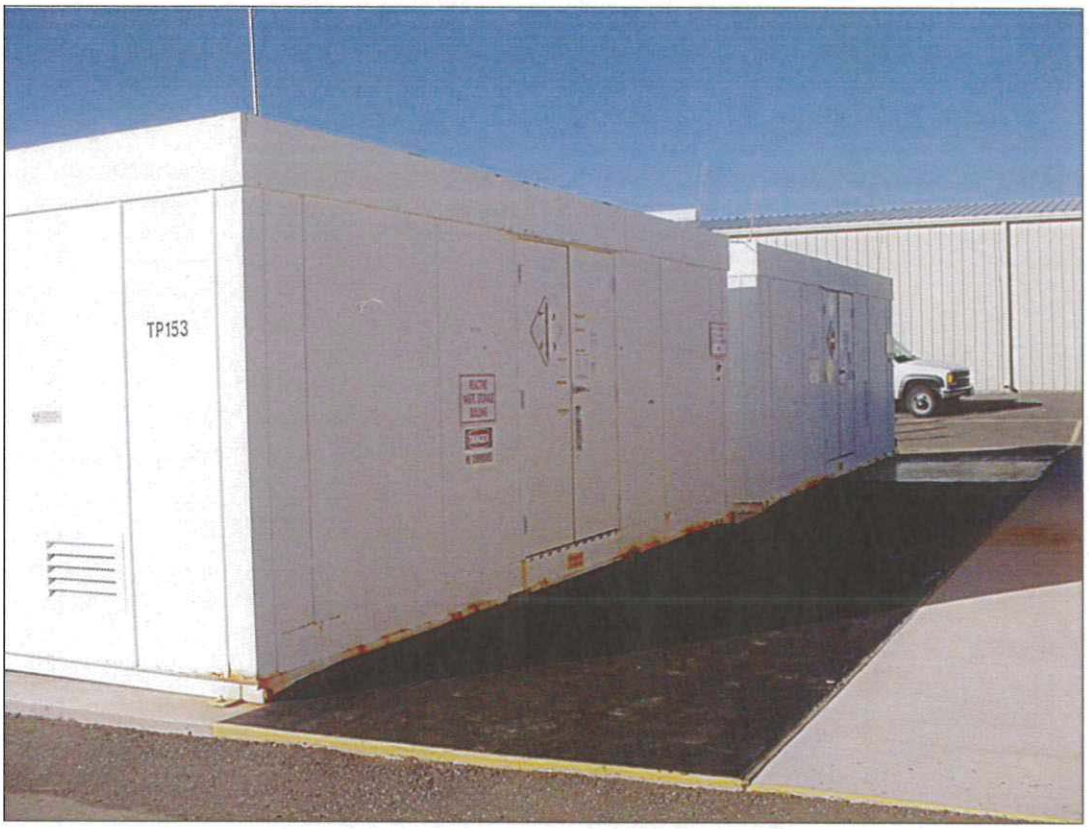
Radioactive and Mixed Waste Management Unit, Building 6921
Photograph Taken on December 5, 2001
Process Codes: S01, T04

Radioactive and Mixed Waste Management Unit, Building 6925
Photograph Taken on December 5, 2001
Process Codes: S01, T04

Radioactive and Mixed Waste Management Unit, Building 6925, Interior
Photograph Taken on December 20, 2001
Process Codes: S01, T04

The drum in the front of the row on the right contains liquid mixed waste and is stored on a portable spill containment pallet.

Radioactive and Mixed Waste Management Unit, Building 6926
Photograph Taken on December 5, 2001
Process Codes: S01



Radioactive and Mixed Waste Management Unit, Modular Storage Buildings
Photograph Taken on December 5, 2001
Process Code: S01

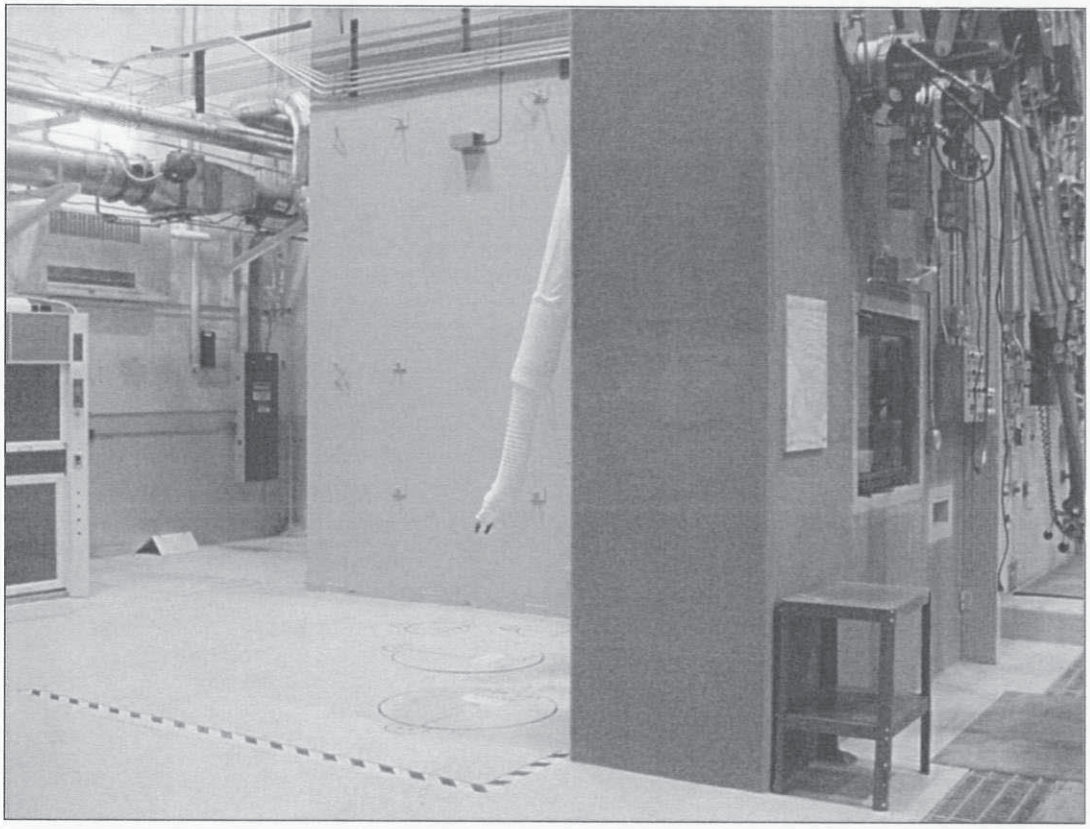
Auxiliary Hot Cell Unit, North Side of Building 6597
Photograph Taken on January 7, 2002
Process Codes: S01, T04

The work area and permanent shield wall are visible inside the building.

Appendix A-4: Photographs of the Hazardous and Mixed Waste Management Areas at the AHCU

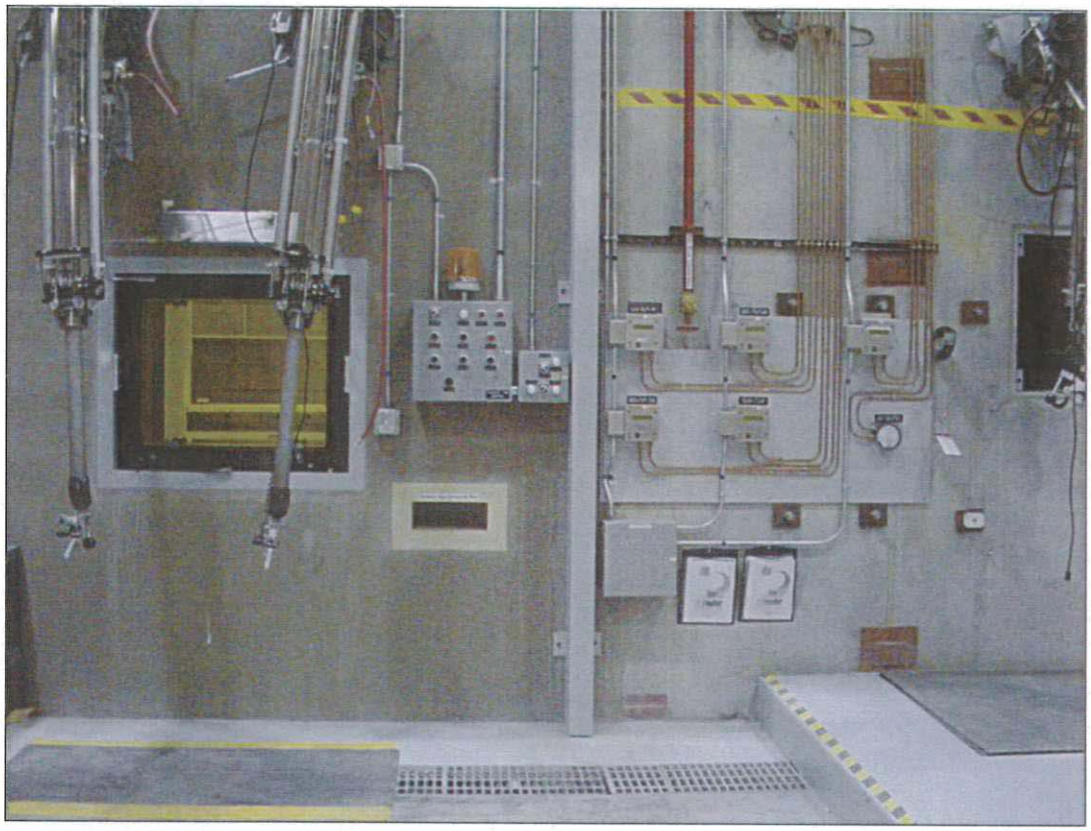
Auxiliary Hot Cell Unit, Work Area North of Auxiliary Hot Cell
Photograph Taken on January 7, 2002
Process Codes: S01, T04

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 Unit, Fume Hood and Work Area North of Auxiliary Hot Cell
Photograph Taken on January 7, 2002
Process Codes: S01, T04

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. Covers of two storage silos are visible on the floor of the work area under the manipulator arm.



Auxiliary Hot Cell Unit, Operator Controls for Work Area and Hot Cell
Photograph Taken on January 7, 2002
Process Codes: S01, T04

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.

Appendix A-5: Photographs of the Hazardous and Mixed Waste Management Areas at the MSB

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.

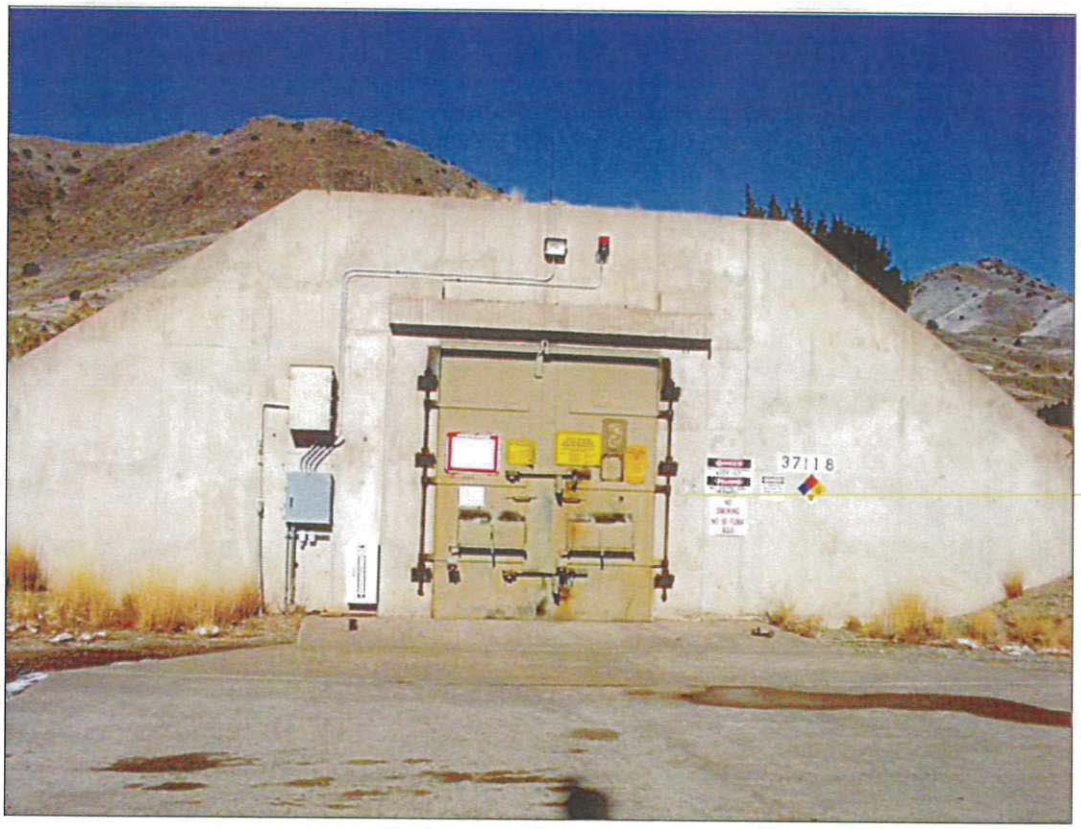
The large orange sign indicates that explosive (D003) waste is currently stored in this bunker. A fire extinguisher is located in the white box below and to the left of the orange sign.

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 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



Manzano Storage Bunkers, Type C, Front View of Bunker 37118
Photograph Taken on December 13, 2001
Process Code: S01

PERMIT ATTACHMENT M LONG-TERM MONITORING AND MAINTENANCE PLAN FOR SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN GRANTED CORRECTIVE ACTION COMPLETE WITH CONTROLS

M.1 INTRODUCTION

This Long Term Monitoring and Maintenance Plan (LTMMP) addresses measures that the Permittees shall perform to provide protection of human health and the environment from constituents of concern present at various Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) at Sandia National Laboratories/New Mexico (SNL/NM). These SWMUs/AOCs are listed in Permit Attachment K, Table K-3, *Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for Which Corrective Action is Complete with Controls*, and Table M-1 of this Permit Attachment.

The SWMUs/AOCs subject to this LTMMP are located within the fenced boundaries of Kirtland Air Force Base (KAFB).

Measures under this LTMMP include surveillance of site conditions and maintenance of institutional controls. The controls are consistent with the risks presented by the site conditions and constituents of concern at each SWMU/AOC. The controls are implemented in an integrated and layered approach to enhance their effectiveness and reliability, and to provide continued protection in the event that one or more controls become temporarily impaired. Administrative and physical controls at the SWMUs/AOCs subject to this LTMMP include:

- Information management,
- Restrictions on future use,
- Awareness,
- Limited access restrictions as described in this LTMMP, and
- Physical features at some SWMUs/AOCs.

Maintenance of control measures, including routine surveillance, is conducted as necessary to prevent deterioration or failure of controls.

The administrative and physical controls are described in Section 2. The scope and frequency of surveillance and maintenance measures are described in Section 3, and periodic reports of SWMU/AOC status are summarized in Section 4 of this LTMMP. Information about the individual SWMUs/AOCs, controls, and maintenance measures is summarized in Table 1. Except for SWMUs 96 and 187, the SWMU/AOC locations are shown in Figures 1 through 5 of this Permit Attachment. The locations of SWMUs 96 and 187 could not be shown on Figures 1-5 due to their large spatial distribution. Instead, the locations for SWMUs 96 and 187 may be found on maps contained in the Investigation Report for each of these SWMUs.

M.2 INSTITUTIONAL CONTROLS

M.2.1 Administrative Controls

The following information about each SWMU/AOC listed in Table M-1 is maintained at SNL/NM: the SWMU/AOC location, characteristics, constituents of concern, corrective action, current conditions, and restrictions on future use.

The SWMUs/AOCs listed in Table M-1 are not approved for residential land use. Plans for future activities by the Permittees within one-half mile of each SWMU/AOC shall be evaluated to identify aspects that are not consistent with land use requirements for that SWMU/AOC.

M.2.2 Physical Controls

Physical controls that shall be implemented for each SWMU/AOC are listed in Table M-1. Each of the SWMUs/AOCs listed in Table M-1 is located within the fenced boundaries of KAFB. Public access to KAFB is restricted. Additional physical controls at these SWMUs/AOCs consist of one or more of the following:

- Land use restrictions (primarily industrial),
- Warning and information signs posted at each SWMU/AOC where feasible,
- Fences that restrict access to some or all of each SWMU/AOC, and
- Physical features such as subsurface location (e.g., sewer lines).

Where signs are posted at the SWMUs/AOCs, the signs shall include the following information:

- SWMU/AOC number;
- Site-specific instructions; and
- Contact information for further direction.

The specific controls and maintenance measures for each SWMU/AOC are listed in Table M-1.

Table M-1
Summary of Institutional Controls for Solid Waste Management Units and Areas of Concern Requiring Controls

SWMU/ AOC Number	Site Name	Site Data	Land Use	Signs and Postings	SWMU/AOC Inspections	Additional Information	Figure
OU 1295 Septic Tanks and Drainfields							
137	Bldg. 6540/6542 Septic System (TA-III)	Maintained and tracked	Industrial	4 signs on SWMU perimeter, one each at selected corners of the SWMU	Annual		3
OU 1302 TA-I							
96	Storm System Drain	Maintained and tracked	Industrial	Not feasible	None	SWMU consists of underground storm drains throughout TA-I. No signs, postings, or inspections are feasible due to SWMU features.	Not shown
98	Building 863 (TCA, Photochemical Releases: Silver Catch Boxes)	Maintained and tracked	Industrial	Not feasible	Annual	SWMU consists of subsurface area located under a building. No signs, postings, or inspections are feasible due to SWMU features.	1
187	Septic Tank Piping for POTW	Maintained and tracked	Industrial	Not feasible	None	SWMU consists of underground sewer lines throughout TA-I. No signs, postings, or inspections are feasible due to SWMU features.	Not shown
190	Steam Plant Tank Farm	Maintained and tracked	Industrial[a]	4 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		1
226	Old Acid Waste Line	Maintained and tracked	Industrial	Not feasible	None	SWMU consists of underground drain line throughout TA-I, II, and IV. No signs, postings, or inspections are feasible due to SWMU features.	1 and 2

Table M-1
Summary of Institutional Controls for Solid Waste Management Units and Areas of Concern Requiring Controls

SWMU/ AOC Number	Site Name	Site Data	Land Use	Signs and Postings	SWMU/AOC Inspections	Additional Information	Figure
OU 1303 TA-II							
1	Radioactive Waste Landfill	Maintained and tracked	Industrial	4 signs on SWMU perimeter, one each in selected corners of the SWMU	Annual		2
2	Classified Waste Landfill (TA-II)	Maintained and tracked	Industrial	5 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		2
3	Chemical Disposal Pit	Maintained and tracked	Industrial	Included with SWMU 1	Annual	Located adjacent to SWMU 1.	2
135	Building 906 Drain System	Maintained and tracked	Industrial	1 sign	Annual		2
OU 1306 TA III and V							
105	Mercury Spill (Bldg. 6536)	Maintained and tracked	Industrial	4 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		3
196	Bldg. 6597 Cistern (TA-V)	Maintained and tracked	Industrial	1 sign near the northeast corner of the SWMU	Annual		3
OU 1307 Liquid Waste Disposal System							
4	LWDS Surface Impoundments	Maintained and tracked	Industrial	4 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		3

Table M-1
Summary of Institutional Controls for Solid Waste Management Units and Areas of Concern Requiring Controls

SWMU/ AOC Number	Site Name	Site Data	Land Use	Signs and Postings	SWMU/AOC Inspections	Additional Information	Figure
OU 1309 Tijeras Arroyo							
45	Liquid Discharge (Behind TA-IV)	Maintained and tracked	Industrial	5 signs on SWMU perimeter, one in approximately each corner of the SWMU outside of the TA-IV fence	Annual	Western half of the SWMU is located within the TA-IV fenced boundary	2
46	Old Acid Waste Line Outfall	Maintained and tracked	Industrial	4 signs along the TA-IV fence line and 7 signs posted along the south and west perimeter of the SWMU	Annual		2
229	Storm Drain System Outfall (for TA-II)	Maintained and tracked	Industrial	1 sign at the top of the outfall	Annual		2
OU 1332 Foothills Test Area							
87	Building 9990 Firing Site	Maintained and tracked	Industrial[a]	4 signs, one at the access road and three on the perimeter of the SWMU	Annual		5
OU 1335 Southwest Test Area							
91	Lead Firing Site (Thunder Range)	Maintained and tracked	Industrial[a]	4 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		4
Miscellaneous Sites							
1029	Building 6584 North Septic System (TA-III)	Maintained and tracked	Industrial	3 signs on SWMU perimeter	Annual		3

Table M-1
Summary of Institutional Controls for Solid Waste Management Units and Areas of Concern Requiring Controls

SWMU/ AOC Number	Site Name	Site Data	Land Use	Signs and Postings	SWMU/AOC Inspections	Additional Information	Figure
1081	Building 6650 Septic System (TA-III)	Maintained and tracked	Industrial	3 signs on SWMU perimeter	Annual		3
1090	Bldg. 6721 Septic System (TA-III)	Maintained and tracked	Industrial	1 sign, approximately in the middle of the SWMU	Annual		3

[a] The Permittees have separate documentation with KAFB to maintain institutional controls at this location, however, this documentation does not prohibit KAFB uses of the land.

M.3 MAINTENANCE OF INSTITUTIONAL CONTROLS

M.3.1 Maintenance of Administrative Controls

Records and information for each SWMU/AOC listed in Table M-1 are maintained in written or electronic form at SNL. The records are kept current and are updated when new information becomes available or is generated. The records include the following:

- Site location and characteristics;
- Site history and corrective action;
- Land use permits or agreements with KAFB;
- Documentation of current site conditions, including information from annual inspections;
- Type of controls
- Maintenance records
- Planning information, including restrictions on future activities at the site; and
- Copies of reports previously submitted to the Department.

M.3.2 Maintenance of Physical Controls

The Permittees shall periodically inspect and maintain the physical controls at the SWMUs/AOCs. Documented annual inspections include reviews of the following, as applicable:

- Condition of the site;
- Evidence of erosion, seepage, or subsidence;
- Evidence of newly-occurring or newly-visible contamination;
- Condition and location of signs;
- Evidence of activities that are not consistent with restrictions in place; and
- Evidence of residential activities adjacent to the given SWMU/AOC that would necessitate additional awareness measures and access restrictions for the site.

Inspection results are evaluated for necessary maintenance, including repair, replacement, or installation. Maintenance will occur on the following schedule (Table M-2) unless weather or other site-specific conditions require a delay.

Table M-2 Maintenance Schedule	
Maintenance Issue	**Response Schedule**
Erosion, seepage, or subsidence	Evaluate severity and if necessary develop mitigation plan within 120 days Complete in a timely manner
Newly-occurring or newly-discovered contamination	See Permit Part 8
Signs	Begin to address within 30 days Complete in a timely manner
Activities that are inconsistent with site restrictions	Begin to address within 30 days Complete in a timely manner
Awareness measures to address new residential activities adjacent to SWMU/AOC locations	Develop measures within 30 days Implement measures in a timely manner
Access restrictions to address new residential activities adjacent to SWMU/AOC locations	Develop measures within 60 days Implement measures in a timely manner

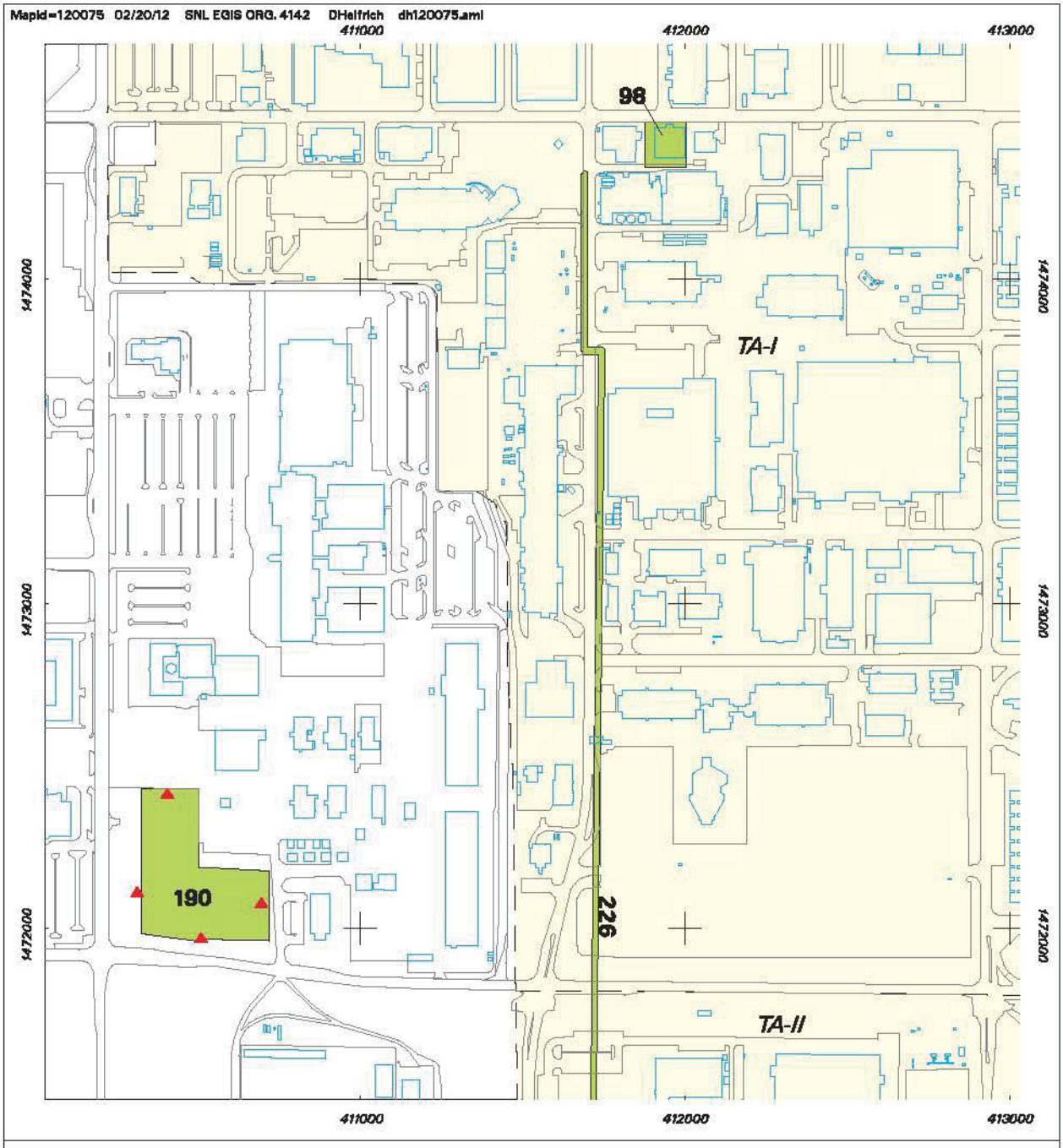
The Permittees shall perform follow-up inspections to verify completion of corrective actions. Follow-up inspections shall occur within 180 days after the actions are completed and may be combined with annual inspections.

M.4 LTMMP REPORTING REQUIREMENTS

An annual SWMU/AOC LTMMP report shall be prepared to document the following:

- Annual inspection results;
- Maintenance and repair activities required;
- Status of maintenance and repair activities; and
- Other conditions or events at the site that affect the performance of the controls.

The report shall include all SWMUs/AOCs listed in the Permit Table M-1. The annual report for each calendar year shall be submitted to the Department by March 31 of the following year.



Legend

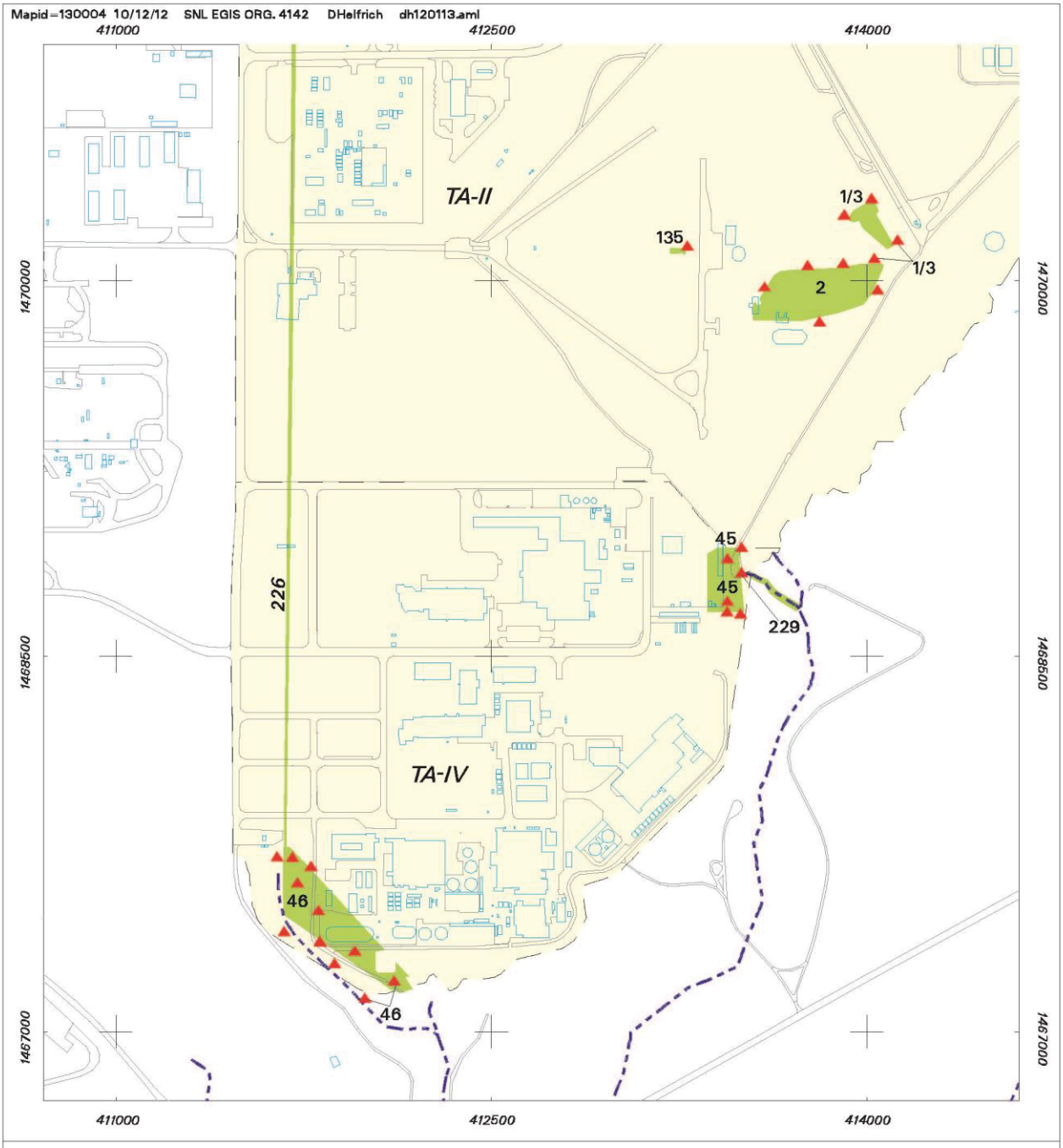
- Sign Location
- Road
- Building / Structure
- SWMU with Controls
- SNL Tech Area I

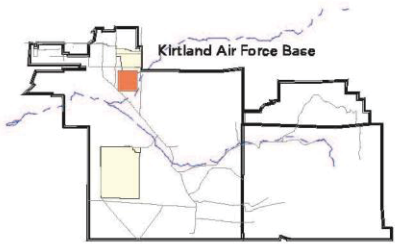
Figure 1
Solid Waste Management Units - Corrective Action Complete with Controls, Tech Area I

0 250 500
Scale in Feet

0 60 120
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System





Legend

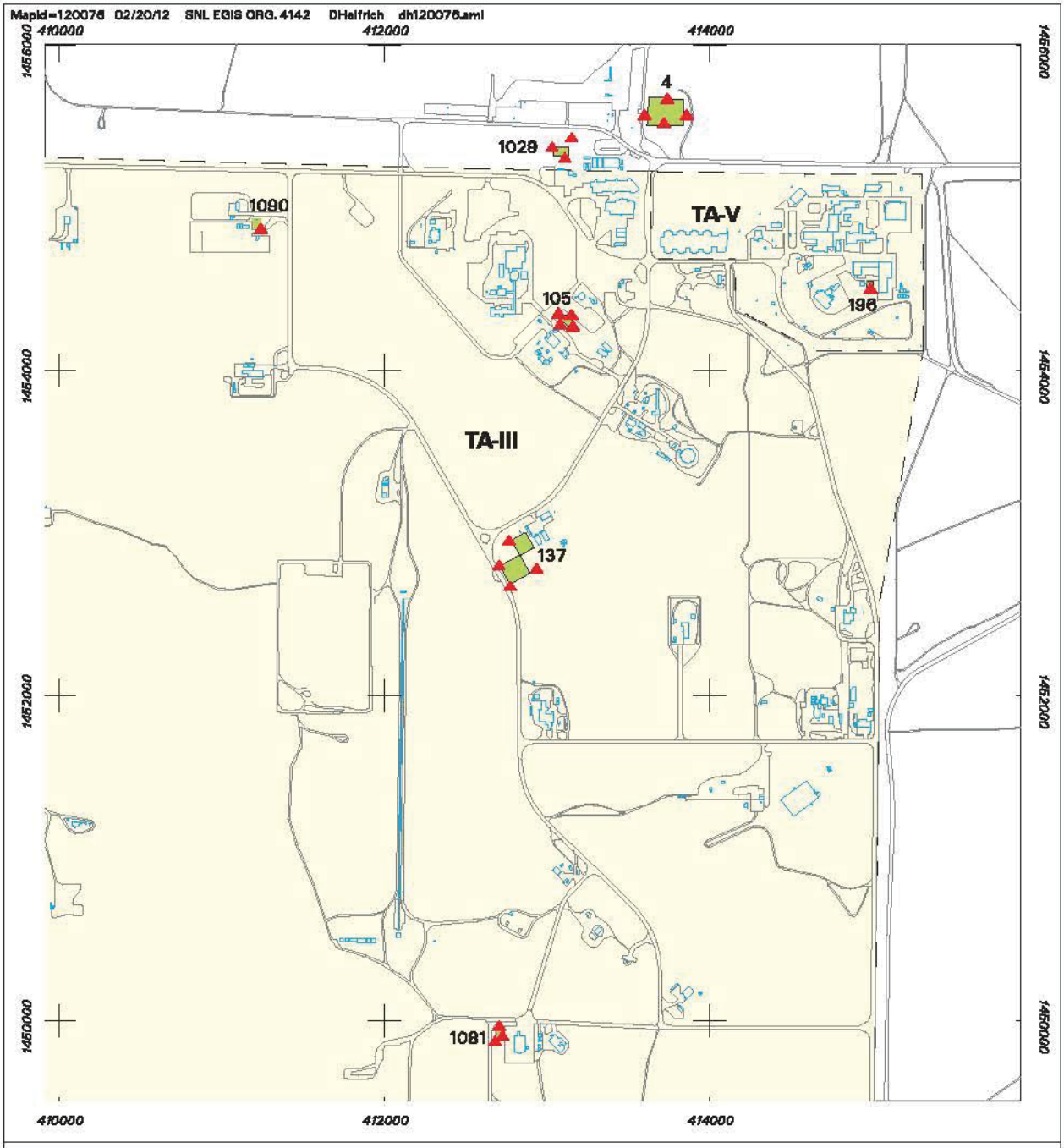
- Sign Location
- Road
- Surface Drainage
- Building / Structure
- SWMU with Controls
- SNL Tech Area II & IV

Figure 2
Solid Waste Management Units - Corrective Action Complete with Controls, Tech Areas II and IV

0 325 650
Scale in Feet

0 78 156
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System



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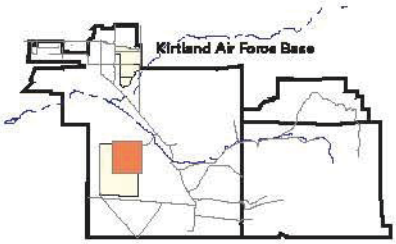


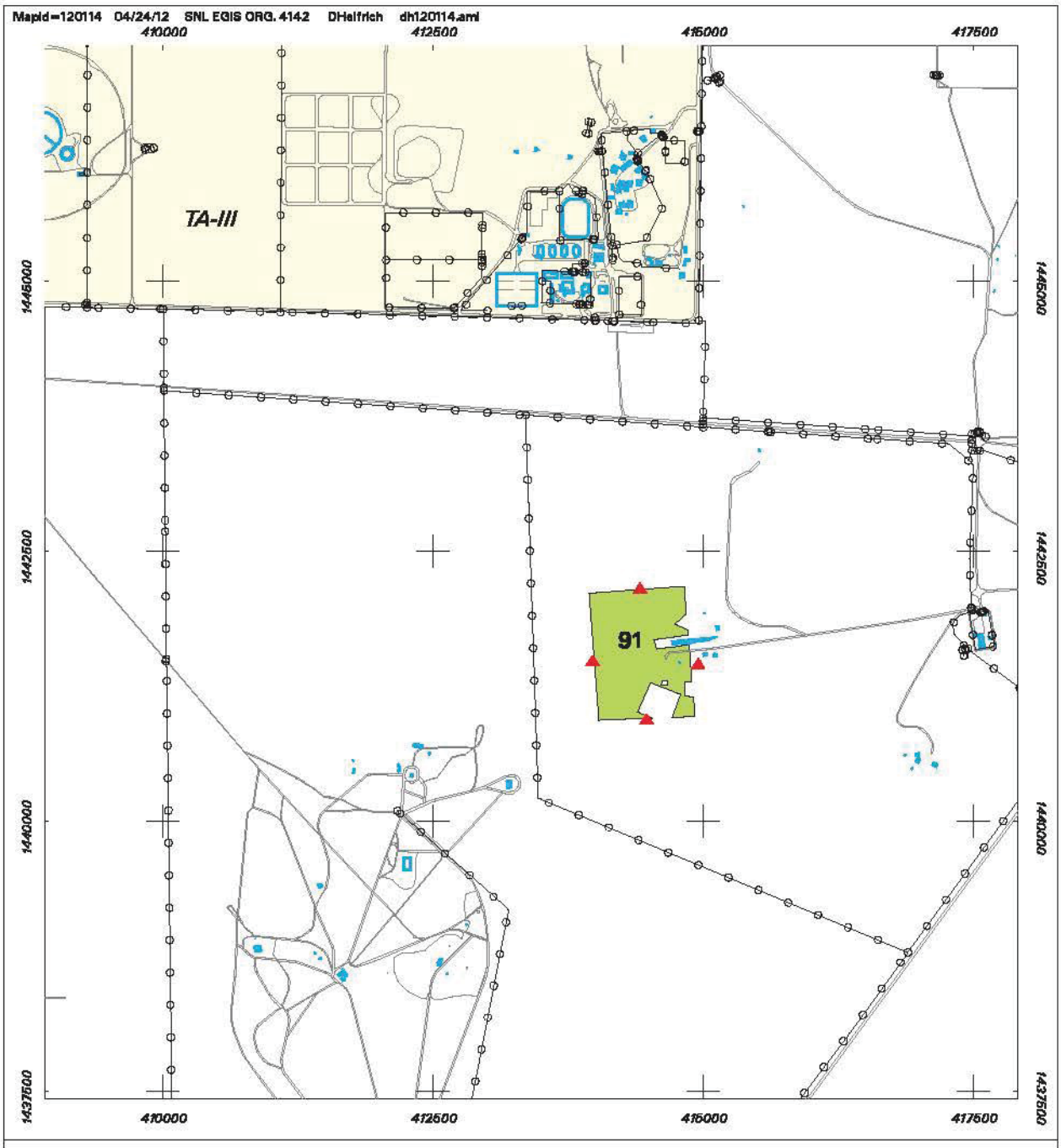
- Sign Location
- Road
- Building / Structure
- SWMU with Controls
- SNL Tech Area III

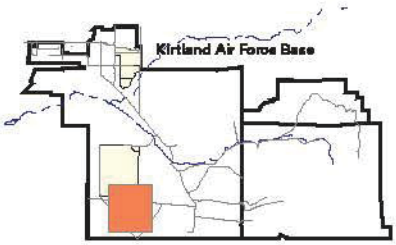
0 500 1000
Scale in Feet

0 120 240
Scale in Meters

Figure 3
Solid Waste Management Units - Corrective Action Complete with Controls, Tech Areas III and V

Sandia National Laboratories, New Mexico
Environmental Geographic Information System





Legend

- Sign Location
- Road
- Fence
- Building / Structure
- SWMU with Controls
- SNL Tech Area III

Figure 4
Solid Waste Management Unit 91 - Corrective Action Complete with Controls

0 750 1500
Scale in Feet

0 180 360
Scale in Meters

Projection: New Mexico State Plane, Central Zone 3002, 1927 North American Datum

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

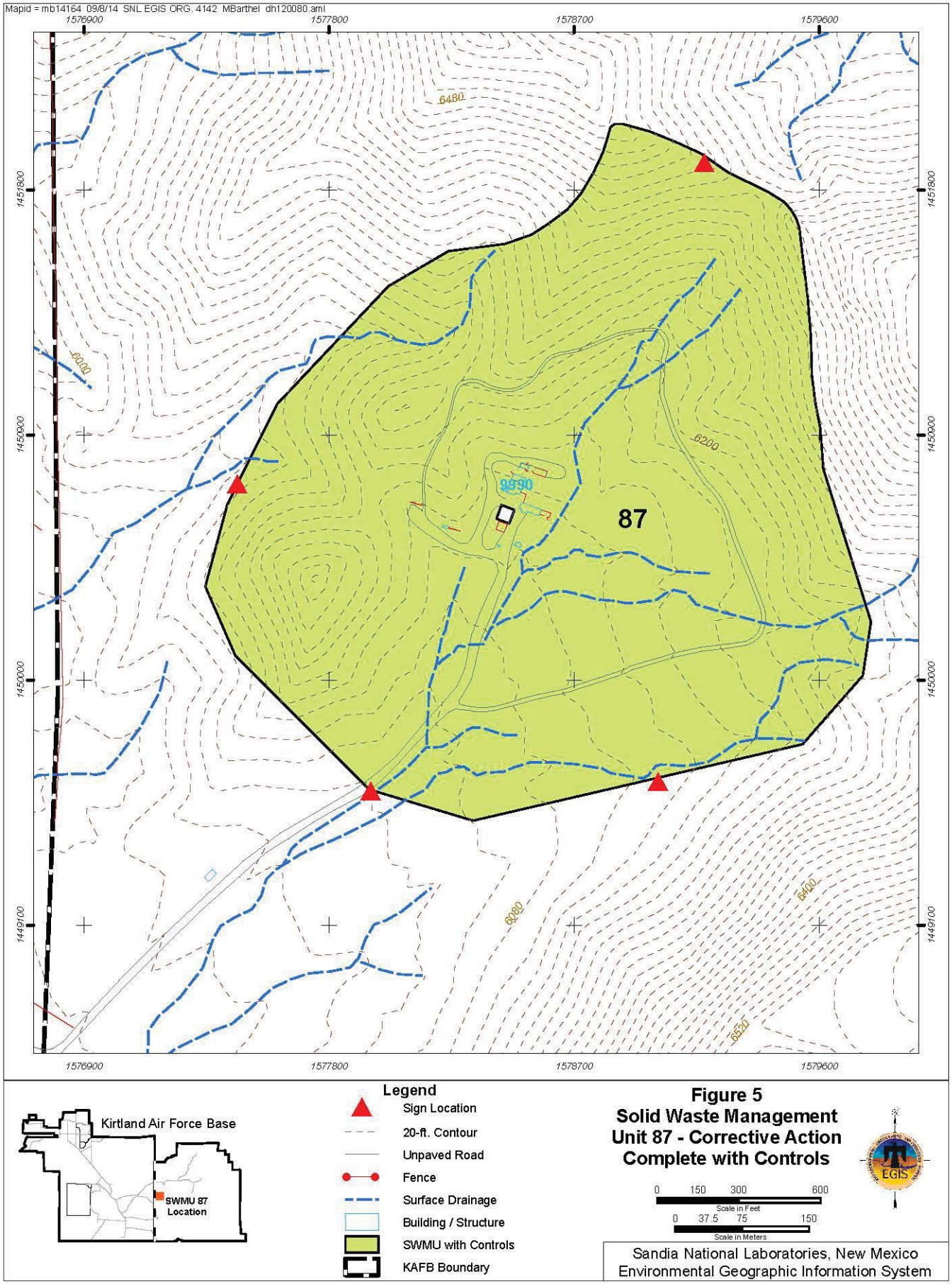


Figure 5
Solid Waste Management Unit 87 - Corrective Action Complete with Controls

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

STATE OF NEW MEXICO
BEFORE THE SECRETARY OF ENVIRONMENT

DEC 2014
DOCKETED BY THE
HEARING CLERK BEFORE THE
SECRETARY OF ENVIRONMENT

IN THE MATTER OF THE RENEWAL OF HAZARDOUS WASTE PERMIT EPA ID NUMBER NM5890110518 AND GRANTING OF CORRECTIVE ACTION COMPLETE STATUS FOR CERTAIN SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN AT SANDIA NATIONAL LABORATORIES

NO. HWB 14-01 (P)

FINAL ORDER

INTRODUCTION

This matter comes before the Secretary of the Environment following a hearing on May 5-8, 2014, in Albuquerque, New Mexico. The United States Department of Energy, National Nuclear Security Administration, and Sandia Corporation ("Applicants"), seek the renewal of permit No. NM5890110518 ("Permit"), issued to Sandia National Laboratories ("Facility") to store and treat hazardous wastes under the New Mexico Hazardous Waste Act. Applicants further seek the determination of corrective action complete status for twenty-four solid waste management units ("SWMUs") and areas of concern ("AOCs") located at the Facility. The New Mexico Environment Department ("NMED" or "Department") supports the issuance of the permit and approval of corrective action complete status with certain conditions and controls the Department believes are necessary to protect public health and the environment. Intervenors Citizen Action New Mexico, Citizen for Alternatives to Radioactive Dumping, Agua Es Vida Action Team and Our Endangered Aquifer Working Group (collectively, "Intervenors") urge additional permit conditions beyond those proposed by the Bureau.

After a four-day public hearing, the Hearing Officer recommended approval of the renewal application permit No. NM5890110518 as well as corrective action complete status for the twenty-four SWMUs and AOCs. The Hearing Officer's recommendations are contained in the Hearing Officer's Report, Proposed Findings of Fact, Conclusions of Law and Draft Order ("Hearing Officer's Report"). Each party had an opportunity to comment on the Hearing Officer's Report, and Applicants and the Department did in fact submit such comments. Intervenors did not submit any comments on the Hearing Officer's Report.

Having considered the administrative record in its entirety, including the post-hearing submittals submitted by Applicants and the Department, and the Hearing Officer's Report; and being otherwise fully advised regarding this matter; the Secretary HEREBY MODIFIES THE HEARING OFFICER'S REPORT AS SET FORTH BELOW:

STATEMENT OF ISSUES

While Applicants and the Department generally agree with the majority of the findings, conclusions and recommendations contained in Hearing Officer's Report, Applicants object to three permit conditions proposed by the Department and recommended by the Hearing Officer: (1) Permit Section 6.2.1, which proposes to require permitted units to meet residential standards to qualify for clean closure; (2) Permit Section 5.1, which requires Applicants to conduct air quality monitoring at the Thermal Treatment Unit ("TTU"); and (3) Permit Section 5.9.1, which requires Applicants to conduct subsurface soil sampling at various locations in the vicinity of the TTU. Applicants and the Department also provided a number of comments requesting minor,

substantive changes or minor corrections to address spelling, grammatical or typographical errors. All of these issues are addressed in detail below.

LEGAL STANDARDS

According to the procedural regulations governing public hearings on permitting decisions, the Department has the burden of proof for any challenged permit conditions it has proposed. *See* 20.1.4.400(A)(1) NMAC. The Hearing Officer must then determine each matter in controversy by a preponderance of the evidence and issue a Hearing Officer's Report containing findings of fact, conclusions of law, a recommended decision and a proposed final order. *See* 20.1.4.400 NMAC. The Secretary may adopt, modify, or set aside the Hearing Officer's recommended decision, and shall set forth in the final order the reasons for the action taken. *See* 20.1.4.500(D)(2).

DISCUSSION

I. PERMIT SECTION 6.2.1: CRITERIA FOR CLEAN CLOSURE

Prior to the hearing, the Department proposed allowing the clean closure requirements set out in Permit Section 6.2.1 to match the foreseeable land use, which could be either industrial or residential. NMED Exh. 1 at 61, § 6.2.1. However, the Department changed its position right before the hearing and argued that clean closure of a hazardous waste management unit requires cleanup levels appropriate for residential land use of a property. Without providing any meaningful discussion or analysis, the Hearing Officer agreed with the Department's position and required closure to residential land use standards. Applicants object to this condition and request closure to be based on the foreseeable land use, which could be either residential or industrial. The Secretary agrees with Applicants' position that closure should be based on the foreseeable land use,

which could be either residential or industrial, and will therefore modify the recommendation contained in the Hearing Officer's Report as to Permit Section 6.2.1.

The Secretary finds the Department failed to adequately demonstrate closure to residential land use standards is factually or legally appropriate. Relying on an unofficial, internal policy developed by a former employee over a decade ago, the Department argued that closure to a residential land use standard is appropriate. As a preliminary matter, unofficial, internal policies will be given no weight by the Secretary in this hearing or in any future hearings. Decisions by government agencies, such as the Department, should be based solely upon a reasonable interpretation of the relevant federal and state statutes and regulations, and official policy guidance documents, such as the RCRA guidance documents promulgated by the Environmental Protection Agency. As Applicants correctly argued, no federal or state law requires remediation to a residential land use scenario as part of closure. To the contrary, closure based on an industrial land use scenario will satisfy the closure standard identified in 40 C.F.R. § 264.111 when the reasonably foreseeable land use scenario is industrial. In addition, EPA guidance documents recognize that closure to non-residential levels is appropriate. *See* Cotsworth Memo (Mar. 16, 1998) (RCRA on-line database on the EPA website, index No. 14174). Finally, the Department's concern over its inability to restrict potential future land use at the permitted units is without merit as Section 1.20.1 of the Permit provides an enforceable mechanism for restricting future land use. As the Department notes on page 35 of its Proposed Findings of Fact and Conclusions of Law, Section 1.20.1 of the Permit requires restrictions on land use at the permitted units in order to ensure that the "property may not be used for any purpose other than that on which the

cleanup of the property was based (e.g. if the cleanup level achieved was based on industrial land use, the property cannot be used in a manner requiring a more strict cleanup level such as for residential use of the land)." Accordingly, the Secretary finds closure should be based on the foreseeable land use, which could be either residential or industrial.

II. PERMIT SECTION 5.1: AIR QUALITY MONITORING AT TTU

Applicants object to Section 5.1 of the proposed Permit, which requires them to submit a work plan to conduct air quality monitoring at the TTU, based on a variety of different arguments. Applicants claim the Department's Hazardous Waste Bureau either does not have the requisite authority to require air quality monitoring at the TTU, or that other entities, such as the Albuquerque Environmental Health Department or the Occupational Safety and Health Bureau, are better equipped to assess and determine whether air quality monitoring at the TTU is necessary to protect human health and safety. Applicants also claim the Department failed to satisfy its burden of demonstrating air quality modeling is necessary to protect human health and safety. The Hearing Officer agreed with the Department's position and upheld this disputed condition in the Hearing Officer's Report. While the Hearing Officer's Report does not adequately explain why the Department's position is correct, the Secretary nonetheless agrees with the Hearing Officer's recommendation regarding Section 5.1 of the Permit. Therefore, for the reasons set forth below, the Secretary will not remove Section 5.1 from the final Permit.

The Secretary finds the Department easily satisfied its burden of proof with respect to Section 5.1 of the Permit since the air monitoring requirements fall under the

authority conferred to Department as the agency authorized to implement and enforce hazardous waste regulations in accordance with the Resource Conservation and Recovery Act. In addition, the Secretary finds the requirements are necessary to protect human health and the environment. As the Department explained in their Closing Argument, Section 5.1 is authorized under 40 C.F.R. Part 264, Subpart X. As a unit for open burning of explosive waste, the TTU is classified as a miscellaneous unit subject to the standards at 40 C.F.R. Part 264, Subpart X. Subpart X provides that the permit for a miscellaneous unit must contain "such terms and provisions as necessary to protect human health and the environment, including but not limited to … design and operating requirements … [and] detection and monitoring requirements." 40 C.F.R. 264.601. Subpart X also provides that protection of human health and the environment includes, but is not limited to prevention of any releases that may have adverse effects "due to migration of waste constituents in the air." 40 C.F.R. § 264.601(c). In addition, 40 C.F.R. § 264.602 provides that "[m]onitoring, testing, analytical data, inspections, response and reporting procedures and frequencies must ensure compliance with §§ 264.601, 264.15, 264.33, 264.75, 264.76, 264.77 and 264.101 as well as meet any additional requirements needed to protect human health and the environment as specified in the permit." Accordingly, Section 5.1 of the Permit clearly falls within the authority of the Department.

The Department also clearly demonstrated Section 5.1 is necessary to protect human health and the environment. As the Department explained, verifying air emissions from the TTU is necessary to verify the appropriateness of the assumptions relied upon in the air quality monitoring and the risk assessment performed for the TTU. *See* NMED

Exhibit 15A at p. 8-9; *see also* NMED Exhibit 20, p. 7-8. Section 5.1 will help determine the accuracy of emission rates relied upon in the AQS Model, especially for cyanide compounds. *See* Tr. Vol. 4, p. 953, lines 12-25 (Testimony of Michael S.Smith). Accordingly, the Department's interest in reducing the uncertainty associated with AQS Model provides a compelling justification for including Section 5.1 in the final Permit as this additional data will help ensure the health and safety of onsite workers at the Facility.

III. PERMIT SECTION 5.9.1: SUBSURFACE SOIL SAMPLING AT TTU

Applicants object to Section 5.9.1 of the proposed Permit, which requires them to conduct subsurface soil sampling at depths of 0-6 inches at specific locations in the vicinity of the TTU. Applicants claim the Department failed to establish such sampling is necessary to protect human health and the environment, or in the alternative that sampling beyond the operational fence of the TTU would not be indicative of subsurface soil conditions in the area. The Secretary finds the Department has sufficiently established the requirements of Section 5.9.1 are necessary to protect human health and the environment and will, therefore, require this condition to be included in the final Permit.

The requirements of Section 5.9.1 were added in response to a recommendation in a screening level risk assessment performed by AQS. AQS' recommendation was based on the fact that soil sampling results for PETN and silver exceeded soil to groundwater screening levels. *See* NMED Exhibit 15A at p. 18-19. Thus, AQS recommended subsurface soil sampling be required in the Permit to definitively show whether subsurface soil contamination is migrating downward. *See* NMED Exhibit 20 at p. 13-14. Accordingly, based on the evidence provided by AQS and presented by the Department

at the hearing, Section 5.9.1's requirements with respect to subsurface soil sampling provide a reasonable method for ensuring that migration of hazardous constituents through soil or groundwater do not result in an adverse effect on human health or the environment.

IV. MINOR SUBSTANTIVE CHANGES AND CORRECTIONS

Both the Department and Applicants request a number of minor, substantive changes or minor corrections to address spelling, grammatical or typographical errors in their respective comments on the Hearing Officer's Report. Specifically, on page 30 of their Comments and Objections, Applicants request a number of "Minor Suggested Changes to the Hearing Officer's Report." Likewise, on pages 1 through 6 of their Comments on the Hearing Officer's Report, the Department also requests a number of minor corrections. Unless otherwise indicated below, the Secretary finds all of these proposed minor, substantive changes or corrections are appropriate and will, therefore, require the Department to incorporate these requests into the final Permit.

CONCLUSION

IT IS THEREFORE ORDERED:

1. Pursuant to 20 NMAC 1.4.403, written comments on the Hearing Officer's Report were accepted and considered.
2. The Permit is renewed and issued as contained in NMED Exhibits 1 and 2, with the following changes:

a. In Permit Section 1.6, the Definition of Permitted Unit is modified as follows:

> "Permitted Unit" means a Hazardous Waste Management Unit authorized for operations or for which post-closure care is required

> by this Permit. The Permitted Units authorized by this Permit are listed in Attachment J (Hazardous and Mixed Waste Management Units), Table J-1.1 (Units Permitted for Storage in Containers (Process Code SO1)), Table J-1.2 (Units Permitted for Treatment (Process Codes TO4 and X01) and Table J-2 (Permitted Units Undergoing Post-Closure Care (Process Code S99)). The locations of the Permitted Units are shown in Figure 2, Permit Attachment L (Figures).

b. In Permit Section 6.2.1, numbered paragraph 2, the recommendation in the Hearing Officer's Report is rejected for the reasons set forth above and paragraph 2 is modified as follows:

> "2. Any release of a hazardous waste or hazardous constituent to environmental media at or from the Unit has been remediated to a concentration level that is protective of human health and the environment. Cleanup levels for environmental media may take into account non-residential exposure assumptions and future land use, provided that those assumptions are clearly stated and that any land use restrictions are maintained."

c. In Permit Section 8.2.1, the third paragraph is modified as follows:

> Attachment J, Tables J-1.1, J-1.2, J-2, and J-3, list the hazardous waste management units at the Facility and their status (e.g., permitted, under post-closure care, closed). A map showing the locations of SWMUs and AOCs at the Facility is presented in Figure 52.

3. The Permit includes two tables in Permit Attachment K, Table K-3, *Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete with Controls*, and Table K-4, *Solid Waste Management Units, Areas of Concern, and Hazardous Waste Management Units for which Corrective Action is Complete with Controls*, as shown in NMED Exhibit 2. The tables are approved with the following change: SWMU 140 is placed on Table K-4 of Attachment K instead of Table K-3. In addition, SWMU 140 is deleted from Table M-1 of Attachment M.

4. Unless specifically addressed in paragraphs 2 or 3 above, all of the "Minor Suggested Changes to the Hearing Officer's Report" requested by Applicants on page 30 of their Comments and Objections shall be incorporated into the final Permit and the minor corrections requested by the Department on pages 1 through 6 of their Comments on the Hearing Officer's Report shall also be incorporated into the final Permit. If any of the minor changes or corrections requested by either Applicants or the Department conflict with any of the changes provided in paragraphs 2 or 3 above, then the language set forth in paragraphs 2 and 3 shall control and be incorporated by the Department into the final Permit.

5. Unless specifically addressed above, all of the other recommendations contained in the Hearing Officer's Report, including the Hearing Officer's Proposed Findings of Fact and Conclusions of Law, are hereby adopted by the Secretary.

6. The Bureau shall provide notice and an opportunity for public comment when the Bureau receives from the Applicants the Community Relations Plan required by Permit Section 1.18, and shall consider all comments in finalizing the Plan.

RYAN FLYNN, Secretary of Environment

Notice of Opportunity for Judicial Review

Pursuant to NMSA 1978, § 74-4-14, any person who is or may be affected by any final administrative action of the Secretary of NMED may appeal to the Court of Appeals for further relief within thirty days after the action.

STATE OF NEW MEXICO
BEFORE THE SECRETARY OF ENVIRONMENT

DEC 2014
DOCKETED BY THE
HEARING CLERK BEFORE THE
SECRETARY OF ENVIRONMENT

IN THE MATTER OF THE RENEWAL OF HAZARDOUS WASTE PERMIT EPA ID NUMBER NM5890110518 AND GRANTING OF CORRECTIVE ACTION COMPLETE STATUS FOR CERTAIN SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN AT SANDIA NATIONAL LABORATORIES

NO. HWB 14-01 (P)

CERTIFICATE OF SERVICE

I hereby certify that on December 19, 2014 a copy of the **FINAL ORDER** was sent electronically and via first-class mail to:

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RYAN FLYNN
Cabinet Secretary
BUTCH TONGATE
Deputy Secretary

January 27, 2015

RE: FINAL DECISION AND RESPONSE TO COMMENTS ON SNL HAZARDOUS WASTE FACILITY PERMIT AND PROPOSALS TO GRANT CORRECTIVE ACTION COMPLETE FOR 24 SWMUS AND AOCS SANDIA NATIONAL LABORATORIES, EPA ID# NM5890110518

Dear Interested Person:

On December 19, 2014, New Mexico Environment Department (Department) Secretary Ryan Flynn signed a Final Order issuing a final Hazardous Waste Facility Permit (Permit) to the Department of Energy/Sandia Corporation for storage and treatment of hazardous waste at the Sandia National Laboratories (SNL) Facility, and granting corrective action complete (CAC) status for 24 solid waste management units (SWMUs) and areas of concern (AOCs).

A 60-day public comment period on the draft Permit and the CAC proposals began on September 17, 2012, and was subsequently extended until February 14, 2013. At the request of commenters, a hearing on the proposed Permit and CAC proposals was held from May 5 through May 8, 2014.

The Permit is effective on February 26, 2015, 30 days after issuance of this final Permit today. The Secretary's decision may be appealed under the provisions of the New Mexico Hazardous Waste Regulations, 20.4.1.901(H) NMAC, and § 74-4-14 of the New Mexico Hazardous Waste Act.

The Final Order, Permit, and Response to Comments (for the Permit and CAC proposals) may be viewed on the Department's webpage at http://www.nmenv.state.nm.us/hwb/snlperm.html under the link for SNL Final Permit.

Sincerely,

Dave Cobrain
Manager
Permits Management Program
Hazardous Waste Bureau

RESPONSE TO COMMENTS

For the

PERMIT FOR

SANDIA NATIONAL LABORATORIES
HAZARDOUS AND MIXED WASTE TREATMENT AND STORAGE UNITS AND POST-CLOSURE CARE OF THE CORRECTIVE ACTION MANAGEMENT UNIT

and the

CORRECTIVE ACTION COMPLETE DETERMINATIONS FOR 24 SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN

prepared by the

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS WASTE BUREAU
2905 RODEO PARK DRIVE EAST, BUILDING 1
SANTA FE, NEW MEXICO 87505

January 2015

New Mexico Environment Department's Response to Comments on the September 2012 Draft Sandia National Laboratories Permit
January 2015

The initial comment period on the draft Sandia National Laboratories (SNL) Permit began on September 17, 2012 and was scheduled to end on November 16, 2012. The New Mexico Environment Department (NMED) granted an extension of the comment period for an additional 90 days, until February 14, 2013, for a total comment period time of 150 days. A hearing on this matter was held at the request of the public from May 5-8, 2014.

Comments received from the public and the NMED's responses thereto are presented below. Note that "Department" and "NMED" are used interchangeably throughout this document.

GENERAL COMMENTS ON PERMIT

1. **Comment:** Citizen Action commented that the Administrative Record for the Draft Permit is not complete. Documents listed in the Administrative Record index are not obtainable. Some examples are an April 3, 1987, Notice of Violation; a June 12, 1985 "generator" document for the TTU; and the 2006 file for the SNL facility. SNL/DOE have not provided the documents electronically as has been done for LANL's Draft Permit.

   NMED Response: The Administrative Record (AR) is complete. The New Mexico Environment Department (NMED), not the Permittees, maintains the Administrative Record. Some old records, such as those dating back to 1985, may have to be retrieved from archives.

   The Department has shared with interested parties, including Permit opponents, multiple drafts of the AR in electronic form (on DVD) as it has been developed.

Pursuant to 20.1.4.7.A(2) NMAC, "'Administrative Record' means all public records used by the Division in evaluating the application or petition, including the application . . . and all supporting data furnished by the applicant . . ., all materials cited in the application . . . , public comments, correspondence, and as applicable, the draft permit and statement of basis or fact sheet, and any other material used by the Division to evaluate the application. . . ." While this definition is expansive (as reflected by the size of the Administrative Record in this proceeding), it is not limitless. Not every document related to the Department's regulation of Sandia National Laboratories (SNL) is part of the Administrative Record. The Department does not believe that any modification of the Permit was necessary based on this comment.

2. **Comment:** Citizen Action commented that the public should not be subject to the multiple, simultaneous comment periods for the draft Permit, the Class 3 Permit modification request to grant Corrective Action Complete status for 24 SWMUs/AOCs, and the Long Term Monitoring and Maintenance Plan (LTMMP) for the Mixed Waste Landfill (MWL). These multiple processes create public confusion, defeat meaningful public participation for the various proposals, and are procedurally improper. These multiple processes create inability for the public to timely and fully review the various proposals.

NMED Response: For the draft Permit and the Corrective Action Complete proposals, the regulations at 20.4.1.901.A(3) NMAC require a public comment period of 45 days. The comment periods for the draft Permit, Corrective Action Complete proposals, and the MWL LTTMP were substantially extended to allow the public adequate time, as follows:

(1) The draft Permit was first posted on September 17, 2012, and the initial comment period was extended from November 16, 2012, to February 14, 2013, for a total of 150 days.

(2) The comment period for the Corrective Action Complete proposals for 24 SWMUs was initially to end on November 16, 2012, and was extended 90 days to February 14, 2013, for a total of 150 days.

(3) The comment period for the LTMMP was originally scheduled to end November 13, 2012. It was extended 30 days to December 13, 2012, then again for an additional 60 days until February 11, 2013, for a total of 150 days.

NMED followed the appropriate procedures for public notice of the draft Permit, the request for Corrective Action Complete, and the MWL LTMMP. There is no prohibition against simultaneously issuing for public comment multiple draft permits, proposed permit modifications, or other documents. Moreover, conducting related processes simultaneously promotes greater efficiency and public understanding of how the processes relate to each other compared to a more "piecemeal" approach. The Department does not believe that any modification of the Permit was necessary based on this comment.

3. **Comment:** Citizen Action commented that they did not receive a notice of any public meeting that was convened by the DOE/SNL before the submission of the current draft Permit to NMED, as is required by RCRA regulations.

NMED Response: The Permittees have already met the requirement to hold a public meeting for the first draft of the Permit, released by the NMED for comment in 2007. They are not required to repeat a public meeting for the revised draft permit released by

the NMED for comment in 2012. The Department does not believe that any modification of the Permit was necessary based on this comment.

4. **Comment:** Citizen Action commented that the Draft Permit is not in any finalized form at this point for consideration as a permit because changes will obviously be required if the 1993 Module IV is modified. Public confusion is created by the question of how a permit can be modified when the permit is still in a draft form.

   NMED Response: The Fact Sheet/Statement of Basis states that the Permit modification requests "are subject to 20.4.1.900 NMAC, incorporating 40 CFR 270.42(c), and 20.4.1.901 NMAC. The SWMUs/AOCs are listed in the Hazardous and Solid Waste Amendments (HSWA) Corrective Action Module IV, which is part of the Permittees' current Resource Conservation and Recovery Act (RCRA) Hazardous Waste Facility Permit (NM5890110518) issued in 1992."

   Furthermore, the Fact Sheet/Statement of Basis also states "The Department is also issuing for public comment on this same date a revised draft Hazardous Waste Facility Permit (draft Permit) which, when finalized, would authorize the Permittees to manage, treat and store hazardous and mixed waste at the Facility. A fact sheet concerning the draft Permit is available separately from the Department through the contact procedures indicated in Sections D and H of this Fact Sheet/Statement of Basis. The draft Permit, when finalized, will replace in full the Hazardous Waste Facility Permit for SNL issued in 1992. Approval or disapproval of CAC status for the 24 SWMUs/AOCs will be tracked in the new Hazardous Waste Facility Permit (specifically, in Attachment K of that permit)."

This clearly explained the relationship between the existing (1992) permit and the draft permit. NMED has replaced the 1992 Permit completely with the renewal Permit, and all SWMUs/AOCs are tracked in Attachment K of the renewal Permit.

The Department does not believe that any modification of the Permit was necessary based on this comment.

5. **Comment:** Citizen Action commented that the Draft Permit should cite the regulatory permit requirements that are required to be included in the permit under RCRA. Comparing the Los Alamos National Laboratory draft Hazardous Waste Permit with the SNL Draft Permit is instructive for demonstrating how few issues the SNL Draft Permit addresses that need to be addressed. An entire discussion should be made for comparison of provisions and additions to the SNL Draft Permit.

   NMED Response: To NMED's knowledge, all regulatory requirements that must be included in a RCRA permit are included in the Permit. See the Consent Order, in addition to Permit Part 8, for regulatory requirements for corrective action.
   There are some differences between the Los Alamos National Laboratory (LANL) permit and the SNL Permit because the two facilities are different and their operators are different entities. LANL may have agreed to provisions in their permit that concern circumstances for their facility which specific regulations do not adequately address. The Permittees, in this case, have done the same with respect to the circumstances at SNL. While NMED possesses the authority to set conditions that are not specifically addressed or adequately addressed in the regulations for protection of human health and the environment, such use of omnibus authority must be justified on a case by case basis, and

is subject to a hearing and appeal. The Department does not believe that any modification of the Permit was necessary based on this comment.

6. **Comment:** Citizen Action commented that the Permit should identify any interim status units at SNL and the effect of the permit on such units.

   NMED Response: All HWMUs that the Permittees have requested be permitted are covered under the Permit. Several former interim status units at SNL are now permitted, which are the Manzano Storage Bunkers, Auxiliary Hot Cell Unit, and the Radioactive and Mixed Waste Management Unit. All other interim status HWMUs will be closed, if not already closed, by actions separate from these proceedings. Information on the remaining interim status units, which are all inactive, is available from the Department. The Department does not believe that any modification of the Permit was necessary based on this comment.

7. **Comment:** Citizen Action commented that the number of tank systems that contain RCRA waste at SNL must be set forth by the RCRA permit. SNL plans to continue using RCRA non-compliant tanks and ancillary service lines and equipment. The Draft Permit must provide information about each tank. Apparently, all of the functioning tanks are not listed in the Draft Permit. DOE must stipulate the ASME design life and age for each of the tanks at SNL along with the anticipated years of future operational use. Many of the tanks date back many decades, long beyond their design life. Additional tanks may lack "certification stamps." Compliance or non-compliance with RCRA secondary containment requirement in tank vaults must be set forward. Tanks that have corroded in the ground with releases must be described as landfills and are subject to corrective action.

NMED Response: Hazardous wastes are not stored or treated in tanks at SNL. Therefore, the regulations that apply to the management of hazardous waste in tanks at 20.4.1.500 NMAC incorporating 40 CFR Part 264 Subpart J, do not apply to SNL. Storage or treatment of hazardous *materials* that are not wastes is not subject to regulation under RCRA.

However, a leaking tank containing hazardous material could become a SWMU or AOC, and thus the release could become subject to corrective action requirements under RCRA Subtitle C. Alternatively, the release may be subject to other State environmental regulations, such as those found under 20.6.2 NMAC, Ground and Surface Water Protection. The Department does not believe that any modification of the Permit was necessary based on this comment.

8. **Comment:** Citizen Action commented that the "Yardholes" must be included in the Permit. Citizen Action obtained information from a FOIA request that the waste from numerous experiments with the reactor fuels had been disposed of in various areas known as Yardholes at SNL. Yardholes were over 30 primitive holes dug in the ground; some were lined and some were unlined. One of the Yardholes was a water filled hole under the Hot Cell Facility monorail at SNL and contained a spent fuel element from the Savannah River Site. SNL has kept secret from the public the types and amounts of the contents of the various Yardholes. The Yardholes contain nuclear materials and/or hazardous wastes that should be disposed of or regulated under the Resources Conservation and Recovery Act (RCRA), the Atomic Energy Act, Nuclear Regulatory Commission (NRC) regulations, or Department of Energy (DOE) Orders.

A "SNL Site Team Report on Spent Fuel," October 1993 ("Yardholes Report"), assessed vulnerabilities of the DOE storage of irradiated reactor fuel and other irradiated nuclear materials (RINM). The 1993 Yardholes report stated: "The vulnerability identified was the lack of approved Safety Analysis Reports." The report identified the existence of the Yardholes at the location of the Sandia Pulse Reactors (19 Yardholes) and the Hot Cell Facility (13 Yardholes under the HCF Monorail) associated with the Annular Core Research Reactor (ACCR).

NMED Response: The Permittees did not request that the "Yardholes" be permitted as HWMUs. The Permittees represent that materials stored in the "Yardholes" are not waste. The Department does not believe that any modification of the Permit was necessary based on this comment. If the Department determines that the material in the Yardholes is in fact hazardous waste, appropriate enforcement actions may be taken.

9. **Comment:** Citizen Action commented that, in or about November 2002, they learned about experiments simulating nuclear meltdowns that involved oxide nuclear reactor fuels that had been shipped in canisters to Sandia National Laboratories (SNL or Sandia) during the mid-1980s "from reactors around the world." (Citizen Action Press Release November 18, 2002). An unknown number of these canisters were disposed of in the Mixed Waste Landfill at SNL. Citizen Action requested the New Mexico Environment Department (NMED) demand a full accounting of the oxide reactor fuels from Sandia to further characterize the contents of the landfill.

NMED Response: The waste contents of the MWL are not relevant to this Permit renewal. The MWL is not being permitted and is not being petitioned for CAC status under these proceedings. Additionally, NMED addressed this issue in its August 2005

response to comments on the Mixed Waste Landfill permit modification for corrective measures. Citizen Action was informed of this response. The Department does not believe that any modification of the Permit was necessary based on this comment.

10. **Comment:** Citizen Action commented that issues related to the Mixed Waste Landfill (MWL) and Chemical Waste Landfill (CWL) must be resolved:

    a. Citizen comments on the CWL post-closure permit have not received a response. The well monitoring network for the CWL has problems of corroded well screens that prevent detection of contaminants beneath the CWL.

    b. Citizen comments on the Soil Vapor Sampling and Analysis Plan (SV SAP) for the MWL have not received response.

    Issues related to the 11/2006 Notice of Disapproval for the MWL soil cover have not been resolved.

    NMED Response: Neither the status of the MWL as a SWMU subject to corrective action, nor the CWL as regulated unit subject to separate post-closure care permit, are affected by the Permit renewal.

    a. NMED responded to public comments on the CWL Post-Closure Care Permit on October 15, 2009.

    b. Comments on the MWL SV SAP are not relevant to the Permit. NMED responded to public comments on the MWL SV SAP on February 14, 2008.

    c. NMED approved the MWL cover through approval of the Corrective Measures Implementation Report on October 14, 2011.

    The Department does not believe that any modification of the Permit was necessary based on this comment.

11. **Comment:** Citizen Action commented that Los Alamos National Laboratory provided an informational meeting for their permit to the Northern New Mexico Citizen Advisory Board, and that a similar meeting should be held for interested organizations, including Citizen Action, in the Albuquerque area by SNL previous to close of any comment period. NMED should ensure that the DOE apply equivalent treatment for public participation for the review of the Sandia RCRA permit.

    NMED Response: The Permittees held a public meeting for the renewal of the permit issued in draft in 2007. The regulations do not require them to hold another public meeting for the 2012 draft permit. The Department does not believe that any modification of the Permit was necessary based on this comment.

12. **Comment:** Citizen Action commented that the Draft Permit should be denied due to the refusal of DOE/SNL for over a year to provide answers to the following questions relevant to air emissions submitted on a Freedom of Information Act Request (the commenter supplies 29 examples of information requests allegedly not fulfilled by the Permittees).

    NMED Response: Requests to DOE/SNL under the federal Freedom of Information Act are not relevant to NMED's decision to issue a RCRA permit, and there is no basis in law to deny a permit to SNL based on DOE/SNL's alleged lack of responsiveness. Moreover, a refusal to renew the permit would not remedy Citizen Action's complaint against DOE/SNL. The Department does not believe that any modification of the Permit was necessary based on this comment.

13. **Comment:** Citizen Action, the Permittees, and others requested a public hearing on the draft permit. Further, and prior to any notice of public hearing, pursuant to 20.4.1.901.

A.4 NMAC, NMED, the Permittees, and other parties need to conduct negotiations to attempt to resolve issues related to the draft permit.

NMED Response: In accordance with 20.4.1.901.A (4) NMAC, NMED, in conjunction with the Permittees, negotiated with the parties in an effort to resolve concerns and reach consensus. Because opposition could not be resolved on all issues, a hearing was scheduled and held May 5-8, 2014. The Department does not believe that any modification of the Permit was necessary based on this comment.

14. **Comment:** Citizens for Alternatives to Radioactive Dumping (CARD), Agua es Vida Action Team, and Our Endangered Aquifer Working Group commented that the volume and complexity of and the changes made to both the revised and reissued SNL draft Permit and the Mixed Waste Landfill Long Term Monitoring and Maintenance Plan (LTMMP) compound difficulties for review. The addition of the Class 3 modification to the Kirtland Air Force Base (KAFB) permit imposes an additional burden. We consider these issues a reason for extension of time.

    NMED Response: The Class 3 modification request for the KAFB permit is not relevant to the SNL Permit or the proposal to grant Corrective Action Complete for 24 SWMUs/AOCs. See also Response to Comment 2. The Department does not believe that any modification of the Permit was necessary based on this comment.

15. **Comment:** CARD commented that the full documentation necessary for review of the Permit and the CAC petitions have not been posted on the NMED and SNL web sites.

    NMED Response: There is no regulatory requirement that the NMED or the Permittees make documents related to the draft Permit or CAC petitions available in electronic format on a web site. Furthermore, the NMED does not have the resources to place all of

the voluminous documentation relevant to this matter in electronic form on its web site. The Department does not believe that any modification of the Permit was necessary based on this comment.

16. **Comment:** A citizen commented that numerous sites at SNL are regulated units because they received hazardous waste after July 26, 1982. Many of the sites are listed only as SWMUs and must instead be monitored and closed as regulated units.

    NMED Response: None of the sites being petitioned for CAC status and none of the units that were permitted as a HWMU is a regulated unit. Thus, they are not subject to the closure and groundwater monitoring requirement for regulated units. This issue was addressed in more detail in NMED's Closing Argument and Proposed Findings of Fact and Conclusions of Law. The Department does not believe that any modification of the Permit was necessary based on this comment.

17. **Comment:** A citizen commented that the MWL is a regulated unit and requires a closure plan and post-closure care permit. Groundwater monitoring must be done in a manner required for a regulated unit. The groundwater is contaminated and the dump should be excavated. Plutonium is present. Other releases of hazardous wastes have occurred.

    NMED Response: The status of the MWL is not at issue in this proceeding. The MWL is not a regulated unit; it is a SWMU. Because it is not a regulated unit, the MWL is not subject to the closure and groundwater monitoring requirements for regulated units. However, groundwater is being monitored at the MWL under the MWL Long-Term Monitoring and Maintenance Plan. Additionally, there is no conclusive evidence that groundwater beneath the MWL is contaminated. Known releases of contaminants from the landfill to the vadose zone occur at low concentrations that are unlikely to cause

groundwater contamination in excess of a regulatory standard or that poses a threat to human health. Furthermore, there is no evidence that the remedy selected for the landfill (installation of a cover and monitoring) is not performing as expected; thus excavation of the landfill is not warranted. Re-evaluation of the feasibility of excavation will be conducted in the review due five-years after the approval of the LTMMP.

Although plutonium occurs in small quantities in the landfill, the amount is believed to be small based on the landfill's inventory. It is unlikely that such a small source of plutonium would be able to cause groundwater contamination, especially under the geologic and climatic conditions that exist at the landfill. Plutonium was not found in the subsurface below the landfill. In summary, releases from the landfill do not pose unacceptable risk to human health or the environment. The Department does not believe that any modification of the Permit was necessary based on this comment.

18. **Comment:** A citizen commented that the draft permit fails to include a definition for regulated units. Collectively, these units, incorrectly classified as SWMUs, disposed of billions of gallons of contaminated water that have contaminated groundwater. The releases have not been adequately monitored and remediated.

NMED Response: It is not necessary for the permit to provide a definition for a regulated unit. That term is defined in the regulations at 40 CFR § 264.90(a)(2). None of the HWMUs is a regulated unit. The SWMUs and AOCs are properly classified as SWMUs/AOCs, and they are not regulated units. None of the SWMUs/AOCs that discharged wastewater required remediation based on the results of the risk assessment for each site. Few required any monitoring, and the monitoring that was conducted at the SWMUs/AOCs where it was needed did not detect groundwater contamination, except at

SWMU 46 (near Technical Area 4) and SWMUs 4, 5, 52, and 196 (at Technical Area 5). Groundwater contamination at SWMU 46 is being addressed separately under the Tijeras Area Ground-Water (TAG) Investigation and that at SWMUs 4, 5, 52, and 196 is being addressed separately under the TA-V Area Ground-Water Investigation. The Tijeras Area Ground-Water and TA-V Area Ground-Water Investigations are listed in Permit Attachment K, Table K-1, as AOCs requiring corrective action under the Consent Order. The Department does not believe that any modification of the Permit was necessary based on this comment.

19. **Comment:** A citizen commented that the permit must contain the requirement that the Secretary review the permit five years after the date of issuance and modify it as necessary pursuant to 40 CFR § 270.50.

    NMED Response: The Permit sets forth requirements applicable to the Permittees, not to the NMED. Additionally, the cited regulation (40 CFR § 270.50 (d)) applies to land disposal units. There are no land disposal units at the Facility subject to the Permit. The Department does not believe that any modification of the Permit was necessary based on this comment.

20. **Comment:** A citizen commented that the NMED must enforce the 5-year re-evaluation of the MWL remedy and excavation of the landfill. The review is 2 ½ years overdue and NMED does not have the legal grounds to delay it for another 5 years.

    NMED Response: The 5-year re-evaluation provision is found in paragraph 5 of the May 26, 2005 Final Order for the MWL. The implementation of corrective action at the MWL is not at issue in this proceeding. The NMED's interpretation of the 5 year review provision is at issue in a case presently before the New Mexico Court of Appeals (Citizen

Action v. NMED, No. 33,517). The Department does not believe that any modification of the Permit was necessary based on this comment.

21. **Comment:** A citizen commented that the change in the 5 year review requirement for the MWL is a revision of the 2005 Final Order for the MWL. The Final order must be modified before the NMED can delay the 5 year review. Five year reviews are required by law at 40 CFR § 270.50.

    NMED Response: See Response to Comment 20.

22. **Comment:** A citizen expressed concern that the five year review was added to Module IV of the SNL permit in 2005 as a Class 3 permit modification. However, the 5 year review is omitted from the draft permit. The omission is a violation of RCRA requirements for public notice.

    NMED Response: The Permit was public noticed as the draft permit issued in September 2012. Thus, requirements for public notice of the draft permit were met by the Department. The five year review is not included in the Permit because the MWL, being a SWMU, is subject to corrective action under the Consent Order and the May 2005 Final Order, not the Permit. The Department does not believe that any modification of the Permit was necessary based on this comment.

23. **Comment:** A citizen expressed concern that the Consent Order is inadequate to be an enforceable document for corrective action. The Consent Order must be public noticed for modification.

    NMED Response: The Consent Order is an enforceable document. See Response to Comment 87. The Consent Order is not being modified. The Department does not believe that any modification of the Permit was necessary based on this comment.

PERMIT PART 1

24. **Comment:** The Permittees request that item #6 of Permit Section 1.17 be revised to read: **"** 6. Each report submitted pursuant to Section 1.9.9 of this Permit if such report is required to be submitted in writing.

    "The Permittees shall establish the IR within 180 days of the effective date of this Permit or within 90 days of the Department's approval of the location, whichever is later."

    The intent is that the requirement be separated into two paragraphs to clarify the time requirement for establishing an information repository.

    NMED response: NMED has separated the requirement into two paragraphs to clarify the time requirement for establishing an information repository.

    Permit Section 1.17 is revised to read:

    "6. Each report submitted pursuant to Section 1.9.9 of this Permit if such report is required to be submitted in writing.

    "The Permittees shall establish the IR within 180 days of the effective date of this Permit or within 90 days of the Department's approval of the location, whichever is later."

25. **Comment:** Citizen Action commented that the duration of the permit for ten years needs to be set forward.

    NMED Response: The duration of the Permit is specified as being 10 years in Permit Section 1.8.1 (except as provided in Permit Section 5.1). The Permit does not need to be modified based on this comment.

26. **Comment:** Citizen Action commented that reporting of planned changes to the Facility needs to be required under 40 CFR 270.30(1)(1).

    NMED Response: Provisions concerning reporting of planned changes are included in the Permit at Permit Section 1.9.9.1. The Permit does not need to be modified based on this comment.

27. **Comment:** Citizen Action commented that new or modified permits must be provided for so that the Permittees may not treat or store hazardous wastes at a new permitted unit or in a modified portion of an existing permitted unit except as provided for in 40 CFR § 270.42 and until there is compliance with 40 CFR §§ 270.30(1)(2)(i)and (ii).

    NMED Response: Permit modification is covered in Permit Section 1.8.2, which states that the Permit may be modified for both routine and significant changes as specified in 40 CFR §§ 270.41 through 270.43.

    Any anticipated noncompliance issues are addressed in Permit Section 1.9.9.2, which also provides "For a new facility, the Permittees may not treat, store, or dispose of hazardous waste; and for a facility being modified, the Permittees may not treat, store, or dispose of hazardous waste in the modified portion of the facility except as provided in § 270.42 until the provision of § 270.30(l)(2)(i) and (ii) are satisfied." The Permit does not need to be modified based on this comment.

28. **Comment:** Citizen Action commented that the Information Repository provisions must require the Permittees to post all existing and future documents for the Facility into a searchable electronic reading room.

    NMED Response: Permit Section 1.17, in part, states: "The Permittees shall establish and maintain a physical Information Repository (IR) in accordance with the requirements

of 40 CFR §§124.33(c) through (f), which are incorporated herein by reference." This applies to the documents: Part A and Part B Permit Applications, permit modification requests, and associated NMED responses, Waste Minimization Report, requests for extensions of time, and corrective action documents. These are the most common types of documents that pertain to Facility operations and corrective actions.

There is no regulatory requirement to establish an electronic reading file. Furthermore, it is unreasonable to expect the Permittees to post all existing documents in an electronic, searchable form due to the enormous volume of documents. Additionally, NMED does not have the regulatory authority to require the latter. The Permit does not need to be modified based on this comment.

29. **Comment:** Citizen Action commented that Conflict Language (1.5) section is unacceptable because it allows the provisions of the Draft Permit to differ from the provisions in the Permit Attachments. The Draft Permit and the Attachments must all be presented as true and correct especially since the bulk of the details lie in the Attachments.

The document issued for public review should not have internal conflict and should not require the public to ferret out such conflict. The Draft Permit admits possible conflict between the parts of the Draft Permit and attachments. That is an additional reason for denial. If there is existing conflict between the Draft Permit and the attachments, the duty of NMED is to set forth the nature of those conflicts and resolve them before issuance of the Draft Permit.

The effect of inaccuracies in the permit application and attachments should be that "Any inaccuracies found in the Draft Permit Application and its Attachments may be

grounds for the termination, revocation and re-issuance, or modification of the permit in accordance with 40 CFR § 270.41-43 to be incorporated by reference and for enforcement action."

NMED Response: The conflict language was removed from the 2012 version of the draft and final Permits. It was intended to provide resolution for the circumstance of conflicting language between a Permit Part and Permit Attachment, should any have existed.

As in the 2007 version of the draft Permit, NMED has made every effort to ensure that there is no conflicting language between the Permit Parts and the Permit Attachments. The Permittees have assisted in this effort.

The effect of inaccuracies in the Permit Application, should any exist, is addressed in Permit Section 1.7. If there is any inaccurate information or conflicting requirement present in a Permit Attachment, the inaccurate information or conflicting requirement can be revised through a Permit modification initiated by either the Permittees or the NMED. See Permit Section 1.8.2 and 20.4.1.900 NMAC incorporating 40 CFR §§ 270.41-42. The Permit does not need to be modified based on this comment.

30. **Comment:** Citizen Action commented that definitions contained in the Draft Permit are not in keeping with the requirements for a RCRA permit. For example, neither the definitions of the terms "Permit," nor "Permitted Unit" refer to RCRA requirements. These definitions constitute modifications of definitions contained in the 1993 Module IV of the RCRA permit. Under that document, "Permit means the conditions embodied in these special conditions pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA."

Citizen Action objects to the use of SNL's non-RCRA definition for "permitted unit" that excludes the numerous other locations at SNL that must be identified and included in the RCRA Draft Permit as a generator, treatment, storage or disposal unit at SNL. SNL cannot define its way out of the applicability of RCRA requirements to avoid the necessary inclusion of units that are regulated units, operable units, interim status units, or SWMUs. The status of numerous other Solid Waste Management Units (SWMUs), the Yardholes, and Areas of Concern (AOC) are ignored and would allow SNL to abandon and leave discarded wastes in place for these numerous facilities without requiring closure plans, post-closure care, post-closure permits or long term monitoring plans for the wastes buried at these locations. Additional facilities that may be producing RCRA waste would include at a minimum all facilities that are shown as operating in the SNL SWEIS (1999) and the Final Supplement Analysis for the SWEIS (2006). SNL has approximately 670 buildings in the 5 technical areas and the structures in the Coyote Test Field. The status of all facilities at SNL must be set forward as to which of these facilities generate, transport, store or dispose of RCRA hazardous or mixed hazardous wastes for inclusion on the draft permit. It is not credible that only 11 locations out of approximately 670 buildings located at SNL are the only areas involving RCRA wastes. All SNL facilities described in Table 2.2-1 of Final Supplement Analysis for the SWEIS (2006) must be included in the RCRA permit. To mention a few: the Advanced Manufacturing Processes Lab (AMPL) (TA-1), Explosive Components Facility (ECF) (TA-II), Integrated Materials Research Laboratory (IMRL) (TA-II), Microelectronics Development Laboratory (MDL) TA-II), Neutron Generator Production Facility (NGPF) (TA-I), Centrifuge Complex (TA-III), and all other facilities that produce, store or treat

RCRA wastes. Section 1.7 must include language that includes closure and post-closure care at these numerous other areas.

NMED response: The definitions in the Permit are the Department's definitions. The Permittees are not trying to avoid compliance with the New Mexico Hazardous Waste Management Regulations.

Operable Units are simply groups of SWMUs that are related in some manner, often by geographic area or by the type of SWMU (for example, septic systems can be grouped together to form an Operable Unit). The tables in Attachment K of the Permit contain listings of SWMUs grouped together as Operable Units. There is no requirement in the regulations to group SMWUs into Operable Units. Each SWMU/AOC goes through the corrective action process individually whether grouped in an Operable Unit or not.

The SWMUs and AOCs considered for CAC status are not permitted hazardous waste management units, regulated units or units under interim status. They do not require permits and are not subject to closure and post-closure care. All known SWMUs and AOCs are accounted for in the Permit.

Although there are numerous locations at SNL where hazardous wastes are generated, the generation of hazard waste does not necessitate a permit. The generation of hazardous waste also does not subject the place of generation to the requirements for closure and post-closure care. However, for a Permitted Facility, a release of generated hazardous waste could cause the location of the release to become a SWMU or AOC requiring corrective action. The term "Permitted Unit" is employed to reflect that the fact that each of the HWMUs would comprise a Permitted Facility if it were not included as a

"unit" in this facility-wide permit, encompassing all of the Facility (i.e., Sandia National Laboratories).

Storage of hazardous waste for less than 90 days does not require a permit. All facilities at SNL that treat or store hazardous waste in a manner requiring a permit are included in the Permit. SNL is not a transporter of hazardous waste because it does not move hazardous waste outside the Facility boundary. There is no disposal of hazardous waste at SNL. The Permit does not need to be modified based on this comment.

31. **Comment:** At hearing, the Permittees commented that in the definition of Permitted Units, Table J-1.2 should have been included as a listing of where authorized treatment at Permitted Units takes place.

NMED Response: The Department agrees that a reference to the table was inadvertently omitted. The definition of Permitted Unit in Permit Section 1.6 is revised to read:

> "Permitted Unit" means a Hazardous Waste Management Unit authorized for operations or for which post-closure care is required by this Permit. The Permitted Units authorized by this Permit are listed in Attachment J (Hazardous and Mixed Waste Management Units), Table J-1.1 (Units Permitted for Storage in Containers (Process Code SO1)), Table J-1.2 (Units Permitted for Treatment (Process Codes TO4 and X01) and Table J-2 (Permitted Units Undergoing Post-Closure Care (Process Code S99)). The locations of the Permitted Units are shown in Figure 2, Permit Attachment L (Figures).

32. **Comment:** Citizen Action commented that Section 1.21 for Corrective Action required pursuant to 40 CFR § 264.101 Subpart F is inadequate as it stands. It must set forth language that would include the provisions of 40 CFR §§ 264.90-100 for all the areas that can be brought under corrective action.

NMED response: The regulations at 20.4.1.500 NMAC incorporating 40 CFR §§ 264.90-100 cover only regulated units. There are no regulated units subject to the Permit

(the Chemical Waste Landfill, which is a regulated unit, is subject to a separate post-closure care permit). All other corrective action under RCRA is covered under 20.4.1.500 NMAC incorporating 40 CFR § 264.101. The Permit is correct as drafted with respect to the corrective action requirements at issue. The Permit does not need to be modified based on this comment.

33. **Comment:** Citizen Action supports inclusion in the Sandia permit of a Public E-Mail Notification List, as has been included in the WIPP Permit, Module I.H. That provision was agreed to by DOE, numerous organizations, and NMED, and should be included in the Sandia permit. Sandia should provide a link on its Home Page whereby members of the public may review the actions requiring e-mail notification. Specific provisions of the Sandia permit should include the notice requirement to inform those on the e-mail notification list.

    NMED Response: Permit Section 1.17.2.1 requires the Permittees to maintain an "Interested Persons List" for any person that wishes to be notified of updates to the Information Repository (IR). Within 30 days of submission to the NMED of any document required to be included in the IR, the Permittees are to send an email notification to the list. The IR is not required to be maintained on a web page (the regulations do not require an IR be provided on a web page); however, the index for the IR must be maintained on a web page. The Permit does not need to be modified based on this comment.

34. **Comment:** Citing Executive Order (EO) 13045, Citizen Action commented that NMED had not determined whether there are any environmental justice (EJ) communities affected by SNL activities, that such information is an important part of the Community

Relations Plan, that the Community Relations Plan should be set out for review, comment, and public hearing, and that the permit process should be stayed until after identification of the EJ communities. Additionally, CARD commented with respect to the Thermal Treatment Unit that SNL and NMED are responsible for reviewing the status of communities and neighborhoods in close proximity to SNL in order to determine if EJ neighborhoods and or communities could be impacted by emissions, and that there is no evidence in the permit or in testimony presented at the hearing that such a review was made.

Response: Executive Order 13045 is applicable to federal agencies and by its express terms does not create any substantive or procedural rights, benefits or responsibilities enforceable by a party (including NMED) against the United States. The Permittees at hearing provided testimony that they comply with EO 13045, but in any case the failure to comply with an EO would not be grounds to deny the permit under NMSA 1978, § 74-4-4.2 (D). However, the Secretary's Final Order did require that the Bureau provide a notice and comment opportunity (but not a public hearing) on the Community Relations Plan once it is received from the Permittees.

Furthermore, NMED considered the impact of air emissions from the TTU and determined that they do not pose unacceptable risk to the health of any communities. The Permit does not need to be modified based on this comment.

35. **Comment:** Referring to the issue of transfer of property, CARD commented that during negotiations four years ago, the Permittees had no plan for keeping people (especially children) in the areas designated for residential use out of the areas designated for

industrial use. We do not see this lack of planning corrected in the current permit. We consider this an incompleteness issue.

NMED Response: SNL has stringent internal procedures in place throughout the Facility to provide for security and site controls. No matter whether a site is granted Corrective Action Complete status on a residential or industrial land-use scenario, unauthorized people will not be able to easily gain access to the sites. Anyone that does gain access to a site, either legally or through criminal trespass will not be significantly exposed to residual contamination during the limited amount of time they may likely spend at a site. The Permit does not need to be modified based on this comment.

PERMIT PART 2

36. **Comment:** The Permittees request that the abbreviation for the Chemical Waste Landfill (CWL) be spelled out in the last sentence of Permit Section 2.2.1.

    NMED Response: NMED agrees to the suggested revision to spell out "Chemical Waste Landfill" for clarity. The last sentence of Permit Section 2.2.1 is revised to read: "No wastes shall be managed at the CAMU except waste generated by post-closure care activities conducted at the CAMU and the Chemical Waste Landfill."

37. **Comment:** The Permittees request that the first item listed in the bullets under Permit Section 2.10 be revised to read: "Generation of extreme heat, pressure, fire, explosions (except as a result of normal treatment operations at the TTU), or violent reactions." The basis of their request is that normal treatment operations at the TTU, in addition to generating explosions, also generate extreme heat, pressure, and fire.

NMED Response: NMED agrees that normal treatment operations at the TTU, in addition to generating explosions, will also generate extreme heat, pressure, and fire. The first item listed in the bullets under Permit Section 2.10 is revised to read: "Generation of extreme heat, pressure, fire, explosions (except as a result of normal treatment operations at the TTU), or violent reactions."

38. **Comment:** The Permittees request that the first two sentences of Permit Section 2.12.6 be revised to read: "The Permittees shall maintain Coordination Agreements with the police, fire department, State and local emergency response teams, and one or more local hospitals that would respond to emergencies at the Permitted Units. The Coordination Agreements shall be in writing executed by Permittees and the local authorities, and shall include the requirements provided in 40 CFR § 264.37(a). Agreements are listed in the Attachment D (Contingency Plan)." The Permittees state that the requirement should reflect the regulations rather than listing the agreements. The current agreements and the type of services provided under each agreement are listed in Table D-1 in Attachment D. The Permittees also state that Table D-1 should be revised as needed to keep it current. Additionally, the Permittees state that the U.S. Forest Service and Kirtland Air Force Base maintain a cooperative firefighting arrangement (listed in Table D-1) which meets the requirements of 40 CFR § 264.37(a)(2), but the Permittees are not a direct party to this arrangement.

NMED Response: NMED agrees to revise the text to correspond closely to the regulations and to cite Attachment D, which indicates the specific agreements in place. The first two sentences of Permit Section 2.12.6 are revised as requested to read: "The Permittees shall maintain Coordination Agreements with the police, fire department,

State and local emergency response teams, and one or more local hospitals that would respond to emergencies at the Permitted Units. The Coordination Agreements shall be in writing executed by Permittees and the local authorities, and shall include the requirements provided in 40 CFR § 264.37(a). Agreements are listed in the Attachment D (Contingency Plan)."

39. **Comment:** The Permittees request that the second and third items listed in the bullets under Section 2.13.1 be revised to read as follows.

"2) An explosion occurs (other than normal operations at the TTU); or

3) A fire occurs (other than normal operations at the TTU)."

The basis of their request is that fire and explosions can be part of normal operations at the TTU, and when so, are not conditions that constitute an emergency.

NMED Response: NMED agrees that the text should be clarified that explosion and fire can be a normal part of the treatment operations conducted at the Thermal Treatment Unit (TTU). The second and third items listed in the bullets under Section 2.13.1 are revised to read as follows:

"2) An explosion occurs (other than normal operations at the TTU); or

3) A fire occurs (other than normal operations at the TTU)."

40. **Comment**: The Permittees request that Item #1 of the second listing of bullets under Permit Section 2.14.2 be revised to provide consistency with Item 6 in the preceding list in Permit Section 2.14.2; and Section E.2 in Permit Attachment E.

NMED Response: NMED agrees that consistency is needed between the two lists in Permit Section 2.14.2 and Permit Attachment E. Inspection records for the current calendar year may be kept at the HWMUs. The regulations at 20.4.1.501.A (5) NMAC

require that records be kept until closure for records referenced in 40 CFR § 264.73(b), with the exception that records required under 40 CFR § 264.73(b)(7) and (9) are to be kept for no less than three years.

Thus, Item #6 of the first listing of bullets under Section 2.14.2 is revised to read:

"6. Records and results of inspections for each Unit as required in Permit Attachment E (Inspection Plan) and 20.4.1.501.A.(5) NMAC;"

Also, Item #1of the second listing of bullets under Section 2.14.2 is revised to read:

" 1. Inspection Schedule and all completed inspection records for that Unit for the current calendar year as set forth in Attachment E (Inspection Plan), as required by 40 CFR § 264.15(b) and this Permit,"

41. **Comment:** With respect to the second listing of items in Permit Part 2.14.2, the Permittees requested that the training records requirement be revised to provide consistency with Item 14 in the preceding list of items Section 2.14.2, as well as with Section F.4 in Permit Attachment F, and to conform to the requirements of 40 CFR § 264.16.

Additionally, to improve clarity the Permittees requested that NMED separate the language regarding Contingency Plan location from that regarding the training records location, and revise the text to refer to the Unit-specific Contingency Plans.

During discussions held in July 2013, the Permittees further noted that records for former employees are also addressed in Permit Attachment F (last paragraph of Section F.4). That paragraph includes a reference to the "Facility Records Center" that the Permittees note should be changed to "Facility Operating Record," for consistency with the other Permit Parts and Attachments. The Permittees also indicated that the Facility Operating

Record encompasses electronic and physical records at the Facility. The Permittees also stated that the requirement for former employees could be further clarified by moving the last sentence of Section F.4 into its own paragraph, referring to the Operating Record, and adding a reference to 40 CFR § 264.16(e).

NMED Response: NMED agrees that consistency is needed between Part 2 and Attachment F. The text is revised as requested, with an additional revision to Permit Section 2.14.2. While training records for only the current calendar year are to be kept at the HWMUs, the duration that the training records of former employees are kept must comply with 40 CFR § 264.16(e) (i.e., three years).

Therefore, the second listing of bullets under Section 2.14.2 is revised to contain items 2 and 3 as follows: "2. Records for the current year of all training required by this Permit for current personnel at that Unit, except personnel training records for the MSB shall be maintained at the RMWMU." "3. The Contingency Plan for the Unit (consisting of the general Facility requirements and the applicable Unit-specific requirements in Permit Attachment D)."

Permit Section 2.14.2(14), under the first listing of bullets, is also revised to read: "14. Personnel training records including both introductory and continuing training programs used to prepare employees to safely operate and maintain each Permitted Unit in compliance with 40 CFR § 264.16(d) and (e), and Permit Attachment F (Personnel Training Plan);"

In addition, the first sentence of the last paragraph of Section F.4 of Permit Attachment F is revised to read: "Current-year training records shall be kept at the Unit

to which employees are or were assigned and training records for previous years shall be maintained in electronic or physical form in the Facility Operating Record."

Finally, the last sentence of Section F.4 is now a separate paragraph, and a reference to 40 CFR § 264.16(e) is added. The sentence now reads: "For former employees, training records shall be maintained in the Facility Operating Record for a minimum of three years from the date the employee last worked at a Permitted Unit, in accordance with 40 CFR § 264.16(e)."

42. **Comment:** Citizen Action commented that:

a. A clear prohibition on land disposal should be provided in the Permit.

b. Waste characterization for compliance with RCRA air provisions should be provided especially for characterization of hazardous wastes managed in containers and tanks for volatile organic compound concentrations.

c. Provisions for receiving hazardous wastes from off-facility locations do not seem to limit where the hazardous wastes can be received and stored at SNL.

NMED Response: NMED responds to these comments as follows.

a. The Permit does not authorize land disposal of hazardous wastes. Because the Permit does not authorize land disposal at the facility, any land disposal of hazardous waste would be in violation of RCRA.

b. Provisions concerning compliance with air emissions requirements under 40 CFR 264 Subpart CC are found in Permit Section 3.8. However, hazardous wastes are not managed in tanks at the Facility.

c. Off-site hazardous wastes are addressed in Permit Section 2.2.3, which describes the wastes that can be received: (1) Treatment-derived waste or residues from wastes

generated at the Facility, sent off site for treatment at off-site facilities, and subsequently returned to the Facility prior to final disposition off-site may be managed at the Facility, subject to certain conditions specified in the Permit; (2) Waste generated by the Permittees as a result of investigation or remediation of a solid waste management unit (SWMU) or area of concern (AOC) listed in Attachment K (Listing of SWMUs and AOCs) and Table K-1 (SWMUs and AOCs Requiring Corrective Action); (3) Wastes from SNL operations located within the metropolitan Albuquerque area.

The wastes can be received at any HWMU at the Facility for storage and treatment, provided the wastes are authorized by the Permit and the regulations. The Department does not believe that any modification of the Permit was necessary based on this comment.

43. **Comment:** Citizen Action states that the maps required under 40 CFR § 270.14 are not provided with sufficient detail to locate all tanks, bunkers, solid waste management units, known past solid or hazardous waste treatment, storage and disposal areas or units regardless of whether they were active on November 19, 1980; surrounding land uses (residential, commercial, agricultural, recreational); and the location of all production and groundwater monitoring wells.

NMED Response: The regulations at 40 CFR § 270.14 pertain to permit applications, not permits. In this case, the Application contains maps for SWMUs/AOCs (Part 4, Figure 1), bunkers (Part 2, Module VI-MSB, Figures 1-14) proposed for the storage of hazardous and mixed waste, surrounding land use (Part 2, Appendix A, Figure A-8) and

the location of production and groundwater monitoring wells (Part 1, Appendix B, Figure B-1 and Part 2, Appendix A, Figure A-2).

There are no tanks at SNL used to store hazardous waste. There is no disposal of hazardous waste at the Facility. The regulations under RCRA Subtitle C do not require that the locations of nonhazardous waste facilities be included in a permit to store, treat, and/or dispose of hazardous waste.

Maps have been included in Attachments G, L, and M of the Permit. NMED wrote the Permit and included maps to depict information generally for the sake of clarity. The Permit contains maps and figures for the HWMUs to be permitted for the storage and treatment of hazardous and mixed waste (Figure 2) and include: the Hazardous Waste Handling Unit (HWHU-Figures 3-8), the Thermal Treatment Unit (TTU-Figures 9-14), the Radioactive and Mixed Waste Management Unit (RMWMU-Figures 15-20), the Auxiliary Hot Cell Unit (AHCU-Figures 21-24), and the Manzano Storage Bunkers (MSB-Figures 25-30). It also includes maps for the Corrective Action Management Unit (CAMU-Figures 31-41), which is subject to post-closure care. However, a map showing the locations of the SWMUs/AOCs was inadvertently excluded from the draft permit that was public noticed in September 2012. The NMED agrees that such a map needs to be a part of a Permit. NMED has added a location map of SWMUs/AOCs to the Permit. Additionally, NMED has added a sentence to Permit Section 8.2.1 that reads: "A map showing the locations of SWMUs and AOCs at the Facility is presented in Figure 52."

Other than as specified above, the Department does not believe that any modification of the Permit was necessary based on this comment.

44. **Comment:** Citizen Action states that the draft Permit fails to address the effects of airplane crashes or terrorist attacks at SNL for numerous facilities, including, but not limited to Bldg. 6715 that contains explosive, reactive and incompatible wastes.

    NMED Response: Any emergency that results in a fire, explosion, or release of hazardous wastes would be covered under Permit Section 2.13.5 and the Contingency Plan in Permit Attachment D. The Department does not believe that any modification of the Permit was necessary based on this comment.

45. **Comment:** Citizen Action states that the section on drainage control claims that figures for drainage features exist for each unit-specific attachment. Furthermore, none of the figures contain information related to the direction of surface water flow for the specific units.

    NMED Response: See Figures 8, 12, 24, 30 and 36 in Permit Attachment L for drainage control features at each individual HWMU. However, the NMED has determined that a similar figure for the Radioactive and Mixed Waste Handling Unit was inadvertently left out of the draft Permit. Figure 10 of Module III of the Applicant's Part B Permit Application is inserted into the Permit to correct this oversight. Other than as specified above, the Department does not believe that any modification of the Permit was necessary based on this comment.

46. **Comment:** Citizen Action states that the Draft Permit proposes to allow hazardous wastes from off-site facilities to be accepted. Citizen Action is concerned that the Permit would allow large amounts of off-site waste to come to SNL from numerous facilities. Furthermore, a list of off-site facilities from which hazardous waste will be accepted should be provided.

Additionally, no amounts are set forth for the types, amounts or disposal pathways of the wastes that will be accepted from other facilities, and no risk assessment is made for potential releases of these offsite wastes during transport to and from SNL or for the potential releases of the wastes during storage at SNL.

NMED Response: Permit Section 2.4.5 provides for acceptance of offsite waste (see Response to Comment 42(c) for the permissible sources of off-site wastes). Table 5-1 of Permit Part 5 (for the Thermal Treatment Unit) and Tables J-1.1 and J-1.2 of Permit Attachment J (for the other HWMUs) set forth the quantities for each waste type that can be treated or stored at any one time at each of the HWMUs.

It is not necessary to specify a disposal pathway in the Permit because there are no disposal units for hazardous waste at the Facility. For disposal of hazardous waste, the Permittees may choose at their discretion any offsite facility, provided that facility is permitted for disposal of hazardous wastes.

Risk assessments are not required for evaluating potential releases of offsite wastes that could occur during transport to and from SNL. Such assessments could only be made on a shipment by shipment basis and are impracticable. There is also no requirement to conduct risk assessments in advance for potential releases of wastes during storage. Such a requirement would also be impracticable and of questionable value as such an assessment would have to be based on assumptions of essentially all key data to estimate the risk. Should a release occur at a HWMU at the Facility that constitutes an emergency, the Permittees would have to implement the Contingency Plan found in Permit Attachment D. The Department does not believe that any modification of the Permit was necessary based on this comment.

47. **Comment:** Citizen Action objects to the treatment, management and storage of hazardous wastes at the HWMU, RMWMU, AHCU, and MSB and other SNL facilities without proper characterization and presentation of the types and amounts of the wastes to be present. Providing a list of EPA Hazardous Waste numbers without associating those numbers with the actual named constituents is of little value to the public. The types and quantities of wastes for each unit need to be described along with the controls that will be used to limit emissions.

There is a lack of any reliable air monitoring systems at these locations. Recovery systems for vapors and compliance with RCRA air regulations are not described. Treatment systems for the wastes at each location are not adequately described.

NMED Response: The Permittees have adequately identified the wastes that will be managed, treated, and stored at the Facility in their Part A Permit Application. Authorized wastes for each HWMU are listed in Permit Attachment B, which is based on the Permittees' Part A Permit Application. Treatment of wastes is also covered under Permit Attachment B and more details related to treatment are provided in Permit Attachment A for the specific HWMUs where treatment will take place (in a manner requiring a permit). Characterization of wastes is comprehensively addressed under Permit Sections 2.4 through 2.4.9 and Permit Attachment C (*Waste Analysis Plan*). EPA Hazardous Waste Numbers are correlated with the waste types they represent (see 40 CFR §§ 261.20-33) and are important to reference in hazardous waste permits. These waste numbers take into account that hazardous wastes may be made up of more than one hazardous substance, may contain more than one hazardous constituent even if made up

of only one hazardous substance, and may exhibit one or more hazardous characteristics. The identification, tracking, and management of hazardous wastes is accomplished from a regulatory perspective using these EPA Hazardous Waste Numbers (for example, meeting treatment requirements under 40 CFR Part 268, completing manifests, and completing the Part A Permit Application).

The Permittees are required to control air emissions from hazardous waste containers in accordance with the applicable regulations in 40 CFR Part 264 Subpart CC (Air Emission Standards for Tanks, Surface Impoundments, and Containers), and especially the requirements at 40 CFR § 264.1086, which concern the control of air emissions from containers. Waste characterization requirements for air emissions are found in Permit Section 2.4.9. In general, emissions would be controlled at the Facility by maintaining closed lids on containers, which meets the Level 1 standards found at 40 CFR § 264.1086(c). Thus, air monitoring and vapor-recovery systems are not likely to be required under the regulations. However, the Permit provides in Permit Section 3.8 that the Permittees must meet all of the applicable regulations in 40 CFR Part 264 Subpart CC. If storage of waste should be conducted in a manner that air monitoring or vapor-recovery systems are required by the regulations, then the Permittees would be compelled to implement such monitoring or systems, or both. The Department does not believe that any modification of the Permit was necessary based on this comment.

48. **Comment:** The Permittees request that item 1.b under Permit Section 2.2.3 be revised to read: "for wastes with an available final disposal path, the Permittees shall manage the wastes for not more than 90 days prior to shipping the wastes off-site." The basis for the Applicant's request is that item 1.b should be consistent with the first sentence of Permit

Section 2.3.3, which allows storage, treatment, or other management at Permitted Units at SNL within the 90-day period. For example, hazardous or mixed wastes may undergo treatment during the 90-day period prior to shipping the wastes off-site for further management.

NMED Response: The NMED does not believe the requested revision is necessary. Nothing prohibits further treatment of a treatment-derived waste or residue returned to the Facility, provided such treatment is carried out in compliance with the Permit and the Hazardous Waste Management Regulations at 20.4.1 NMAC. The language as originally written was meant to clarify the intent that the time limitation for storage in such cases is not to exceed 90 days. Thus, the total time for storage of such offsite-generated wastes cannot be extended more than 90 days beyond one year from the time the waste first arrived at the Facility. To be even more clear about the intention of the original language, NMED has revised item 1.b under Permit Section 2.2.3 to read: "for wastes with an available final disposal path, the Permittees shall not store the wastes for more than 90 days prior to shipping the wastes off-site."

49. **Comment:** At hearing, the Permittees requested further clarification of the above response to comment.

NMED Response: The Department responded at the hearing that once waste exists at SNL, the Permittees have one year to manage it. If waste is shipped off-site but is returned to SNL, the Permittees have 90 days from the date the waste arrives back at SNL to process it and get it back off of the Facility. The Department does not believe that any modification of the Permit was necessary based on this comment.

PERMIT PART 3

50. **Comment:** The Permittees request revision of the text in Permit Section 3.6.2 to maintain consistency with the regulations that are cited as the basis for this requirement. Specifically, the Permittees request that the clause "or other liquids" be deleted from the end of numbered paragraph 1 in Permit Section 3.6.2, because precipitation is the only liquid intended to be drained from the storage area.

    NMED Response: NMED agrees to revise the text to be consistent with regulatory requirements. The text in Permit Section 3.6.2 paragraph 1, and now reads: "The containers are stored in storage areas that are sloped or otherwise designed and operated to drain and remove liquid resulting from precipitation (see 40 CFR § 264.175(c)(1)); or"

51. **Comment:** Citizen Action commented that the Manzano Storage Bunkers (MSB) do not have adequate leak detection or air monitoring for volatile liquids that could leak from containers.

    The regulatory history, the complete number of bunkers, and length of time that the MSB has been in operation should be provided along with the types of wastes, releases, the volumes handled and the periods of storage of the various wastes and the manifest system for tracking the inventory of wastes.

    Radioactive waste should be stored in bunkers that are separate from where mixed wastes are stored. The sparse scheduled inspections at MSB do not provide a reliable method for prevention of contamination of the environment.

    The existence of ignitable wastes and storage of water reactive wastes provides opportunity for fires and explosive reactions. The presence of different types of wastes within the same bunker does not provide for safe segregation of waste types that could be

accomplished by the use of separate bunkers. The potential for fires and explosions and releases to the atmosphere of hazardous wastes is not described.

Automatic fire suppression systems should be, but are not provided for the bunkers containing the reactive, explosive wastes. Once daily inspection of liquid wastes that could cause fire or explosions is unacceptable where those wastes could be monitored by leak detection systems. The response time for the KAFB fire department is inadequate to provide protection of the public health and environment.

The description for limitation of storage of the MSB RCRA wastes should be provided.

The information for 7.6.3.2 Access to Communication or Alarm Systems is not provided as to what alarm systems exist at the MSB in Permit Attachment 2. The Alarm systems must be described for the 5 MSB bunkers as to what the alarms will provide - explosions, fire, radiation, volatile chemicals releases, etc.

NMED Response: In each Manzano Storage Bunker, containers holding liquid hazardous or mixed wastes are stored on portable spill pallets and pans that provide secondary containment. Secondary containment is also provided for in Permit Section 3.6.1.

The portable spill pallets and pans are designed for use with 55-gallon drums or other standard containers, and meet the requirements of 40 CFR §§ 270.15(a-b) and 264.175(b)(1-3). The pallets and pans are designed to be resistant and impervious to corrosives and other liquids.

Leak detection and air monitoring systems are not required under 40 CFR Part 264 for container storage at the MSB or any other container storage area at the Facility.

Inspections, required under Permit Section 2.8 and Permit Attachment E, Section E.9, are designed in part to catch any leaking containers, and to conduct the necessary corrective action if any leaking containers are discovered.

The Permittees control air emissions from each hazardous waste container at the MSB in accordance with the applicable regulations in 40 CFR Part 264 Subpart CC, and especially the requirements at 40 CFR §264.1086. Note that containers of mixed waste are exempt from the requirements under 40 CFR § 264.1080(b)(6).

The history of the MSBs prior to their regulation as hazardous waste management units is not available to NMED as they were used for classified purposes by the Department of Defense and the Department of Energy. The 5 MSBs, prior to becoming covered under the Permit, were interim status units used to store mixed waste. They were operated from 1999 to the present. Two other bunkers (37063 and 37078), previously used to store mixed waste under interim status (see Table J-3 of Permit Attachment J), were closed in 2006 and can no longer be used to store hazardous or mixed waste in a manner that requires a permit. While NMED can document historical information in a permit, in general, this is not done in order to limit the permit to a manageable size.

Table B-2 in Permit Attachment B lists the wastes, process codes, and annual quantities that the Permittees are authorized to store at the five Manzano Storage Bunkers.

There have been no releases of hazardous wastes at the MSBs.

Inventory tracking is found in Permit Sections 2.4.5 and 2.4.8. Waste manifests are used for shipment of waste to offsite treatment and disposal facilities. Manifests are not required for the shipment of wastes from and to onsite locations at the Facility.

There are no regulatory prohibitions against storing mixed waste and radioactive waste in the same area. Inspections are performed as frequently as required by regulations under 40 CFR § 264.15 (a)(2). The inspection frequency is found at Permit Attachment E (*Inspection Plan*).

Ignitable and reactive wastes are stored separately from other wastes at sufficient distances to prevent any potential reaction. This is a requirement of Permit Section 2.10. The regulations do not require that ignitable and reactive wastes be stored in completely separate hazardous waste management units, such as different bunkers. The potential for fires, explosions and releases to the atmosphere of hazardous wastes is low. Permit Section 2.10 requires procedures to minimize the risk of releases, explosions or fires. Automatic fire suppression systems are not required under 40 CFR § 264.32. There are smoke detectors inside each bunker (Table D-12). Additionally, KAFB tanker trucks at the KAFB Fire station in the Manzano administrative area are within 2.6 miles of the bunker located furthermost from the station. The fire station response time should be relatively short if an emergency occurs. Any fire occurring at the MSB will be unlikely to spread due to the design of the bunkers for their original purpose (i.e. storage of weapons).

Table J-1.1 in Permit Attachment J lists the permissible storage capacity of hazardous and mixed waste that can be stored at the MSB.

Permit Section 2.11.3 provides for communication and alarm systems as required under the regulations. Permit Attachment D, Table D-12 includes a description of the alarm system at the MSB. Smoke detectors inside each bunker will activate strobe lights on the front, outside each bunker in the event of a fire. No radiological detectors are

installed at the MSB, and such detectors are not required under RCRA. All personnel reporting to the MSB carry radiation detectors with them and are to be equipped with 2-way radios for communication. The Department does not believe that any modification of the Permit was necessary based on this comment.

52. **Comment:** Citizen Action commented that

Figure 1-2 for the MSB complex shows that no RCRA monitoring wells are present at the point of compliance for the MSB boundary. The nearest monitoring wells are over 1400 feet distant from the MSB. No RCRA upgradient monitoring well exists.

NMED Response: The MSBs are not regulated units. Groundwater monitoring wells are not required unless, for purposes of conducting corrective action, there is evidence of a release that threatens groundwater. The Department does not believe that any modification of the Permit was necessary based on this comment.

53. **Comment:** Citizen Action commented that the Tijeras Fault is shown on Figure 1-2 to run directly through the center of MSB Bunker number 37045 and along the edges of 37034 and 37118 within 1000 feet of the Tijeras Fault. The seismic risks associated with the storage of hazardous and mixed hazardous wastes at the MSB are not evaluated.

NMED Response: No strand of the Tijeras Fault is known to cross through or is within 3,000 feet of the MSBs or has had displacement in Holocene time. Seismic risk is evaluated in the Permittees' Part B Application; the locations of the MSBs meet the seismic standards found at 40 CFR 264.18(a) and 270.14(b)(11). The Department does not believe that any modification of the Permit was necessary based on this comment.

54. **Comment:** Public comment was received from Citizen Action objecting to the treatment, management and storage of hazardous wastes at the HWMU, RMWMU,

AHCU, and MSB and other SNL facilities without proper characterization and presentation of the types and amounts of the wastes to be present. The types and quantities of wastes for each unit need to be described along with the controls that will be used to limit emissions. There is a lack of any reliable air monitoring systems at these locations. Recovery systems for vapors and compliance with RCRA air regulations are not described. Treatment systems for the wastes at each location are not adequately described.

NMED Response: The Permittees have adequately identified the wastes that will be managed, treated, and stored at the Facility (see Permit Attachment A). Authorized wastes for each Unit are listed in Attachment B.

The Permittees will control air emissions from hazardous waste containers in accordance with the applicable regulations in 40 CFR Part 264 Subpart CC, and especially the requirements at 40 CFR § 264.1086. Note that containers of mixed waste are exempt from the requirements under 40 CFR § 264.1080(b)(6).

The Permittees are required to characterize hazardous wastes subject to emission controls in accordance with Permit Section 2.4 (*Waste Analysis*) and Attachment C (*Waste Analysis Plan*). Treatment of hazardous waste that requires a permit will be conducted only at the Permitted Units. Treatment at the Permitted Units is described in Permit Part 4 (*Treatment of Hazardous and Mixed Wastes*) and Permit Attachment A (*Facility Description*) on a unit by unit basis. The Department does not believe that any modification of the Permit was necessary based on this comment.

55. **Comment:** Citizen Action commented that the location of the Auxiliary Hot Cell Unit (AHCU) is not shown on a map. The length of time that the unit has been in operation

and the characterization and volume of the mixed hazardous wastes that are managed must be described. The period of storage for containers must be described. Whether the unit is handling off-site waste should be described. Whether the AHCU is a generator of hazardous and mixed hazardous waste should be described. The destination for where the AHCU mixed and hazardous waste is to be treated or disposed of should be described. Mixed waste items or containers that are handled remotely are from time to time being put under a "temporary tent like room" in Building 6597, erected north of the hot cell, to accommodate the containerized mixed waste items. The frequency of the erection and the duration of the temporary tent-like room are not sufficiently set forth.

NMED Response: The location of the AHCU is shown on Permit Attachment L, Figures 21-A and 21-B. No hazardous or mixed wastes have been stored at the AHCU since it was created under interim status on March 22, 2002 pursuant to 20.4.1.900 NMAC incorporating 40 CFR § 270.70 (a)-(c). A description of the AHCU is presented in Permit Attachment A.5. A description of hazardous and mixed wastes to be treated and/or stored and methods of treatment are presented in Permit Attachment A.5.4, Table B-2 of Permit Attachment B, and Table J-1.2 of Permit Attachment J. The AHCU may handle off-site waste as allowed in Permit Part 2.2.3. The time allowed for storage is found in Permit Part 3.1.1. It is possible and even likely that hazardous and mixed wastes may be generated at the AHCU; however, the generation of hazardous or mixed waste does not necessitate a permit. At minimum, NMED would expect that hazardous waste in the form of used personal protective equipment (such as gloves) would be generated at the AHCU.

Container storage at the AHCU is described in Permit Attachment A.5.1.4, and Permit Part 3, *Storage of Hazardous and Mixed Waste*, describes general requirements for storing wastes, including container inspection.

The final destination of the treated waste may be any permitted Treatment, Storage, or Disposal Facility (TSDF). RCRA does not require a list of offsite TSDFs be included in a permit; however, the name and location of offsite TSDFs are required in shipping manifests.

The description of the "temporary tent like room' is in Permit Attachment A.5.1.2. The main purpose of the temporary tent like room is to manage the radioactive component of the waste to prevent the spread of even small amounts of radioactive contamination. The tent like room is temporary and its frequency, design and duration will vary depending on the waste being managed. The Department does not believe that any modification of the Permit was necessary based on this comment.

56. **Comment:** Citizen Action commented that real-time air monitoring located at the vents from Building 6597 should be provided. The controls for air emissions venting out of the Building 6597 are insufficient to determine if filter systems are functioning properly. Gases that are not trapped by filtration should be described. The activities conducted in the temporary structure should be conducted in a dedicated engineered structure that is fully permitted for air emissions. The potential for leakage or existing spills from containers in the temporary area is not sufficiently described nor are operations for cleanup or emergency situations.

NMED Response: Air emissions are passed through a HEPA filter at the AHCU to capture radioactive particles; the NMED generally does not regulate radionuclides at

DOE facilities. The regulations do not require that emissions monitoring systems be deployed for hazardous or mixed waste storage in containers. The Permittees must control air emissions from each hazardous waste container in accordance with the applicable regulations in 40 CFR Part 264 Subpart CC as provided for in Permit Part 3.8. Activities in the temporary structure will be conducted under negative pressure and air emissions are controlled by normal operating procedures such as maintaining closed lids on containers. The contingency plan for an emergency-level release of a hazardous or mixed waste which could threaten human health or the environment is addressed under Permit Section 2.13, with more specific details presented in Permit Attachment D. Requirements related to spills are provided in Permit Section 2.12.3. Secondary containment and inspection requirements for container storage are provided for in Permit Sections 2.8, 3.6, and Permit Attachment Section A.5.1.4. Secondary containment for the floor is not required because containers with liquids are to be placed on portable spill pallets or pans. (See Permit Attachment Section A.5.1.4.). The Department does not believe that any modification of the Permit was necessary based on this comment.

57. **Comment:** Citizen Action commented that the storage silos are not accurately described. There are a total of 8 of these "silos" that are actually 15 feet deep subsurface wells or sumps that are for storage of liquid wastes. There is no provision for a real-time leak detection system to monitor for releases from the storage sumps. There is no indication as to whether leaks have occurred in the past and whether monitoring for the movement of contaminants beneath the ACHU has taken place. Container storage in the High Bay south and west of the hot cell appears to have no leak detection system in place. The length of time for the storage of the containers is not set forth. The floor should provide

for double containment and real-time leak detection. Provisions must be set forth to describe venting for emissions. Provisions for handling damaged containers should be provided. The procedures for detecting liquid wastes should be provided

NMED Response: The Storage Silos are accurately described in Permit Section A.5.1.3. Permit Parts 3.6 and 3.7 discuss leak detection and inspection. The regulations do not require leak detection systems for container storage; instead, containers are inspected at the frequency indicated in Permit Attachment E (*Inspection Plan*). Leaks of hazardous or mixed waste have not occurred in the past. See Permit Attachment A.5.1.3 concerning secondary containment at the silos. See Permit Section 3.1.1 concerning the length of time for storage of containers. Air emissions are discussed in Permit Section 3.8. Provisions for handling damaged containers are provided in Permit Sections 3.2 and 3.6.1. Characterization procedures for wastes are provided for in Permit Section 2.4 and Permit Attachment C.3.

The High Bay is a closed hazardous waste management unit. Hazardous or mixed wastes can no longer be stored or otherwise managed at the High Bay in a manner that requires a permit. The Department does not believe that any modification of the Permit was necessary based on this comment.

58. **Comment:** Citizen Action commented that risk assessment for explosive hazards that can occur at the AHCU and the potential for the release of hazardous wastes should be described.

NMED Response: Risks due to explosive hazards and potential releases are minimized by proper management, storage, and treatment of wastes. Special requirements for ignitable, reactive, or incompatible wastes are described in Permit Part 2.10.

Implementation of the contingency plan due to an explosion is described in Permit Attachment D.6.2. Permit Attachment Section D.6.3 requires additional measures in the event of uncontrolled releases, and additional contingency plan information specific to the AHCU is described in Permit Attachment Section D.13. The Department does not believe that any modification of the Permit was necessary based on this comment.

PERMIT PART 4

59. **Comment:** The Permittees requested revision of Permit Section 4.5 for consistency and to note that it is often (but not always) necessary to add void-filling materials to maximize treatment effectiveness and container properties, and to meet the requirements of the off-site disposal facility.

NMED Response: NMED agrees to make the change. The revisions clarify the various methods often used by the Permittees to accomplish macroencapsulation. The revised text is in Permit Section 4.5 paragraphs 3 and 4, and now reads:

"3. Placing the waste along with inert void-filling materials as appropriate inside a commercially available container made of inert or non-corroding materials such as polyethylene or stainless steel and sealing the container to encapsulate the waste. This method may not be used to treat D008 radioactive lead solids.

"4. Placing the waste in a container consisting of an outer shell with a liner of inert or noncorroding material such as polyethylene or stainless steel, along with inert void-filling material as appropriate, and then sealing the liner to encapsulate the wastes."

PERMIT PART 5

60. **Comment:** In its pre-hearing filings, the Department proposed to add a provision to Permit Section 5.1 requiring the Permittees to submit, within one year of the effective

date of the Permit, a work plan to conduct air sampling coincident with treatment operations in order to verify emissions from the TTU. The Permittees objected to this provision on several grounds: a) that the Department lacked jurisdiction over air emissions from the TTU; b) that the City of Albuquerque was better suited to assessing risks from air emissions, c) and that the Department had failed to demonstrate the necessity of air quality monitoring at the TTU. The Permittees raised these objections at the hearing and in their post-hearing filings. The Department presented evidence and arguments in support of the provisions at the hearing and in its post-hearing filings.

Response: In his final order, the Secretary explained his reasons for finding that the Department had satisfied the burden of proof to justify the air monitoring requirements of Permit Section 5.1. The Secretary found that the requirement was authorized by the provisions of 40 CFR §§ 264.601 and 264.602, which are applicable to the TTU as "Miscellaneous Unit." These provisions authorize requirements including but not limited to detection and monitoring for releases that may involve migration of waste constituents in air. The Secretary further found that the Department had demonstrated that the provision was necessary to protect human health and the environment because it will help determine the accuracy of the data relied upon in the risk assessment, especially for cyanide compounds, and will therefore help ensure the health and safety of onsite workers.

61. **Comment:** The Permittees request that the language in Permit Section 5.5.2.1 be revised to delete “reuse” as it is not clear in this context. The Permittees also requested NMED to revise Permit Section 5.5.2.1 “to allow less than the stated four hours between burn events that occur in the same day.” The Permittees added that, “In order to maintain

product quality, SASN is formulated in batches; this process may generate some excess SASN that requires treatment on the same day. The time between completing treatment of the wastes generated during SASN formulation and starting treatment of excess SASN may be less than four hours."

The Permittees went on to explain that "If burn events occur less than four hours apart, Unit personnel will not be able to perform an inspection between the events, but will perform a pre-treatment inspection before the events and a post-treatment inspection after the events are completed."

NMED Response: The text is revised as requested. This is because the original text imposed an unreasonable time frame to wait between burn events, making it difficult to accomplish multiple treatment events each day. It is not necessary to conduct pre-treatment inspections between every burn event, especially if only a short time elapses between burn events.

Permit Section 5.5.2.1 is revised to read as follows: "A minimum of four hours shall elapse between burn events before inspection of the burn pan except in cases of multiple burn events on the same day. In the case of multiple burn events on the same day, a pretreatment inspection will be performed if at least four hours elapse between burn events. If less than four hours elapse between burn events, a pretreatment inspection will not be performed. The Permittees shall not conduct more than three burn events on a single day."

62. **Comment:** The Permittees request that NMED revise the language in Permit Section 5.5.3 (on page 51 of the draft Permit) to be consistent with the requirements set forth in Permit Section 5.5.2.1, with regards to the time required between burn events.

NMED Response: The Department proposed to add the clause "unless a subsequent burn event starts within the four hour cool down period to the first sentence of the second paragraph of Section 5.5.3, so that it would to read:

"After the cool-down period of at least four hours, but within one business day, the Permittees shall perform a post-treatment inspection to check for any untreated waste in the burn pan and any contamination or untreated waste ejected from the burn pan during a burn event ("kick-out"), unless a subsequent burn event starts within the four hour cool down period." However, at hearing the Applicant commented that the additional language was confusing, so it has not been incorporated into the final Permit.

63. **Comment:** In its comment on the Hearing Officer's report the Permittees requested additional clarification of the sentence at issue in the previous response above, so that the clause "ejected from the burn pan during a burn event ("kick out") during the preceding burn event(s)" is modified to read "ejected from the burn pan ("kick out") during the preceding burn event(s)."

NMED Response: Pursuant to the Secretary's Final Order, paragraph 4, the requested change has been made.

64. **Comment:** At hearing, Citizen Action requested that the Department add a provision prohibiting post-burn inspections after sunset.

NMED Response: The following has been added as the second sentence of the second paragraph of Section 5.5.3: "If the cool down period ends after sunset, the Permittees shall wait until after sunrise on the following morning to perform the inspection required by this section."

65. **Comment:** With reference to Permit Section 5.5.4 (on page 52 of the draft Permit) regarding the handling of treatment residues at the TTU, the Permittees request that the Department clarify that the treatment residues are in the burn pan, and that the Permittees do not use other waste containment devices. They also state that the lid does not contain treatment residues.

NMED Response: The text is revised as requested to more accurately describe the process and to improve organization of the Permit. Treatment residues are contained in the burn pan. Treatment residues are expected to be found deposited on the lid after a burn takes place.

The first sentence of Section 5.5.4, which is now found in the third paragraph of Permit Section 5.5.3 under "Post-Treatment Operations", is revised to read:

The Permittees shall remove treatment residues from the burn pan using plastic scoops or a vacuum cleaner equipped with a high-efficiency particulate air filter. The Permittees shall close the lid on the TTU burn pan to prevent dispersal of any residue which could not be removed by the plastic scoop or vacuum cleaner. The Permittees shall remove treatment residues from the burn pan and clean treatment residues deposited on the top exterior of the lid with wet paper or cloth wipes within one working day of a burn event unless another burn event is to take place within one day, or one or more adverse weather conditions as defined in Section 5.5.2.2 is present. Residues that are removed from the burn pan and wipes used in cleaning the top exterior of the lid shall be containerized and managed in accordance with Section 5.5.4.

66. **Comment:** The Permittees requested that Permit Section 5.8 (on page 53 of the draft Permit) regarding the inspection of the TTU be revised so that this requirement is

consistent with the pre-burn inspection requirements in 5.5.1 and the Inspection Plan in Attachment E, and to clarify that multiple pre-burn inspections are not required.

NMED Response: The text is revised for consistency with the contents of Permit Attachment E, and to indicate that multiple pre-burn inspections are not required. The revision is somewhat different than requested, in order to make it clear that inspections are to be conducted prior to the first burn event conducted for any given day of treatment operations.

Permit Section 5.8 is revised to read: "The Permittees shall inspect monthly and prior to the first burn event that is conducted for any given day of treatment operations, and shall maintain as necessary, the surface water run-on and run-off control features (e.g., all associated retention structures, retaining walls, covers, berms, ditches) associated with the TTU in accordance with Permit Attachment E (Inspection Plan)."

67. **Comment:** In its pre-hearing filings, the Department proposed to add a provision to Permit Section 5.9.1 to require that, at the time the first surface soil samples are collected in accordance with that section (i.e. no later than August, 2015), the Permittees must also collect soil samples at a depth of 2 feet at the locations specified in Table 5-2 and analyzed for the same parameters as the surface samples. The Permittees objected to this condition on the basis that, according to the Permittees, the Department had not established that it was necessary to protect human health and the environment and that sampling beyond the operational fence of the TTU would not be indicative of subsurface conditions in the area. The Permittees raised this objection at the hearing and in their post-hearing filings. The Department presented evidence and arguments in support of the provision at the hearing and in its post-hearing filings.

Response: The intent of Permit Section 5.9.1 is to ensure that migration of hazardous constituents through soil to groundwater is not occurring. Moreover, in his final order, the Secretary explained his reasons for finding that the Department had met the burden of establishing that the provision is necessary to protect human health and the environment. The Secretary found that, based on evidence presented by the Department and its consultant, AQS, the subsurface sampling requirement provided a reasonable method to ensure that migration of hazardous constituents through soil or groundwater do not result in an adverse effect on human health or the environment.

68. **Comment:** Citizen Action objects to the continued use of the TTU for open air burning of explosives and explosives contaminated waste without pollution controls near the major metropolis of Albuquerque, the lack of any reliable air monitoring systems at the TTU, and the lack of notification to the public as to when the wastes will be burned. Citizen Action argues that the TTU threatens human health and the environment by its emissions during burn operations and thus fails to meet the applicable requirements of 40 CFR 264 Subpart X. (See 40 CFR § 264.600 et seq.).

NMED Response: Treatment events at the Thermal Treatment Unit (TTU) will release, through air emissions, ash (carbon produced from burned wood and paper items) 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). Silver is present in the ash when SASN is treated at the TTU. The Permittees and the NMED have modeled air emissions from the TTU. Modeling results predict no significant adverse effect to the environment, to the public, or to onsite workers. There is no regulatory provision that requires Permittees to notify the public

when wastes will be treated at the TTU. However, the Permit at Section 5.5.1 (1) does require Permittees to notify the KAFB Fire Department before each treatment event as a precaution.

NMED does not have the authority or jurisdiction to regulate air quality in Bernalillo County. The City of Albuquerque and Bernalillo County have air quality jurisdiction including over federal lands and facilities, pursuant to 42 USCA 7401(a) (3), 42 USCA 7418 (a), and Executive Order No. 12088 (1978), as amended by Executive Order No. 12580 (1987). The City of Albuquerque Environmental Health Department has authority—via the City of Albuquerque, the County of Bernalillo, and the Albuquerque/Bernalillo County Air Quality Control Board—to regulate air emissions from open burn activities at the TTU, pursuant to the Federal Clean Air Act, 42 U.S.C. §§7401 to 7642 (1992); the New Mexico Air Quality Control Act, Article 2, NMSA 1978, and the Albuquerque/Bernalillo County Joint Air Quality Control Regulations. An administrative unit within the Environmental Health Department, the Air Quality Division, issued to Permittees an air quality permit for the TTU. The City of Albuquerque "Open Burn Permit #14-0013" does not require the Permittees to install air monitoring systems at the TTU or pollution controls. The Air Permit does not require the Permittees to notify the public prior to any open burn activities. The Air Permit requires only that the Permittees notify local fire authorities before igniting each burn.

Furthermore, NMED has collected and analyzed soil samples at the TTU which show that the concentrations of the hazardous waste constituents in the soil do not threaten human health or the environment. The Department has added to the Permit (see Permit Section 5.1) an air sampling requirement to confirm conservative assumptions of

the air modeling. Soil samples will be periodically collected under the requirements of Permit Part 5, Section 5.9 (Soil Monitoring Requirements).

The Department does not believe that adding pre-burn public notices to the Permit is reasonable or necessary based on this comment.

69. **Comment:** Citizen Action states that the regulatory history of the TTU is unclear and is not set forward in the Draft Permit. It also adds that the TTU cannot properly be included as part of the Permit because it was not part of earlier Part B applications.

NMED Response: The TTU is subject to the regulations set forth in 40 CFR Part 264 Subpart X. The Permit renews the original TTU permit issued November 4, 1994. It is not necessary or reasonable to report in the body of Permit the regulatory history of the TTU. However, the current TTU operating permit states, in permit attachment 9, Section 1.4, that the TTU was constructed in 1969 and began operations in 1970. The Part B Permit Application includes the request to renew the TTU operating Permit. Including all historical data in the Permit obfuscates requirements with unnecessary content; and it would only lengthen the Permit and make it more time consuming to read and understand. The Department does not believe that any modification of the Permit was warranted based on this comment.

70. **Comment:** Citizen Action states that a groundwater investigation is necessary at the TTU under 40 CFR §§ 264.90-100 for corrective action under § 264.101 that provides where the "Owner or operator of a facility seeking a permit for the treatment, storage or disposal of hazardous waste must institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any solid waste management unit at the facility, regardless of the time at which

waste was placed in such unit." Citizen Action adds that the corrective action provisions of 40 CFR §§ 264.90-100 must be included in the Permit for the TTU as well as the other units to be permitted at SNL.

NMED Response: There is no evidence of any significant release of contaminants at the TTU which would require corrective action, and especially not a groundwater investigation. However, with respect to Permit Section 5.9.1, the Department has required one-time subsurface soil sampling in order to confirm that no possible threat to groundwater exits. Additionally, the TTU is not a regulated unit, and thus, is not subject to the groundwater monitoring requirements under 20.4.1.500 NMAC, which incorporates 40 CFR §§ 264.90-100. The Permit provides for corrective action, should any become necessary, in Permit Sections 6.8 and 8.1.1. The Department does not believe that any modification of the Permit was necessary based on this comment.

71. **Comment:** Citizen Action commented that the TTU should not be permitted, and should undergo closure. Citizen Action adds that the current closure scheme is not appropriate for the TTU. They state that the closure methods for the TTU are based on the assumption that releases of hazardous waste and/or hazardous waste constituents to the environment did not occur. Furthermore Citizen Action states that there is potential for release of hazardous waste or constituents from the TTU to air, soil and groundwater and uptake through the food chain and air pathway for incidental ingestion, dermal contact and inhalation. Citizen Action also stated that routine environmental monitoring at the TTU is not conducted, and that there is potential for explosions from the reactive wastes treated in the TTU.

NMED Response: NMED believes that the TTU is safe to operate and that the Permittees can continue to operate it safely and in a manner that protects human health and the environment. NMED also believes that when the TTU is no longer needed for treatment of hazardous waste, the TTU can be closed in a manner that meets the performance standards set forth in Permit Section 5.5. The regulations require that any releases that occur are controlled, minimized, or eliminated to protect human health and the environment. Permittees thermally treat reactive and ignitable waste at the TTU; and these wastes are especially sensitive and can explode, which is why it is safer to thermally treat those wastes at the TTU rather than to transport them to any other location for treatment.

Closure requirements in Permit Part 6 and Permit Attachment G are stringent in order to protect human health and the environment. Permittees are required to conduct environmental sampling for TTU closure, pursuant to Permit Sections 6.3.7 and 6.3.8. The TTU design prevents potential releases of hazardous waste or constituents from run-off. The TTU design diverts run-off to a catch tank where it is collected and stored (see Permit Attachment Section A.3.4). Liquid waste evaporation is almost nonexistent, because the burn pan lid is closed except when adding waste, treating waste, and cleaning and maintaining the pan.

Although releases of contaminants will occur during operations of the TTU, such releases are not expected to adversely impact human health and the environment bases on modeling studies. Little, if any, contamination will be released from the TTU during times the unit is not active, as the unit is sealed (the lid on the burn unit is to be closed) during such times and wastes are not stored at the unit. Additionally, sampling and

analysis has demonstrated that the levels of contaminants released at the TTU during its operating life to date (more than 40 years) do not pose a threat to human health or the environment. The Department has added to the Permit (see Permit Section 5.1) an air sampling requirement to confirm conservative assumptions of the air modeling. Permittees are required to monitor surface soil (Permit Section 5.9) during the active life of the unit to ensure that human health and the environment are protected.

Groundwater contamination is not expected to occur from operation of the TTU because the amount of waste generated in Building 6715 and treated at the TTU is small and groundwater is deep (on the order of 500 feet below ground surface). As noted above in Response to Comment 67, the Department has required one-time subsurface soil sampling in order to confirm definitively that no possible threat to groundwater exits.

The Department does not believe that any modification of the Permit was warranted based on this comment.

72. **Comment**: Citizen Action states that the closure of the TTU burn pan lid does nothing to prevent the release of contaminants during loading and burning.

NMED Response: The burn pan lid must be open during burn events and during loading. Any spills during loading of the burn pan are subject to clean up under Permit Section 5.6.2. The Department does not believe that any modification of the Permit was warranted based on this comment.

73. **Comment**: Citizen Action states that SWMU 111, adjacent to the TTU, was used for disposal to the subsurface, liquid wastes from operations involving explosives wastes that contained RCRA contaminants from Building 6715 and the TTU. They assert that, although boreholes were drilled, no monitoring for the groundwater was done even

though significant silver contamination is present. Citizen Action further states that the sump at SWMU 111 was not properly addressed by the NMED and should not have been granted Corrective Action Complete status. They add that the TTU and Building 6715 site must be characterized again because of past and possibly ongoing releases and the request that the TTU be permitted.

NMED Response: SWMU 111 is tracked in Table K-4 of Permit Attachment K; and it was investigated, characterized, and found suitable for corrective action complete (CAC) without controls (the old term "No Further Action" or "NFA" has been replaced with the term "CAC"). CAC status was granted in November 2001. No new information has been provided to the NMED that indicates that SWMU 111 presents a threat to human health or the environment. The Department does not believe that any modification of the Permit was warranted based on this comment.

74. **Comment:** Citizen Action contends that characterization of the types of explosives for combustion, and "explosives contaminated wastes," is not detailed enough, and that the characterization fails to explain whether or not other RCRA wastes are present and being burned. Citizen Action also alleges that acetone and other solvents, as well as mercury and barium that are commonly used in high explosives were not described by types and quantities. They also state that depleted uranium and other toxic metals may be present in fragments, powders and residues that are burned and will be released to the atmosphere. Citizen Action also states that combustion byproducts are not described and that dioxin-furans may be present in the air emissions or ash released from the TTU.

NMED Response: Wastes that are prohibited are found in Permit Section 5.2. Authorized wastes that can be treated in the TTU are limited to those listed in Table 5-1,

Permit Section 5.3 and Permit Attachment B.2; waste characterization is covered under Permit Attachment C (Section C.3.4.1 for characterization of wastes to be treated, Section C.3.4.4 for characterization of treated waste residues, Table C-3 for additional parameters, characterization methods, and rationale for treated wastes at the TTU). Mercury, barium, and uranium are not present in the wastes treated at the TTU. Combustion products are described in Section A.3.2. Small amounts of dioxin and furan compounds may be generated by the treatment operations at the TTU due to the burning of small amounts of plastic and some explosives. The air modeling included these compounds; they should not pose any significant threat to human health or the environment. Surface soil will be monitored during the active life of the unit to ensure that human health and the environment are protected. The Department does not believe that any modification of the Permit was warranted based on this comment.

75. **Comment:** Citizen Action commented that "the number of burn events that will be conducted at the TTU on an annual basis was not presented." Citizen Action also states that "the habitat at the site is already damaged by emissions from operations that will continue to limit food chain uptake," and that the operations "have created a dead zone".

NMED Response: The number of burn events that will be conducted on an annual basis is not specified because it can vary significantly. Instead, Permit Section 5.3 provides the maximum quantities of waste that can be treated at the TTU on an annual basis and per burn event. Limiting food chain uptake in the habitat would also lessen intake of any contaminant and thus protect the environment.

There is no evidence of a "dead zone" at the TTU, nor is there evidence that TTU operations have damaged the environment. The immediate area surrounding the TTU is

kept clear of vegetation and other combustible materials for the purpose of fire prevention. The Department does not believe that any modification of the Permit was warranted based on this comment.

76. **Comment**: Citizen Action comments that the SNL Site-Wide Environmental Impact Statement (SWEIS) Table 5.4.2-1 indicates the capacity of the TTU on an annual basis is 7,300 lbs rather than 1,200 gallons as indicated in the Draft Permit.

    NMED Response: The SWEIS likely cites an attempt to provide an average weight of hazardous waste. But because the hazardous waste treated at the TTU will vary by proportion and chemical composition, the weight (7300 pounds) of waste reported in the SWEIS cannot be easily converted to volume of waste (1200 gallons). Thus, Permit Section 5.3 limits the quantity of waste based on both volume and weight. The Department does not believe that any modification of the Permit was warranted based on this comment.

77. **Comment:** Citizen Action expresses concern over the amounts of liquid wastes and solid wastes being burned and states that wastes should be fully characterized as to types and amounts. Citizen Action further states that controls for reactive wastes are poorly described in the draft Permit, and that incinerator ashes and other wastes and their method to be disposed of are not described.

    NMED Response: Authorized wastes treated in the TTU are limited to those in Permit Section 5.3 and Permit Attachment B Section B.2. Waste characterization is covered under Permit Attachment C (Section C.3.4.1 for characterization of wastes to be treated, Section C.3.4.4 for characterization of treated waste residues, Table C-3 for additional parameters, characterization methods, and rationale for wastes treated at the TTU).

Permit Section 5.3 and Attachment B.2 establish the amounts of waste the TTU may treat per burn event and per year. All wastes treated at the TTU are considered to be reactive and ignitable. Management of such wastes is covered under Permit Sections 2.1-2.4, 2.10, 2.12, and 5.4-5.7. Treatment residues are to be disposed of in accordance with the regulations (see Permit Sections 2.4.6-2.4.8 and 5.5.3). The Department does not believe that any modification of the Permit was necessary based on this comment.

78. **Comment:** Citizen Action alleged that no RCRA monitoring wells have been installed at the TTU for releases and detection of contaminants that may be in the soil or groundwater. Citizen Action also stated that no data has been collected from boreholes, groundwater monitoring wells or measurements made for the saturated and unsaturated zone at the TTU, adding that the hydrologic setting beneath the TTU and Building 6715 is not characterized. Citizen Action maintains that no monitoring, analysis, inspection, response, reporting and corrective action in compliance with 40 CFR § 264.101 has been performed at the TTU and Building 6715 as required by 40 CFR § 264.602. Citizen Action asserts that the TTU has released quantities of silver and other contaminants that constitute significant evidence of contamination for which detection monitoring is required under §§ 264.90-100.

NMED Response: The TTU is not a regulated unit, but a hazardous waste management unit, and is not subject to the groundwater monitoring requirements under 40 CFR § 264.90-100. Soil samples were collected at the TTU on November 21, 2013. See also Responses to Comments 64 and 66. The Department does not believe that any modification of the Permit was necessary based on this comment.

79. **Comment:** Citizen Action commented that the figure showing the TTU layout and drainage control features fails to indicate the direction of the flow for groundwater at the TTU.

    NMED Response: As shown on base-wide water-level maps, groundwater beneath the TTU flows westerly. The Department does not believe that any modification of the Permit was necessary based on this comment.

80. **Comment:** Citizen Action commented that the location of the TTU within Technical Area III is not shown on a figure nor is the surrounding land uses such as Isleta Pueblo and the Mesa del Sol residential development. Citizen Action is also concerned that road access and public roads in relation to the TTU are not shown, as well as the TTU Evacuation Route and Emergency Access in relation to public roads and facilities.

    NMED Response: Figure 9 through Figure 14 in Permit Attachment L apply to the TTU. Figure 9 (Location of the TTU at the Facility, within TA-III) shows the boundary of the Isleta Pueblo with respect to the location of the TTU. Mesa del Sol, not shown on Figure 9, is located west of the west boundary of Kirtland Air Force Base (Figure 9). Figure 12 of Permit Attachment L illustrates the drainage control features at the TTU. Figure 11 of Permit Attachment L shows the "Water runoff flow" direction into the catch tank illustrated on Figure 11. Figure 45 of Permit Attachment L shows evacuation routes and the access road and parking east of the TTU. The Department does not believe that any modification of the Permit was necessary based on this comment.

81. **Comment:** Citizen Action argues that Building 6715 should have a Permit because it is a generator of hazardous wastes that are ignitable, reactive and incompatible and creates solid and liquid wastes that are transferred to the TTU.

NMED Response: Generators are not required to obtain permits under RCRA. Therefore, the generation of waste in Building 6715 does not require a permit. The treatment of hazardous waste at the TTU does require a permit. The Department does not believe that any modification of the Permit was necessary based on this comment.

PERMIT PART 6

82. **Comment:** The Permittees request that the last two sentences of the second requirement under Permit Section 6.2.1 (of the 2012 draft Permit) be deleted on the basis that the requirement to protect human health and the environment in accordance with the closure performance standard in 40 CFR 264.111 is sufficient and is clearly stated in the first sentence. Furthermore, the Permittees argue that specifying particular risk levels is not consistent with Department guidance *Risk Assessment Guidance for Investigation and Remediation,* February 2012, updated June 2012.

NMED Response: At the hearing, the Department opposed the requested revision of the Permit and maintained that, based on Department policy all hazardous waste management units should be closed to residential criteria, regardless of anticipated future land use. More specifically, immediately prior to the hearing, the Department withdrew alternative language for Section 6.2.1 that it had proposed in Exhibit 1 of its Notice of Intent, and proposed instead to revert to the language contained in the 2012 draft Permit. The Permittees (Applicants at the time) continued to oppose the 2012 draft language on the basis that, in accordance with EPA policy, closure based on industrial criteria satisfies the cleanup standard of 40 CFR § 264.111 when the reasonably anticipated future land use is industrial.

In his Final Order, the Secretary found that the Department did not demonstrate that closure to residential land use standards is factually or legally appropriate. The Secretary found that no federal or state law requires remediation to a residential land use scenario as part of closure and that closure based on an industrial land use scenario will satisfy the standard identified in 40 CFR § 264.111when the reasonably foreseeable land use is industrial; that EPA guidance documents recognize that closure to non-residential levels is appropriate; and that Permit Section 1.20 provides an enforceable mechanism for restricting future land use. Accordingly, the Secretary ordered that paragraph 2 of Permit Section 6.2.1 be revised to read:

> "Any release of a hazardous waste or hazardous constituent to environmental media at or from the Unit has been remediated to a concentration level that is protective of human health and the environment. Cleanup levels for environmental media may take into account non-residential exposure assumptions and future land use, provided that those assumptions are clearly stated and that any land use restrictions are maintained."

83. **Comment:** The Permittees requested that the second item under the second paragraph of Permit Section 6.6 (requiring the Permittees to identify the laboratory analytical methods detection limits for all constituents of concern) be deleted on the basis that it is redundant and unnecessary. The analytical method detection limits (MDLs) are established through the analytical methods which are specified in the sampling and analysis plan portion of the closure plan, the amendment of which is the subject of this Permit section. Additionally, the actual MDLs and practical quantitation limits that are achieved during closure will be included with the analytical data in the closure report.

NMED Response: Method detection limits will be included in the SAP of the Closure Plan for a HWMU, whether the Closure Plan is amended or not. Thus, the original text does not materially add to the requirements in this Permit Section and can be deleted.

The second paragraph of Permit Section 6.6 is revised as requested by the Permittees to read: "If necessary, the Permittees shall amend a Permitted Unit's closure plan at closure to correctly and completely identify all constituents of concern as specified in Permit Section 6.5(1)."

84. **Comment:** Citizen Action states that closure performance standards must include 40 CFR § 264.10 through 40 CFR § 264.16, 264.178, 264.197, 264.228, 264.310, 40 CFR Part 264 Subparts F (§§ 264.90-100), G, I, J, K, N and X, and 40 CFR § 270.32(b). Furthermore, if the Facility cannot achieve clean closure standards under those parts, the Facility must submit a Post-Closure Plan according to 40 CFR § 264.117.

NMED Response: Some of the regulations cited by Citizen Action do not apply to the HWMUs as discussed below. Closure performance standards are found at 20.4.1.500 NMAC incorporating 40 CFR § 264.111, in 40 CFR Part 264 Subpart G. The closure performance standards are included in Permit Section 6.2. The rest of Subpart G does not concern closure performance standards, but the other closure requirements, which are found in various sections of Permit Part 6 and Permit Attachment G.

The regulations at 40 CFR §§ 264.10 through 264.16 are general facility standards and do not concern closure. The regulations at 40 CFR §§ 264.197, 264.228, 264.310, in 40 CFR Part 264 Subparts J, K, and N, respectively, are closure requirements for tanks, surface impoundments, and landfills, and do not apply to any of the HWMUs at SNL addressed by the Permit. The rest of these Subparts (J, K, N) do not concern closure.

The regulations at 40 CFR § 264.178, in 40 CFR Part 264 Subpart I, apply to container storage units and are included in Permit Section 6.4 and Permit Attachment G, as discussed above. The rest of Subpart I does not concern closure.

The regulations at 40 CFR § 264.601, in 40 CFR Part 264 Subpart X, require in part that a miscellaneous unit (in this case, the TTU) close in a manner that is protective of human health and the environment. The rest of Subpart X does not concern closure, although post-closure is addressed under 40 CFR § 264.603 and Permit Part 7.

The regulations under 40 CFR Part 264 Subpart F do not apply to any of the HWMUs in the Permit (none is a regulated unit as defined at 40 CFR § 264.90(a)(2)). The regulation at 40 CFR § 270.32(b) concerns Department's omnibus authority to impose conditions as necessary to protect human health and the environment. The Permit contains the necessary provisions to carry out closure in a manner protective of human health and the environment, and contains requirements for closure as applicable for each HWMU.

All HWMUs that the Permittees have requested to be permitted are covered under the Permit. All other HWMUs at the Facility are closed or are inactive and will be closed. When the Permit was finalized and becomes effective, several interim status HWMUs at SNL will be permitted for the first time. All of the HWMUs are subject to post-closure care should it become necessary (see Permit Section 6.2.2 and Permit Part 7). Any HWMU that is not permitted and has not been closed would be subject to corrective action, if necessary, in accordance with 40 CFR § 264.101. Provisions requiring a post-closure plan and amendment of the Permit are included in Permit Sections 7.1.1 and 7.1.2.

The SWMUs and AOCs listed in the tables in Permit Attachment K are not and will not be permitted units, are not treatment, storage, or disposal facilities, and are not subject to closure and post-closure care. Instead, the SWMUs and AOCs in Table K-1

are subject to corrective action under 40 CFR § 264.101. The granting of Corrective Action Complete status for a SWMU or AOC may be predicated on the establishment and implementation of long-term controls, which is addressed under Permit Attachment M. Thus, the Department does not believe that any modification of the Permit was necessary or appropriate based on this comment.

85. **Comment:** CARD and Agua es Vida Action Team state that Permit is incomplete because it lacks a closure plan and post closure care permit for the Mixed Waste Landfill (MWL). The MWL is a regulated unit because it received waste after July 26, 1982, thus, a closure plan and a post **c**losure permit are required.

NMED Response: The MWL is a SWMU, was not and will not be permitted as a HWMU, was not operated under interim status as a HWMU, and is not a regulated unit under 40 CFR § 264.90(a)(2). The MWL is not subject to the requirements for a closure plan and post-closure care permit for HWMUs. Instead, it is subject to corrective action for a SWMU under 40 CFR § 264.101, the Consent Order and the Final Order of May 26, 2005. The corrective action provisions under 40 CFR § 264.101 are incorporated into the SNL Consent Order (April 2004). The MWL Long-Term Monitoring and Maintenance Plan (LTMMP) will become enforceable under the Permit (under Attachment M) when the Permit is effective and corrective action at the MWL is deemed complete.

Determination of corrective action complete status for the MWL will require a Class III permit modification and will be subject to the opportunity for public comment and a public hearing. Although not a post-closure care plan, the LTMMP is essentially equivalent to such a plan with respect to technical requirements. The Department does not believe that any modification of the Permit was necessary based on this comment.

PERMIT PART 7

86. **Comment:** Regarding Permit Part 7, Citizen Action requested that post-closure provisions be provided for all "units" at SNL, in addition to permitted units, in the event clean closure cannot be achieved. They indicate that an entire section needs to be added into the Draft Permit providing for Post-Closure Care, including a Post-Closure Care Plan for the Facility, with provisions for amendment by means of permit modification.

NMED Response: The Department does not agree with the requested revision. All hazardous waste management units that the Permittees have requested be permitted are covered under the Permit. When the Permit was finalized, several interim status units at SNL became permitted. All of these units are subject to post-closure care, should it become necessary (see Permit Section 6.2.2 and Permit Part 7). Provisions requiring a post-closure plan and amendment of the Permit are included in Permit Sections 7.1.1 and 7.1.2. SWMUs and AOCs are not permitted units, and are not subject to closure and post-closure care. SWMUs and AOCs are subject to corrective action as necessary to protect human health and the environment. This includes the possibility of implementing long-term controls. The Department does not believe that any modification of the Permit was necessary based on this comment.

PERMIT PART 8

87. **Comment:** Citizen Action states that the SNL Consent Order does not meet the requirements of 40 CFR § 270.1(c)(7) for an enforceable document.

NMED Response: The Consent Order was issued under the authority of the New Mexico Hazardous Waste Act, NMSA 1978 § 74-4-10 and the New Mexico Solid Waste

Act, NMSA, 1978 § 74-9-36(D). Under 40 CFR § 271.16 (e), an enforceable document must have available the following remedies: (1) Authority to sue in courts of competent jurisdiction to enjoin any threatened or continuing violation of the requirements of such documents, as well as authority to compel compliance with requirements for corrective action or other emergency response measures deemed necessary to protect human health and the environment; and (2) Authority to access or sue to recover in court civil penalties, including fines, for violations of requirements in such documents. New Mexico is an authorized State under RCRA and has available under its authorities the aforementioned remedies, which are listed in the Consent Order under Sections III.I.5 and III.U. Thus, the Consent Order is an enforceable document. NMED does not believe that any modification of the Permit was necessary based on this comment.

88. **Comment:** Citizen Action states that there is no regulatory authority under RCRA for the permit to now include the SWMUs as a part of the permit.

    NMED Response: Contrary to the comment, the NMED has the authority (and the obligation) to include SWMUs and set forth corrective action requirements in a permit (see 40 CFR §§ 264.101(b)) and 264.100(a)) or other enforceable document, such as an order on consent. For the SNL Facility, corrective action requirements are addressed in the Consent Order, with the exception of certain conditions that are addressed under Permit Section 8.1.1. NMED does not believe that any modification of the Permit was necessary based on this comment.

89. **Comment:** The Permittees request that Permit Section 8.10.2.6 be revised to be consistent with Section 8.10.2.4.v with respect to the lamp to be used on photo-ionization

detectors. Specifically, they ask that reference to an 11.7 eV (electron volt) lamp be revised to 10.6 eV or higher.

NMED Response: NMED agrees that the language in Permit Section 8.10.2.6 should be consistent with that in Section 8.10.2.4.v, as requested. A 10.6 eV lamp is commonly used for photoionization detectors. Thus, Permit Section 8.10.2.6 is revised to read: "Organic vapors (using a photo-ionization detector with a 10.6 or higher eV (electron volt) lamp, a combustible vapor indicator or other method approved by the Department);"

90. **Comment:** The Permittees request clarification of the first sentence of the second paragraph of Permit Section 8.10.2.8.ii. The existing text, as written, erroneously implies that a less-than-90-day storage area is a container.

NMED Response: NMED proposes to revise the text to clarify that less-than-90-day storage areas are not containers. Containers are used to store waste at the areas referenced in the comment. Permit Section 8.10.2.8.ii is revised as requested by the Permittees to read: "All purged groundwater and decontamination water shall be temporarily stored at satellite accumulation areas, less-than-90-day storage areas or transfer stations in labeled 55-gallon drums, or other containers approved by the Department until proper characterization and disposal can be arranged."

91. **Comment:** The Permittees request that Permit Section 8.10.2.8.iv be revised to clarify that trip blanks need only accompany shipping containers of VOC samples and need only be analyzed for VOCs.

NMED Response: NMED agrees that trip blanks are needed only when analyzing for volatile organic compounds (VOCs). Thus, Permit Section 8.10.2.8.iv is revised to read:

"Trip blanks shall be analyzed for VOCs at a frequency of one for each shipping container of VOC samples."

92. **Comment:** The Permittees request that punctuation be corrected (add comma) in Permit Section 8.2.1. In addition, at hearing the Applicant commented that Permit Section 8.2.1 should include a reference to Table J-1.2 as a listing of units where authorized treatment of hazardous waste will take place.

    NMED Response: NMED agrees with the comment and also notes that the citations to the Attachment J tables need correction. Therefore, Permit Section 8.2.1 is revised to read: "Attachment J, Tables J-1.1, J-1.2, J-2, and J-3, lists the hazardous waste management units at the Facility and their status (e.g., permitted, under post-closure care, closed)."

93. **Comment:** The Permittees request that Permit Section 8.11.1.2 be clarified by substituting a more applicable word that is consistent with the rest of the Permit Parts. More specifically, they request that the word "insure" be replaced with the word "ensure".

    NMED Response: NMED agrees with the comment. The sixth sentence of the first paragraph of Permit Section 8.11.1.2 is revised to read: "The filter system shall be inspected regularly to ensure that the system is functioning properly."

94. **Comment:** The Permittees request that Permit Section 8.11.2.2.i be clarified by substituting a more applicable word that is consistent with the rest of the Permit Parts. More specifically, they request that the word "insure" be replaced with the word "ensure".

NMED Response: NMED agrees with the comment. The third sentence of the third paragraph of Permit Section 8.11.2.2.i is revised to read: "Teflon tape can be used to wrap the threads to ensure a tight fit and minimize leakage."

95. **Comment:** The Permittees request that Permit Section 8.11.5 be clarified by substituting a more applicable word that is consistent with the rest of the Permit Parts. More specifically, they request that the word "insure" be replaced with the word "ensure".

    NMED Response: NMED agrees with the comment. The last sentence of the second paragraph of Permit Section 8.11.5 is revised to read: "After the grout has cured, the top two ft of the borehole shall be filled with concrete ensure a secure surface seal."

96. **Comment:** Citizen Action states that a total review of all the locations at SNL that comprise the SWMUs and AOCs has not been provided as required by RCRA. All SWMUs need to be set forth for corrective action under 40 CFR § 264.101. The permit should be denied because it does not identify all the areas at SNL that have released hazardous and mixed wastes as a result of generation, treatment, storage and disposal.

    NMED Response: The Permit lists all SWMUs and AOCs known to exist at the Facility. Any newly discovered SWMUs, AOCs, or releases, should any be found in the future, are covered under Permit Sections 8.1.1, 8.2.1 and 8.3.3 and Consent Order Section V. Corrective action, whether pursuant to the Permit or the Consent Order, must conform with 40 CFR § 264.101 or other regulations, as applicable. NMED does not believe that any modification of the Permit was necessary based on this comment. NMED also notes that this comment appears to conflict with another comment from Citizen Action, asserting that there is no regulatory authority to include SWMUs in the Permit.

97. **Comment:** Citizen Action states that the public currently reviewing the draft permit for some time now has been led to believe that the SWMUs and AOCs would be subject to corrective action under the Consent Order.

NMED Response: Corrective actions for SWMUs and AOCs are subject to the requirements of the Consent Order, except as provided under Permit Section 8.1.1. Permit Section 8.1.1 states, in part that the Permittees shall conduct corrective action under the Permit (or other enforceable document) rather than the Consent Order, in the following circumstances:

(1) New releases and newly discovered releases from HWMUs at the Facility;

(2) At HWMUs undergoing closure and post closure care;

(3) Implementation of the controls, including long-term monitoring;

(4) Releases that occur or are discovered after the date on which the Consent Order terminates.

Permit Section 8.1.1 also states, in part: "Corrective action for releases from hazardous waste management units that commingle with releases originating from other sources undergoing corrective action under the Consent Order shall be conducted under the Consent Order. Any SWMU or AOC for which corrective action is required that is not subject to corrective action under the Consent Order shall be subject to corrective action under this Permit Part and 40 CFR §§ 264.100 and 264.101, which are incorporated herein by reference."

It was intended that this integration of the Permit and Consent Order be consistently maintained throughout the permit development process. As of now, all known SWMUs and AOCs subject to corrective action are being addressed under the Consent Order.

NMED does not believe that any modification of the Permit was necessary based on this comment.

98. **Comment:** Citizen Action states that the draft permit adds a provision that is not present in the Consent Order, Section III.W.1. That provision would effectively remove the application of the Consent Order from the permit. This constitutes a modification of the Consent Order without any notice to the public that such a modification is being made to the Consent Order. This violates the Consent Order Section III.W.5, *Preservation of Procedural Rights,* for the public that provides for public participation, including public notice and comment, administrative hearings, and judicial appeals, when a modification is being made. (See Consent Order III.J.1). The permit must incorporate the Consent Order as a part of the Permit and the provision 5 must be removed from the draft permit.

    NMED Response: The Consent Order is an enforceable, independent document, and as such, does not need to be and will not be incorporated into and become a part of the Permit. No rights of the public under Section III.W.5 of the Consent Order are being vacated or affected. Additionally, the Consent Order is not being modified in any way. NMED does not believe that any modification of the Permit was necessary based on this comment.

99. **Comment:** Citizen Action states that the Consent Order at Section III.W.1. provides that "operating units" at the Facility must be addressed for new releases of hazardous wastes, closure and post-closure requirements of Subpart G, including long-term monitoring. The draft permit now contrives to limit the Consent Order requirements to only "Permitted Units."

NMED Response: The term "operating units" in the Consent Order (at Section III.W.1) is considered by the NMED to be synonymous with the term "Permitted Unit" in the Permit. The Permit does not limit or modify the Consent Order in any way. NMED does not believe that any modification of the Permit was necessary based on this comment.

100. **Comment:** Citizen Action opines that permit provisions concerning corrective action required pursuant to 40 CFR § 264.101 are inadequate. It must set forth language that would include the provisions of 40 CFR §§ 264.90-100 for all the areas that can be brought under corrective action.

NMED Response: The regulations at 40 CFR §§ 264.90-100 cover only regulated units as defined at 40 CFR 264.90(a)(2). There are no regulated units subject to this Permit (the Chemical Waste Landfill, which is a regulated unit, is subject to a separate post-closure care permit that is already in effect). All other corrective action under RCRA at the Facility is being conducted currently under the Consent Order and pursuant to 40 CFR § 264.101, as the latter is the appropriate and applicable regulation. Thus, the Permit is correct as written. NMED does not believe that any modification of the Permit was necessary based on this comment.

101. **Comment:** Citizen Action states that it opposes the lack of characterization of RCRA wastes present at the Sled Track Complex (TA-III), which must receive corrective action and monitoring. An April 9, 1987 Memorandum to Tom Clark (USEAP) from AT Kearney states "There are a number of outdoor test sites at the facility where explosive and impact testing is conducted. Residue from these experiments typically includes shrapnel, lead, beryllium, and depleted uranium; other metals and radioactive materials may also be present."

NMED Response: The sled tracks are currently active test facilities. The Long and Short Sled Tracks are listed as SWMUs 83 and 240, respectively, on Table K-1 of Permit Attachment K (under Operable Unit 1306) as requiring corrective action.

It is possible that other outdoor test facilities could become SWMUs or AOCs in future. Many of the SWMUs listed in Table K-1 and Tables K-3 and K-4 of Permit Attachment K are outdoor testing facilities where explosives and impact testing have been conducted in the past. Thus, such testing facilities are being addressed as required by the regulations. NMED does not believe that any modification of the Permit was necessary based on this comment.

102. **Comment:** Citizen Action states that the draft permit references inclusion of the Long Term Monitoring and Maintenance Plan (LTMMP) for the Mixed Waste Landfill (MWL). The draft permit is being issued before issues surrounding the LTMMP are resolved.

NMED Response: The MWL is not being permitted. The MWL LTMMP was approved on January 8, 2014. Once the Permit becomes effective, and after corrective action is completed at the MWL, the LTMMP will become enforceable under the Permit (part of Attachment M) as it specifies the administrative and physical controls for the landfill. Issuance of the draft permit was not dependent on approval of the LTMMP. NMED does not believe that any modification of the Permit was necessary based on this comment.

103. **Comment:** Citizen Action states that RCRA requires as follows in pertinent part from 40 CFR §264.101: (a) The owner or operator of a facility seeking a permit for the treatment, storage or disposal of hazardous waste must institute corrective action as necessary to protect human health and the environment for all releases of hazardous

waste or constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in such unit.

Therefore, §264.101 requires the following changes (in bold italics) to the statements in the draft permit to identify that the facility permit shall implement the Corrective Action Program of §264.100 and the monitoring requirements of §§264.90 through 264.101:

1. New releases of hazardous waste or hazardous waste constituents from Permitted Units***, Regulated Units and any SWMU*** at the Facility ***require compliance with §§264.90 through 264.101 for the Proposed Permitted Units, Regulated Units, and any SWMU at the Facility.***
2. The closure and post closure care requirements of 40 C.F.R. Part 264, Subpart G, as they ***require compliance with §§264.90 through 264.101 for the Permitted Units, Regulated Units, and any SWMU at the Facility****;*
3. Implementation of the controls, including long-term monitoring ***in accord with the requirements of §§264.90 through 264.101,*** for any Solid Waste Management Unit (SWMU) on this Permit's list of SWMUs for which the Department has issued a determination of "Corrective Action Complete With Controls";
4. Releases of hazardous wastes or hazardous constituents ***at any SWMU, Permitted Unit or Regulated Unit*** that occur after the date on which the Consent Order terminates; and ***require compliance with §§264.90 through 264.101 for the Permitted Units, Regulated Units, and any SWMU at the Facility***
5. For the purpose of complying with the requirements of this Permit for the Mixed Waste Landfill (MWL) ***which is recognized by RCRA as a Regulated Unit and***

therefore, must comply with the requirements of §§264.91 through 264.100 in lieu of §264.101 for purposes of detecting, characterizing and responding to releases to the uppermost aquifer" (§264.90).

NMED Response: Corrective action is to be conducted under the Consent Order, except as required under Permit Section 8.1.1. Permit Section 8.1 cites 40 CFR § 264.101 as one of the authorities for requiring the Permittees to conduct corrective action as necessary to protect human health and the environment. The groundwater requirements at 40 CFR §§ 264.90-100 do not apply to the HWMUs that are now under the Permit, and do not apply to any of the SWMUs or AOCs listed in the Permit, including the MWL, and none is a regulated unit. *See* 40 CFR § 264.90(a)(2), providing that 40 CFR §§ 264.90 – 100 apply at *regulated units* in lieu of the requirements of 40 CFR § 264.101. Requirements for corrective action for the MWL have been removed from the Permit, as it is subject to corrective action under the Consent Order (as the case for all other known SWMUs and AOCs at the Facility). The MWL is not being permitted. The MWL LTMMP was approved on January 8, 2014. Once the Permit becomes effective, and corrective action is completed at the MWL, the LTMMP will become enforceable under the Permit (part of Attachment M) as the LTMMP specifies the administrative and physical controls for the landfill.

The Permit is correct as written. NMED does not believe that any modification of the Permit was necessary based on this comment.

104. **Comment:** CARD, Agua es Vida Action Team, and Our Endangered Aquifer Working Group state that corrective action is required to be conducted beyond the facility boundary (42 U.S.C. 6924(v), 20.41.500 NMAC, incorporating 40 CFR §264.101) where

necessary to protect human health or the environment and yet they do not see any monitoring efforts mentioned concerning the Mountain View Neighborhood source wells, noted as containing perchlorate, a known cause of thyroid disruption and birth defects, as specified in Secretary Curry's November 26, 2008 letter to EPA. Perchlorate, a by-product of rocket fuel production, is a scourge to water resources wherever military facilities are found. SNL dismantled its community ambient air monitors when ambient air monitors on base showed alpha emissions close to regulatory standards (refer to the monitoring and assessment website, Albuquerque Peace Center grant researchers). Corrective Action begins with careful monitoring. The issue of SNL's responsibility to protect human health and the environment beyond the facility boundary is an issue to consider in hearings or negotiations.

NMED Response: Permit Section 8.3.1 and Consent Order Section III.A require corrective action beyond the facility boundaries where necessary.

However, conducting corrective action under RCRA and monitoring for releases that are *not* related to hazardous waste management are governed by different environmental laws and regulations. In general, monitoring activities that fall outside of RCRA are addressed in other permits where applicable, and are not included in hazardous waste permits.

NMED does not believe that any modification of the Permit was necessary based on this comment.

PERMIT ATTACHMENT A

105. **Comment:** The Permittees request that Permit Attachment A, Section A.4.5.5 be revised to read:

4. "Placing the waste, along with inert void-filling materials as appropriate, inside a commercially available container made of inert or non-corroding materials such as polyethylene or stainless steel and sealing the container to encapsulate the waste. This method is not used to treat D008 radioactive lead solids.

5. Placing the waste in a container consisting of an outer shell with a liner of inert or non-corroding material such as polyethylene resin or stainless steel. After the wastes and inert void-filling materials as applicable, are placed in the container, the resin is heated to seal the container and lid (e.g. using a resistance-heated wire system embedded in the container lid). Non-corroding materials such as stainless steel are also available as containers and liners; the stainless steel is welded closed to seal the container and encapsulate the wastes. The Permittees use containers of various sizes, depending on the volume and dimensions of waste items to be macroencapsulated."

The intent of the requested revision is for consistency with the requirements in Permit Part 4, Section 4.5.

NMED Response: NMED will make the modification as stated above. The revisions will clarify the various methods often used by the Permittees to accomplish macroencapsulation.

Permit Attachment A, Section A.4.5.5 will be revised to read:

4. "Placing the waste, along with inert void-filling materials as appropriate, inside a commercially available container made of inert or non-corroding materials such as polyethylene or stainless steel and sealing the container to encapsulate the waste. This method is not used to treat D008 radioactive lead solids.

5. Placing the waste in a container consisting of an outer shell with a liner of inert or non-corroding material such as polyethylene resin or stainless steel. After the wastes and inert void-filling materials as applicable, are placed in the container, the resin is heated to seal the container and lid (e.g. using a resistance-heated wire system embedded in the container lid). Non-corroding materials such as stainless steel are also available as containers and liners; the stainless steel is welded closed to seal the container and encapsulate the wastes. The Permittees use containers of various sizes, depending on the volume and dimensions of waste items to be macroencapsulated."

106. **Comment:** The Permittees request that Permit Attachment A, Section A.4.6.1 be revised to read:

"3. Document check to determine whether treated waste is an oxidizer as defined in 40 CFR § 261.21(a)(4). "

The request for the revision is to keep the requirement current with changes to the regulatory requirements for the hazardous waste characteristic of ignitability.

NMED response: NMED agrees to make the modification as stated above to keep the language consistent with current regulatory requirements for hazardous waste characteristics, in this case, an ignitable waste which is an oxidizer under 40 CFR § 261.21(a)(4).

Permit Attachment A, Section A.4.6.1 is revised to read:

"3. Document check to determine whether treated waste is an oxidizer as defined in 40 CFR § 261.21(a)(4)."

107. **Comment:** The Permittees request that Permit Attachment A, Section A.6.5 be revised to read:

"Personnel work in pairs and maintain contact with each other."

It is not necessary that both personnel be waste handlers. Please clarify this statement to minimize confusion with the job titles in Table F-2 in Permit Attachment F.

NMED response: NMED agrees to make the modification as stated above to clarify that under the buddy system, both personnel do not need to be handling waste to fulfill the requirement to work in pairs, so long as they maintain contact with each other.

Permit Attachment A, Section A.6.5 is revised to read:

"Personnel work in pairs and maintain contact with each other."

108. **Comment:** The Permittees request that Permit Attachment A, Section A.7.4 be revised to read:

"The LCRS sump shall be inspected on a quarterly basis for the presence of leachate in accordance with Permit Attachment Section E.10.4."

The citation to E.9.4 is incorrect, and should be corrected to E.10.4.

NMED response: NMED agrees to correct the reference. Additionally, a quarterly basis is adequate in this case because only small amounts of leachate are produced and captured by the LCRS at the Corrective Action Management Unit (CAMU).

Permit Attachment A, Section A.7.4 is revised to read:

"The LCRS sump shall be inspected on a quarterly basis for the presence of leachate in accordance with Permit Attachment Section E.10.4."

PERMIT ATTACHMENT B

109. **Comment:** The Permittees request that the sentence fragment in Attachment B be deleted that reads "Waste listed in Table B-2 that must be treated using a technology specified in the table of 40 C.F.R. §"

NMED Response: The sentence fragment is deleted, as it was a typographical error.

PERMIT ATTACHMENT C

110. **Comment:** The Permittees requested that the first sentence of Permit Attachment C, Section C.2.1 be revised to add "unused" as an additional example in the description of laboratory chemical waste.

NMED Response: The Department agrees with the requested addition. Therefore, the first sentence of Permit Attachment C, Section C.2.1 is revised to read: "Laboratory chemical waste includes unused and used commercial chemical products or manufacturing chemical intermediates (in solid, liquid, or contained gas forms) declared to be waste, such as reagents, metal powders, oxidizers, reactive metals, elemental mercury, elemental sodium, spent or discarded solvents and other materials."

PERMIT ATTACHMENT D

111. **Comment:** The Permittees requested that the first row of Permit Attachment D, Table D-1 be revised to reflect the current designation of the responsible New Mexico state emergency response agency.

NMED Response: The Department agrees with the requested revision. Therefore, the first row of Permit Attachment D, Table D-1 is revised to read: "The New Mexico Department of Homeland Security and Emergency Management" and "Mutual aid involving an actual or potential emergency, assistance in training and emergency response".

112. **Comment:** The Permittees requested that a footnote be added to Permit Attachment D, Table D-1 to clarify that the Permittees are not a direct party to the agreement between the USFS and KAFB.

NMED Response: The Department agrees with the requested revision. Therefore, the third row, first column of Permit Attachment D, Table D-1 is revised to read: "The U.S. Forest Service[a]". Additionally, a footnote has been added at the end of Table D-1 that reads: "[a] The Permittees are not a direct party to the agreement between the U.S. Forest Service and Kirtland Air Force Base".

113. **Comment:** The Permittees requested that the contact information for the emergency coordinator listed in the first row of Permit Attachment D, Table D-5, be revised to reflect an updated home phone number.

NMED Response: The Department agrees with the requested revision. Therefore, the home phone number listed in the first row, fourth column of Permit Attachment D, Table D-5 is revised to read: "(505) 899-1956".

114. **Comment:** The Permittees requested that the contact information for the emergency coordinators for the TTU listed in the second and third rows of Permit Attachment D, Table D-7, be revised to reflect a change in the first and second alternate emergency coordinators.

NMED Response: The Department agrees with the requested revision. Therefore, the second row of Permit Attachment D, Table D-7 designating the first alternate emergency coordinator is revised to read: "Daniel Dow, Sandia National Laboratories, P.O. Box 5800, Albuquerque, NM 87185, Office phone: (505) 284-1622, (505) 951-6781 (pager), Home phone: (505) 892-0497". The third row of Permit Attachment D, Table D-7

designating the second alternate emergency coordinator is revised to read: "Marcus Chavez, Sandia National Laboratories, P.O. Box 5800, Albuquerque, New Mexico, (505) 284-1278 (office), (505) 283-1709 (pager), Home Phone, (505) 974-8918".

115. **Comment:** The Permittees requested that Permit Attachment D, Table D-8, Building 6921, fourth section, *Fire Extinguishers*, be revised to change the location of one of the fire extinguishers in Building 6921 to improve access for use and inspections.

NMED Response: The Department agrees with the requested revision. Therefore, Table D-8 is revised to include the following under the entries for Building 6921, column 3, row 4: "By north personnel door in electrical/mechanical room; In hallway near restrooms; By northwest personnel door of assay area; By east personnel door in southeast counting room".

116. **Comment:** The Permittees requested that Permit Attachment D, Table D-10, Building 6597, first section, *Spill Control and Decontamination Equipment*, be revised to change the storage locations of the absorbent material and the personal protective equipment to reflect current operations.

NMED Response: The Department agrees with the requested revision. Therefore, Table D-10, Building 6597, first section, *Spill Control and Decontamination Equipment*, is revised to include the following under the entries for absorbent and personal protective equipment in the third column: "In equipment storage in Building 6597".

117. **Comment:** The Permittees requested that Permit Attachment D, Table D-10, Building 6597, fourth section, *Fire Extinguishers*, be revised to add an additional fire extinguisher on the north wall to reflect current operations.

NMED Response: The Department agrees with the requested revision. Therefore, Table D-10, Building 6597, fourth section, *Fire Extinguishers*, is revised to include the following in the third column: "By personnel doors on north, east, south, and west walls".

118. **Comment:** The Permittees requested that Permit Attachment D, Table D-10, Building 6597, fifth section, *Fire Suppression, Branch line from the Building 6597 sprinkler system, Temporary Room*, be revised to remove this sprinkler as fire protection is provided by the additional extinguisher near the Temporary Room (see previous comment).

NMED Response: The Department agrees with the requested revision. Therefore, Table D-10, fifth row is revised by deleting the text "Branch line from the Building 6597 sprinkler system, Temporary Room" from the second and third columns.

119. **Comment:** The Permittees requested that the contact information for the emergency coordinator listed in the first row of Permit Attachment D, Table D-11, be revised to reflect an updated pager number.

NMED Response: The Department agrees with the requested revision. Therefore, the pager number listed in the first row, third column of Permit Attachment D, Table D-11 is revised to read: "(800) 341-1137".

120. **Comment:** The Permittees requested that a second alternate be added to the list of emergency coordinators for the Auxiliary Hot Cell Unit.

NMED Response: The Department agrees with the requested revision. Therefore, Permit Attachment D, Table D-11 is revised to add the following information: "Second

Alternate, Bryan Green, Sandia National Laboratories, P.O. Box 5800, Albuquerque, New Mexico, (505) 284-3161 (office), (505) 280-5118 (cell), (505) 897-6366".

121. **Comment:** The Permittees requested that the contact information for the second alternate CAMU emergency coordinator listed in the third row, second column of Permit Attachment D, Table D-15, be revised to reflect the correct name spelling.

NMED Response: The Department agrees with the requested revision. Therefore, the name of the second alternate emergency coordinator is corrected to read: "Danielle Nieto".

122. **Comment:** Citizen Action commented that no actual contingency plan was presented in the draft Permit, and that the public is entitled to review the terms of an emergency plan during consideration of the Permit.

Response: The Contingency Plan is contained in Attachment D of the draft and final Permits, and was subject to public comment along with the rest of the draft Permit. The Permit does not need to be modified based on this comment.

PERMIT ATTACHMENT E

123. **Comment:** The Permittees requested that Permit Attachment E, Section E.2 be revised to clarify that the Unit-specific inspection records need only be maintained for the active life of the Unit.

NMED Response: The text is revised for consistency with the contents of Permit Attachment E. The first sentence of paragraph 2, Permit Attachment E, Section E-2 is revised to read: "Inspection records for each Unit shall be maintained at the Facility for the active life of the Unit, except as provided by 20.4.1.501.A (5) NMAC, Permit Section

7.2.2 and Permit Attachment H (Post-Closure Care Plans for the Corrective Action Management Unit)."

124. **Comment:** The Permittees requested that Permit Attachment E, Section E.2 be revised by deleting monitoring equipment from the inspection requirements as it is not applicable to the batch treatment operations conducted at the Permitted Units.

NMED Response: NMED agrees to make the requested revision, since monitoring equipment is not used during the batch treatment operations conducted at the Permitted Units. The second item listed under Section E.4.1 is revised to read:

2. Treatment areas that were used, including treatment equipment.

125. **Comment:** The Permittees requested that NMED also delete monitoring equipment from the monthly inspection requirements in Section E.4.3(4) as it is not applicable to the batch treatment operations conducted at the Permitted Units.

NMED Response: NMED agrees to make the requested revision, since monitoring equipment is not used during the batch treatment operations conducted at the Permitted Units. Section E.4.1 (4) is revised to read: 4. Treatment areas, including general conditions (floors, walls), and treatment equipment and tools.

126. **Comment:** The Permittees requested that NMED delete the requirement to inspect monitoring equipment listed in the second section under Table E-1 of Permit Attachment E, as monitoring is not applicable to the waste management operations at the Hazardous Waste Handling Unit (HWHU).

NMED Response: NMED agrees to make the requested revision, since monitoring equipment is not used during the batch treatment operations conducted at the Permitted Units.

The requirement to inspect monitoring equipment at the HWHU is deleted from the second section of Table E-1. The text deleted was in the 9th row, columns 1-3, of the second section of the Table:

Monitoring equipment

Instruments in good condition, operational, calibrated

Daily, when, and where wastes are handled. Monthly otherwise.

127. **Comment:** The Permittees requested that NMED revise the second section of Table E-2 to be consistent with the pre-burn operation requirements in Permit Part 5, Section 5.5.1.

NMED Response: NMED agrees to make the requested revision in the frequency of inspection in order to maintain consistency with the pre-burn requirements in Permit Part 5.

The second section of Table E-2, 2nd section, 7th row, 3rd column, reads:

Prior to treatment. Monthly otherwise.

128. **Comment:** The Permittees requested that NMED delete the requirement to inspect monitoring equipment listed in the second section under Table E-3 of Permit Attachment E, as monitoring is not applicable to the waste management operations at the Radioactive and Mixed Waste Management Unit (RMWMU).

NMED Response: The next to last row in the second Section of Table E-3, Attachment E, which requires inspection of monitoring equipment, is deleted. Such a requirement is not applicable to the batch treatment operations to be performed at the RMWMU. Specifically, the following language is deleted which was found in the next to last row in the second section of Table E-3, Attachment E:

Monitoring equipment

Instruments in good condition, operational, calibrated

Daily when and where wastes are handled. Monthly otherwise.

129. **Comment:** The Permittees requested that NMED delete the requirement for monthly inspection and activation of the pump in the fourth section of Table E-6 for consistency with Section E.10.4 which requires quarterly inspection and activation of the pump.

NMED Response: The requirement for monthly inspection and activation of the pump is deleted for consistency with Section E.10.4, which requires quarterly inspection and activation of the pump. Quarterly activation and inspection of the LCRS pump is adequate because little leachate is being generated at the CAMU.

Therefore, Permit Attachment E, Section Table E-6, second section is revised to read:

LCRS

Leachate in sump

Quarterly[c]

Manually activate pump/inspect for leachate collection Quarterly.

130. **Comment:** The Permittees requested that NMED revise the last section of Table E-6 to require repair in accordance with the requirements in Section E.3, which are comprehensive and require timely corrective action to ensure the problem does not lead to an environmental or human health hazard. Requiring corrective action as discussed in Section E.3 is more comprehensive than the 10-day requirement, and it is also consistent with requirements for the other waste management units. Furthermore, Section 2.11.2 in

Part 2 requires that "Maintenance, repair, and replacement of emergency equipment shall be performed as needed to ensure proper function and in a timely manner."

NMED Response: The revision is made to require repair in accordance with the requirements in Permit Attachment E, Section E.3, which require timely corrective action to ensure the problem does not lead to an environmental or human health hazard. The revision is consistent with requirements for the other hazardous waste management units. The last row, fifth column, in the last section of Table E-6, Attachment E, is revised to read:

As soon as possible, in accordance with Section E.3 of this Permit Attachment.

PERMIT ATTACHMENT F

No comments were received on Attachment F that are not addressed under NMED's responses to comments under Permit Part 2.

PERMIT ATTACHMENT G

131. **Comment:** The Permittees request that Figure G.1-1 be revised to incorporate the current office trailers as shown in Figure 4 in Permit Attachment L.

NMED Response: Figure G.1-1 is revised so that it shows the most updated information for the office trailers as requested by the Permittees.

PERMIT ATTACHMENT H

132. **Comment:** The Permittees requested the insertion of a reference to the pertinent parts of Permit Attachment E into the second paragraph of Permit Attachment H, Section H.4.1.

NMED Response: The Department agrees with the requested revision. Therefore, the second paragraph of Permit Attachment H, Section H.4.1 is revised to read: "Cover damage that exceeds the limits described in Permit Attachment E, Section E.10.2 and Table E-6, shall be repaired within 60 days to a condition that meets or exceeds the original design".

133. **Comment:** The Permittees requested the insertion of a reference to the pertinent parts of Permit Attachment E into the first sentence of Permit Attachment H, Section H.4.2.

NMED Response: The Department agrees with the requested revision. Therefore, the first sentence of Permit Attachment H, Section H.4.2 is revised to read: "Based upon the results of the storm-water diversion structure inspections, erosion or damage that exceeds the limits described in Permit Attachment E, Section E.10.3 and Table E-6 shall be repaired within 60 days to a condition that meets or exceeds the original design".

134. **Comment:** The Permittees requested that the first sentence of Permit Attachment H, Section H.4.4 be revised to delete the dashes and clarify that the text is complete.

NMED Response: The Department agrees with the requested revision. Therefore, the first sentence of Permit Attachment H, Section H.4.4 is revised to read: "The VZMS components shall be maintained/repaired within 60 days, as needed, to maintain them in good condition, based upon inspection results".

135. **Comment:** The Permittees requested that the first sentence of Permit Attachment H, Section H.4.5 be revised to delete the dashes and clarify that the text is complete.

NMED Response: The Department agrees with the requested revision. Therefore, the first sentence of Permit Attachment H, Section H.4.5 is revised to read: "The fence,

gates, and warning signs shall be maintained/repaired within 60 days, as needed, to maintain them in good condition, as indicated by quarterly inspections".

136. **Comment:** The Permittees requested that the first sentence of Permit Attachment H, Section H.5.1 be revised to reflect the monitoring schedule that was followed during the first year following the closure of the containment cell.

NMED Response: The Department agrees with the requested revision. Therefore, the first sentence of Permit Attachment H, Section H.5.1 is revised to read: "During the initial stages of the post-closure care period, the primary subliner (PSL), vertical sensor array (VSA), and chemical waste landfill and sanitary sewer line monitoring subsystems (CSS) of the vadose zone monitoring system (VZMS) were monitored on a monthly and annual basis for one year".

137. **Comment:** The Permittees requested that the first sentence of Permit Attachment H, Section H.5.2.1 be revised to reflect consistency with the time-domain reflectometry used in the VSA monitoring system, which reports volumetric soil moisture data.

NMED Response: The Department agrees with the requested revision. Therefore, the first sentence of Permit Attachment H, Section H.5.2.1 is revised to read: "In the case of a soil moisture increase greater than 4 percent above baseline (expressed as gravimetric percent moisture content at CSS and PSL locations or expressed as volumetric percent moisture content at VSA locations) at any monitoring location(s), the Permittees shall immediately confirm the result by collecting and analyzing additional samples".

138. **Comment:** The Permittees requested that the fourth sentence of the third paragraph of Permit Attachment H, Section H.6.2 be clarified by substituting the word

"ensure" for the word "insure" so that it will be more consistent with the rest of the Permit Attachments.

NMED Response: The Department agrees with the requested revision. Therefore, the fourth sentence of the third paragraph of Permit Attachment H, Section H.6.2 is revised to read: "To ensure the accuracy of the moisture measurement using the correlation formula the neutron probe must be recalibrated to account for source decay and drift of the electronic counting system."

PERMIT ATTACHMENT I

Attachment I is reserved. No comments were received on Attachment I.

PERMIT ATTACHMENT J

139. **Comment:** The Permittees requested that NMED revise the third row of Table J-1.2, which shows the daily quantity of waste to be treated at the Auxiliary Hot Cell Unit (AHCU) to reflect the volume of larger containers that may be used for macroencapsulation at the AHCF.

NMED Response: The revision is made to the operating capacity for macroencapsulation. It was not the NMED's intent to limit the treatment capacity to only 55 gallons per day. The requested treatment capacity of 840 gal/day is not an unreasonable volume and can be safely managed at the Auxiliary Hot Cell Unit (AHCU). Permit Attachment J, Section Table J-1.2, last row, third column, the capacity data for macroencapsulation is revised to read:

840 gal/day, 6,000 gal/yr.

PERMIT ATTACHMENT K

140. **Comment:** The Permittees requested that NMED delete SWMU 96 from the group of SWMUs listed in OU 1309 in Table K-3. SWMU 96 is already listed with its correct name under OU 1302 in the same table.

NMED Response: SWMU 96 is deleted from the group of SWMUs listed under OU 1309 in Table K-3, Permit Attachment K, because the SWMU does not need to be listed twice and it properly belongs listed under the table heading for OU 1302. SWMU 96 is listed under OU 1302 in the same table.\

141. **Comment:** The Permittees request that in Table K-1, under Miscellaneous Sites, the names of the Areas of Concern listed as Tijeras Area Arroyo Ground-Water (TAG) Investigation, TA-V Area Ground-Water investigation, Burn Site Area Ground-Water investigation be revised for consistency with current names which are Tijeras Arroyo Ground-Water (TAG) Investigation, TA-V Ground-Water Investigation, and Burn Site Ground-Water Investigation.

NMED Response: The names of the Areas of Concern are now corrected. The names of the AOCs in Permit Attachment K, Section Table K-1, Miscellaneous Sites, are revised as requested by the Permittees to read: "Tijeras Arroyo Ground-Water (TAG) Investigation, TA-V Ground-Water Investigation, and Burn Site Ground-Water Investigation."

PERMIT ATTACHMENT L

142. **Comment:** The Permittees request that the titles for the following figures be revised for clarity and consistency (underlined text is that to be inserted, strike-out text is that to be deleted).

Figure 4: Hazardous Waste Handling Unit, Hazardous and Mixed Waste Management Areas

Figure 27: Views, Manzano Storage Bunker, Type B, Floor Plan, Bunker 37034

Figure 28: Views, Manzano Storage Bunker, Type C, Floor Plan, Bunker 37118

Figure 29: Views, Manzano Storage Bunker, Type D, Floor Plan, Bunkers 37045, 37055, and 37057

Figure 32: Post-Closure Perimeter Boundary – Corrective Action Management Unit

Figure 34: Corrective Action Management Unit North-South Cross-Section of Leachate Collection and Removal System Sump ~~Containment Cell Liner Details 2~~

Figure 35: Corrective Action Management Unit East-West Cross-Section of Containment Cell ~~Liner Details 1~~

Figure 40: Cross-Section View of Corrective Action Management Unit Containment Cell and Primary Subliner Monitoring System

Figure 51: Local Area Map of Corrective Action Management Unit Containment Cell Evacuation Routes

NMED Response: The titles in the List of Figures for Figures 4, 27, 28, 29, 32, 34, 40 and 51 are revised to improve clarity and consistency. The List of Figures is also revised so that the title of Figure 35 is correct. However, the proposed change noted in the comment is slightly incorrect. In order to correspond with the correct titles as shown on the figures, the following titles in the List of Figures read:

"Figure 4: Hazardous Waste Handling Unit, Hazardous and Mixed Waste Management Areas"

"Figure 27: Views, Manzano Storage Bunker, Type B, Bunker 37034"

"Figure 28: Views, Manzano Storage Bunker, Type C, Bunker 37118"

"Figure 29: Views, Manzano Storage Bunker, Type D, Bunkers 37045, 37055, and 37057"

"Figure 32: Post-Closure Perimeter, Corrective Action Management Unit"

"Figure 34: Corrective Action Management Unit North-South Cross- Section of Leachate Collection and Removal System Sump"

"Figure 35: Corrective Action Management Unit West-East Cross-Section of Containment Cell"

"Figure 40: Cross-Section View of Corrective Action Management Unit Containment Cell and Primary Subliner Monitoring Subsystem"

"Figure 51: Local Area Map of Corrective Action Management Unit Containment Cell Evacuation Routes"

143. **Comment:** The Permittees request that a revised Figure 4 be substituted into the Permit for the original Figure 4.

NMED Response: Figure 4 is replaced with the new figure included with the comment. The title of the new figure more accurately reflects the waste types that may be stored and managed at the Hazardous Waste Handling Unit.

144. **Comment:** The Permittees request that revised Figures 10, 17, 18, 19, and 22 be substituted into the Permit for the original corresponding Figures so that the titles are consistent with the titles listed on the List of Figures in Permit Attachment L.

NMED Response: Figures 10, 17, 18, 19, and 22 are replaced with the corresponding new figures included with the comment so that the titles of the figures will be consistent with those in the List of Figures.

145. **Comment:** The Permittees request that revised Figures 7, 8, 43, and 44 be substituted into the Permit for the original corresponding Figures. The figures need to be revised to reflect changes to the HWHU access road.

NMED Response: Figures 7, 8, 43, and 44 are replaced with the figures included with the comment to account for changes to the HWHU access road. The access road to the Unit needs to be accurately shown in the figures.

146. **Comment:** The Permittees request that revised Figure 43 be substituted into the Permit for the original corresponding Figure 43. The original figure does not indicate the future evacuation assembly point for the HWHU.

NMED Response: Figure 43 is replaced with the figure included with the comment to indicate the future evacuation assembly point for the HWHU. The assembly point should be accurately depicted on the figure because such areas are places where personnel are to muster to ensure that all personnel are accounted for in the event of an emergency.

147. **Comment:** The Permittees request that revised Figure 45 be substituted into the Permit for the original corresponding Figure 45. The original figure does not indicate the future evacuation assembly point for the TTU.

NMED Response: Figure 45 is replaced with the figure included with the comment to indicate the future evacuation assembly point for the TTU. The assembly point should be accurately depicted on the figure because such areas are places where personnel are to muster to ensure that all personnel are accounted for in the event of an emergency.

PERMIT ATTACHMENT M

148. **Comment:** The Permittees request that in the last paragraph of Permit Attachment M, Section M.1, the figure numbers be revised, from 1-7 to 1-6, for consistency with the SWMUs and AOCs listed in Table M-1.

NMED Response: The cited figure numbers are corrected to be consistent with the SWMUs and AOCs listed in Table M-1 as requested. The text, in the last paragraph of Permit Attachment M, Section M.1, is revised to read: "Except for SWMUs 96 and 187, the SWMU/AOC locations are shown in Figures 1 through 6 of this Permit Attachment. The locations of SWMUs 96 and 187 could not be shown on Figures 1-6 due to their large spatial distribution."

149. **Comment:** The Permittees request that in the first sentence of Permit Attachment M, Section M.2.2, the reference to Table 1 be corrected to Table M-1.

NMED Response: The reference to Table 1 in the first sentence of Permit Section M.2.2 of Attachment M is corrected to read: "Table M-1".

150. **Comment:** The Permittees request that Figures 2, 4, and 5 of Permit Attachment M be replaced with new figures provided with the comment.

NMED Response: Figures 2, 4, and 5 are replaced with the figures included with the Applicant's comment to be consistent with Table M-1 and Table K-3. The new figures have removed the depiction of SWMUs that are not listed on the tables and that are not relevant in this situation.

151. **Comment:** The Permittees request that Figure 7 of Permit Attachment M be deleted and the page marked as reserved. Figure 7 is not consistent with Table M-1 or Table K-3.

NMED Response: Figure 7 of Permit Attachment M is deleted, as SWMUs 94-B, 94-F and 94-H, the only SWMUs depicted on Figure 7, are not listed on Table K-3 or Table M-1. It is not necessary to mark the page as "reserved", as there are no following pages.

OTHER PUBLIC COMMENTS RECEIVED AT THE HEARING

152. **Comment:** A citizen commented that NMED should require community air monitors throughout Albuquerque due to emissions of tritium, a dangerous radionuclide that causes cancer and other adverse health effects.

NMED Response: NMED is not aware of any specific sources of tritium emissions to the atmosphere from SNL, aside from low levels of tritium emitted from the Mixed Waste Landfill. Based on risk assessment, the low levels of tritium released from the Mixed Waste Landfill do not pose unacceptable risk to human health or the environment. In any case NMED does not have jurisdiction over radioactive wastes under RCRA. The City of Albuquerque and Bernalillo County have jurisdiction over air quality issues within the city and county limits. The Department does not believe that any modification of the Permit was necessary based on this comment.

153. **Comment:** A citizen commented that the permit would give legal permission to contaminate and pollute Albuquerque's precious water, soil, and air. She stated that the permit would allow up to 10,000 pounds per year of hazardous waste to contaminate the air from open burning. The permit should also include the Mixed Waste Landfill. NMED should not grant permits without considering the region in its totality including cumulative effects on water, soil, and air. The total watershed should be addressed as one corrective action unit. The groundwater at Tijeras Arroyo, Technical Area 5, the Mixed Waste Landfill, and the "burn site" cannot be contained. The permit should focus on

clean-up jobs rather than limiting the amount of contamination and pollution. Clean-up means removal, not covering or dilution of contaminants. The commenter cited several environmental issues around the state, including the Kirtland fuel spill, the pit rule for the oil and gas industry, contamination at WIPP, and the uranium legacy in Western New Mexico, and asserted that the permit hearing is another pollution challenge where New Mexico is a sacrificial zone.

NMED Response: NMED agrees that clean water, air, and soil are precious resources that NMED is charged with protecting, in compliance with applicable laws. NMED disagrees that issuance of the Permit will allow contamination of these resources at levels posing unacceptable risk to human health or the environment. NMED believes that no additional clean-up actions are needed at the 24 SWMUs/AOCs that were subject to corrective action complete determinations, based on the analyses documented in the Administrative Record and explained in NMED's technical testimony. The Mixed Waste Landfill and the Kirtland fuel spill are being addressed in separate processes, which are also subject to opportunities for public participation. The issuance of a permit to SNL to govern the storage and treatment of hazardous waste and conduct post-closure care of the Corrective Action Management Unit does not eliminate or affect those processes. Additionally, the Permit sets forth clean-up requirements for situations where contamination has occurred but is not subject to the Consent Order. The MWL is tracked under the Permit as all other SWMUs/AOCs. The Kirtland fuel spill is not the responsibility of the Permittees, but instead, is being cleaned up by the Air Force as their responsibility. The risk-based analysis to determine whether corrective action is complete at a given solid waste management unit or area of concern evaluates risk for all

contaminants of concern at the site and follows the guidance issued by EPA. NMED believes that groundwater monitoring at SNL, where needed at SWMUs and AOCs, is conducted in an appropriate manner based on geology, hydrology, and other factors. With respect to open burning, the statement that 10,000 pounds per year of hazardous waste will be emitted is not accurate. The allowable mass of 9500 pounds per year represents the gross amount of waste to be combusted, which includes the weight of water, liquid wastes, and solid materials (e.g., paper, cardboard, plastic, and other debris) which contain the hazardous waste to be treated. The hazardous waste component is typically only a small proportion of this total mass. In addition, some of the hazardous constituents in the hazardous waste will not be emitted to the air, but will remain in the ash and will be further treated and disposed of as hazardous waste. The Department does not believe that any modification of the Permit was necessary based on this comment.

154. **Comment:** A citizen questioned why NMED would even consider issuing a permit that will be dangerous to the community and the state as a whole.

NMED Response: NMED does not believe that actions taken in compliance with the Permit will be dangerous to the community or the state. NMED's basis for adopting each section and subsection of the Permit was explained in detail in NMED's written and oral testimony. The Department does not believe that any modification of the Permit was necessary based on this comment.

155. **Comment:** A citizen commented that the government wants to make New Mexico a sacrifice area, that the Air Force has polluted the water, the air is totally polluted, uranium mining at Mt. Taylor causes cancer in Albuquerque; Cochiti Lake

contains radionuclides that pollute Albuquerque drinking water, that NMED, SNL, and Air Force employees do not care about the public.

NMED Response: NMED disagrees with the conclusions asserted, and further notes that issues regarding the Air Force, Mt. Taylor and Cochiti Lake are not relevant to the Permit. NMED employees are conscientious and professional and have expended enormous efforts to ensure that the Permit is protective of human health and the environment. See also Response to Comment 153. The Department does not believe that any modification of the Permit was necessary based on this comment.

156. **Comment:** A citizen offered comments on the development of a permanent war economy and asserted that what is practiced at SNL is not science but pseudo-science because it involves the destruction of life rather than the enhancement of life.

NMED Response: NMED has no authority to determine the mission or scope of work of SNL, which is determined by Congress and the DOE. As an administrative agency, NMED is limited to the authority delegated to it by the legislature, which in this case involves the implementation and enforcement of hazardous waste laws and regulation. The Department does not believe that any modification of the Permit was necessary based on this comment.

157. **Comment:** A citizen commented that there are a lot people with respiratory problems in the state and questioned why above-ground burning of hazardous wastes from old weapons is allowed when there are precautions and safety measures and others measures that could be taken.

NMED Response: For the reasons explained in NMED and SNL testimony, NMED believes that treatment by open burning at the Thermal Treatment Unit is the only

currently practical method and is a safe method of treating the explosive waste created during experiments conducted by SNL at Building 6715. (It is not used to treat waste from old weapons). The Permit imposes numerous conditions on open burning at the TTU to minimize the risk to the public and SNL workers. Conservative modeling of air emissions from the TTU and soil sampling done to date indicates that the risk to public health posed by air emissions should be negligible. In addition, NMED has required that SNL conduct air sampling to confirm the absence of unacceptable risk to the public. The Department does not believe that any modification of the Permit was necessary based on this comment.

158. **Comment:** A citizen commented that he is afraid to drink tap water and questioned what Sandia is doing to stop the infiltration of radionuclides in the drinking water.

NMED Response: NMED generally does not have jurisdiction over radionuclides under RCRA. However, NMED has no information indicating radionuclide contamination at SNL threatens the drinking water aquifer. Additionally, Albuquerque's drinking water supply is safe and is being monitored by the Albuquerque/Bernalillo County Water Utility Authority under the Safe Drinking Water Act and is under the oversight of the NMED's Drinking Water Bureau. The Department does not believe that any modification of the Permit was necessary based on this comment.

159. **Comment:** A citizen commented that: 1) that the permit should be one that emphasizes and allows dialogue with the community about clean air and clean water; 2) that air monitors should be installed throughout Albuquerque and Bernalillo County with readings that are available to the public; 3) that open burning of hazardous waste should

be stopped or controlled with covers and filtration systems; and 4) that the public should be notified about offsite releases, and about decisions that have to do with public safety.

NMED Response: With respect to point (1), dialogue with the community about clean air and clean water is covered in the Community Relations Plan at Permit Part 1, Section 1.18. That Plan is to describe how the Permittees will establish an open working relationship with communities, the Isleta Pueblo, and interested members of the public. The Plan also requires that the Permittees provide a mechanism for the timely dissemination of information in response to individual requests. Regarding points (2) and (4) about air monitoring throughout Albuquerque and notification of the public on releases and matters of public safety, NMED has no jurisdiction over air quality in Bernalillo County. Air quality in Bernalillo County is regulated by the City of Albuquerque Environmental Health Division. NMED can only regulate air quality at the TTU to the extent authorized under the Resource Conservation and Recovery Act, which for a hazardous waste management unit like the TTU basically contains only generalized requirements that prohibit adverse air impacts at levels posing an unacceptable threat to air quality. Although air modeling, based on conservative data inputs, indicates that air quality should not pose unacceptable risk to the human health or the environment, the Permit requires that air monitoring be conducted at the TTU to prove definitively this point with hard data. Should the modeling results or inputs be proven wrong, NMED can modify or revoke the Permit as appropriate to address the problem. Furthermore, the Permit's Contingency Plan (in Attachment D, Section D.8) contains provisions that require the Permittees to notify various government entities, including the City of Albuquerque and the Isleta Pueblo, should there be an emergency incident and the public

could be affected by the emergency. With respect to point (3), see Response to Comments 157 and 162. The Department does not believe that any modification of the Permit was necessary based on this comment.

160. **Comment:** A citizen commented that, with respect to open burning of hazardous waste at the TTU, it should not cost "much to go ahead and investigate a better way to dispose of the hazardous waste rather than belching it out at the unknowing population." The commenter asserted that "cancer rates are rampant everywhere" and there are no filters or ways of disposing of waste. She urged NMED to "do something about the belching of all these radionuclides into the ocean."

NMED Response: Permit Part 5, Section 5.5.5 requires the Permittees to submit an open burn alternative treatment assessment report to the NMED no later than the eighth anniversary of the effective date of the Permit. The report is to include an analysis of risk to human health and the environment for each alternative discussed. Permit Part 5 Section 5.2 also limits the Permittees to treating only the waste types set forth in Permit Attachment B, and Table 5-1 of Permit Part 5. The Permittees are also prohibited from treating radioactive wastes and any waste outside those listed in Table 5-1 of Permit Part 5, and Permit Attachment B. The Permittees' testimony addressed in detail a current assessment of viable treatment options for the TTU. For now, open burning of the explosives wastes treated at the TTU is the only practical and is a safe method for treatment of these wastes, which are immediate hazard to life and safety due to their explosive components. Modeling and sampling indicate that the contaminants released by the TTU should not pose unacceptable risk to human health or the environment,

including the ocean. The Department does not believe that any modification of the Permit was necessary based on this comment.

161. **Comment:** A citizen raised concerns with the State's combined approach of Kirtland Air Force Base and Sandia National Laboratories (SNL) on KAFB's Bulk Fuels Facility Spill and SNL's MWL and TTU. He expressed frustration with the State's lack of commitment in making cleanups happen and the lack of openness regarding environmental issues at SNL.

NMED Response: The State has followed all laws and regulations in permitting and corrective actions for SNL, even in some cases exceeding public participation and comment period requirements. Although the comment on the Bulk Fuel Facility Spill is not relevant to the Hearing for SNL Permit, NMED is working with KAFB to cleanup the Bulk Fuel Facility Spill. The Department does not believe that any modification of the Permit was necessary based on this comment.

162. **Comment:** A citizen asserted that "Sandia pulled a fast one, along with collusion of NMED" by suppressing the results of the TechLaw Report that revealed the "…faultiness [and] danger of the MWL to the public." The commenter further asserted that:

1) Paul Hommert, SNL President, must meet with public,

2) The public must have more input into SNL's biannual meeting agendas,

3) All TTU pollutants must be identified, soil samples must be collected and burning must be conducted within a closed container with treatment of the emitted gases,

4) Independent toxicologist assessment of TTU impact on human health must be done, including claimed increases in still births and cancer in the South valley and NMED assurance as to toxicologist's impartiality,

5) No more extensions to the MWL's 5-year feasibility study for excavation of the landfill, and

6) Lockheed must commit to fully funding SNL's environmental cleanups.

NMED Response: With reference to point (1), the NMED has no authority to require a meeting between the President of SNL and the public; the Permittees are free to choose their representatives for the meetings required under the Permit. With respect to point (2), it is the NMED's understanding that, in biannual meetings, the Permittees typically requests agenda items for the next public meeting. Regarding point (3), gaseous emissions are identified for the TTU and have been evaluated in detail for their impact on human health and the environment. Soil samples have been collected in the past and will be collected again under Permit Part 5, Section 5.9 (Soil Monitoring Requirements). The capture of emissions has been considered in light of the modeled releases and the explosive and other characteristics of the waste as explained in detail in SNL's testimony. Regarding point (4) the NMED has no information that incidences of still births or cancer have increased in the South Valley, or information that would causally connect such incidences with operations at the TTU. The information that is available indicates that the TTU should not pose unacceptable risk to human health. Regarding point (5), although the requirement for 5-year reevaluations of the MWL is not relevant in this matter, an extension to this requirement has not been sought by the Permittees or authorized by the NMED. Finally, with respect to point (6), the NMED has no control on

the level of funding provided to the Facility by Congress. However, the Permittees have been meeting their obligations to complete corrective action under the Consent Order, including cleanup of contaminated sites that require remediation. The Department does not believe that any modification of the Permit was necessary based on this comment.

163. **Comment:** A citizen commented that SNL should follow United Nations (UN) Resolution 64292 in providing citizens with clean drinking water and to monitor the TTU and dig up the MWL. Not doing so, she claims, is about control and power.

NMED Response: NMED has no authority to require SNL to obey UN Resolutions. However, groundwater contamination at SNL sites has not impacted any drinking-water supply wells. Permit Sections 5.1 and 5.9 require sampling at the TTU to ensure protection of human health, the environment, and to definitively demonstrate that there is no potential for contaminants to migrate to groundwater. The remedy for the MWL, which includes the installation of an engineered cover (design completed and installed) and monitoring, was set forth in accordance with the Secretary's Order of May 26, 2005, in consideration of public input and public participation (including a hearing), as well as voluminous amounts of technical information submitted by the Permittees to the NMED. NMED is not aware of any credible information indicating that the remedy has failed to be protective of human health and the environment, and that excavation of the MWL is the only remedial option that remains to ensure such protection. The Department does not believe that any modification of the Permit was necessary based on this comment.

Other Comments Submitted in Post-Hearing Filings

164. **Comments:** Both the Permittees and NMED submitted minor substantive corrections to the Hearing Officer's Report, some of which applied to draft Permit

language. See U.S. Dept. of Energy and Sandia Corporations' Comments and Objections on the Hearing Officer's Report at p. 30; NMED's Comments on the Hearing Officers Report at pp. 1-6.

NMED Response: In accordance with the Secretary's Final Order at paragraph 4, the Permittees' minor corrections are accepted and have been incorporated into the Permit, and those corrections offered by NMED, which affect permit language have also been incorporated into the Permit. Specifically, the latter changes are at Permit Sections 1.20.1.(4) and 1.20.2.4, where the word "or" was inserted between "hazardous waste" and "hazardous constituents" in the following clause "The notice shall include the following . . . a description of any known or suspected presence of hazardous waste or hazardous constituents in environmental media."

165. **Comment:** Citizen Action commented that SNL's emergency response procedure involving a fire, explosion, or release of hazardous material is addressed through the contingency plan. In the event of an emergency, SNL would notify the City of Albuquerque which has the responsibility and authority to issue protection action recommendations and orders to the public including evacuation or protective sheltering. As SNL is a source of risk to the public for accidental exposure to hazardous waste, the permit should impose upon SNL greater responsibility than to only notify the City of Albuquerque Emergency Operations Center (EOC) in the event of an emergency.

NMED Response: Contrary to the comment, the Permit does require other entities to be notified if an emergency threatens human health or the environment outside of the Facility's boundary. Pursuant to Section D.6 of Permit Attachment D, the Permittees' Emergency Coordinator must notify its internal Emergency Operations Center in the

event of an emergency. Furthermore, in accordance with Permit Section 2.13.5.1, and as detailed in Section D.8 of Permit Attachment D, the Permittees must immediately inform the City of Albuquerque (not necessarily the EOC as indicated in the comment), KAFB command, and Isleta Pueblo in the event that residents of Albuquerque or Isleta Pueblo, or workers at KAFB could be affected by an emergency. The Permittees must also notify the New Mexico Department of Public Safety, the National Response Center, and the NMED if human health or the environment outside the SNL Facility is threatened. The above Permit conditions meet the notification requirements found at 40 CFR § 264.56.

Moreover, the nature of the Permittees operations does not warrant additional notification requirements. There are businesses within the Albuquerque metropolitan area where greater volumes of hazardous waste or hazardous materials are stored than are typically stored at any given time at the hazardous waste management units at SNL. In most cases, businesses are not required to have a permit to store hazardous waste (but are still subject to certain hazardous waste management regulations at 20.4.1 NMAC where hazardous wastes are generated but not stored in a manner requiring a permit). If properly managed in accordance with Permit requirements, the storage of hazardous waste at SNL should not pose any greater risk than that of other businesses with similar volumes and types of hazardous waste or hazardous materials.

No modification to the Permit was made based on this comment.

166. **Comment:** Citizen Action commented that it is the responsibility of the City of Albuquerque's Emergency Operations Center (EOC) to augment any emergency procedures for the public. SNL provides no signage itself to indicate public evacuation

routes in the event of an emergency because such signage is dictated by and within the authority of the City of Albuquerque rather than SNL or DOE. SNL is not aware of any signage of evacuation routes posted by the City of Albuquerque nor of any emergency-warning sirens or either radio or TV alternatives to alert the public in the event of any sudden emergency. Any directions for a planned and appropriate public response to an emergency would come through the City of Albuquerque's EOC. Any emergency/contingency plan of the City of Albuquerque EOC should have been included as an appendix to the draft Permit for public review.

NMED Response: The Permit sets forth requirements that the **Permittees** must meet to ensure protection of human health and the environment. The Permittees and the NMED have no control of the content of City of Albuquerque EOC emergency plans and how they may be maintained or updated. For this reason, inclusion of a City of Albuquerque EOC emergency response plan, which is likely to be highly generalized and not tailored towards hazardous waste management at SNL, would not add appreciably towards public safety.

No modification to the Permit was made based on this comment.

167. **Comment:** Citizen Action commented that SNL did not provide a telephone number or contact information for the Albuquerque Emergency Operations Center (EOC). As discovered by a phone call to the City, there is no public listing of a telephone number for the EOC. No steps that may be taken by EOC or the adequacy of any emergency response provided by the EOC could be reviewed. The Hearing Officer should impose a condition in the permit for SNL to provide such information.

NMED Response: The Permittees are required to contact the City of Albuquerque if human health or the environment outside the SNL Facility is threatened by an emergency. Presumably department heads within city government would engage the Albuquerque Emergency Operations Center if this was necessary as a response to an emergency. Additionally, the Permittees have no control on the content of emergency response plans that are adopted by the Albuquerque Emergency Operations Center, and may not even have access to such plans, or updates to such plans. As the Albuquerque Emergency Operations Center is a separate entity from the Permittees, it would be unreasonable to include in the Permit conditions that the Permittees would have to meet but would not be able to control. Additionally, as mentioned above, inclusion of a City of Albuquerque EOC emergency response plan, which is likely to be highly generalized and not tailored towards hazardous waste management at SNL, would not add appreciably towards public safety.

No modification to the Permit was made based on this comment.

168. **Comment:** Citizen Action commented that regarding emergency procedures, the Community Relations Plan (CRP) needs to require SNL's much more direct involvement regarding warning and assisting the community in the event of an emergency. Sprinklers, fire extinguishers, and phone calls do not begin to meet SNL's responsibility to the public and place the public at serious risk through negligible emergency preparedness and procedures. Under the current CRP, no provision exists for any direct notification to the public in the event of an emergency event. Provisions for direct notification of the public should be set forward as a part of the contingency plan. Citizen Action also commented that in the 2007 draft Permit, members on an e-mail stakeholder list were to be notified in

the event of an off-site release; but in the 2012 draft Permit, stakeholders would not be notified. Furthermore, documents to be included in the information repository are specified in Section 1.17 of the 2012 draft Permit. These are permit-related documents, and e-mail notification is required when new documents are added. These documents include notification of off-site releases and corrective action beyond the facility boundaries under Part 8 of the draft permit. The Hearing Officer should impose a condition in the SNL Permit to include a section for public participation in emergency planning as a part of the CRP.

NMED Response: Emergency planning is covered extensively in the Contingency Plan in Permit Attachment D. Thus, the public was already given the opportunity to participate in emergency planning to the extent it involves a hazardous waste management unit, when the draft Permit was released for public comment. Emergency preparedness for the SNL Facility is addressed extensively and adequately in Permit Section 2.13 and in the Contingency Plan in Permit Attachment D, and covers much more than just sprinklers, fire extinguishers, and phone calls.

The Permit requires local and other government entities to be notified of emergencies that threaten human health or the environment outside the Facility's boundary. Direct notification from the Permittees to citizens was judged by the Department to be infeasible. Notification and instructions to citizens during an emergency is a government function that should not be delegated to permittees.

Although the public was already given opportunity to weigh in on emergency procedures contained in the Permit, Permit Section 1.18 indicates that the CRP must describe how the Permittees will keep the public informed of permit actions of interest,

and specifically identifies implementation of the Contingency Plan, if any should occur, as being of interest to the public. Additionally, the Secretary's order of December 19, 2014, requires that the NMED Hazardous Waste Bureau provide notice and opportunity for public comment on the CRP and to consider all comments in finalizing the CRP. Nothing prevents the public from providing comment on the CRP that expresses interest in being informed of emergency procedures and providing input to the Permittees (and the Department) concerning potential improvements or additions to emergency procedures.

No modification to the Permit was made based on this comment.

169. **Comment:** Citizen Action commented that no person is currently designated as an emergency coordinator. No written contingency plan is present in the permit.

NMED Response: The Permit contains a contingency plan in Permit Attachment D. The lists of emergency coordinators for the various hazardous waste management units are found in Tables D-5, D-7, D-9, D-11, D-13, and D-15 of Permit Attachment D. No modification to the Permit was made based on this comment.

170. **Comment:** Citizen Action commented that SNL's on-site emergency preparedness for fire protection at each of the hazardous and mixed waste management units takes the form of either automatic sprinklers or fire extinguishers or both. SNL has emergency response resources and DOE agreements with KAFB Fire Department and Albuquerque hospitals to provide emergency support. No agreements were provided as evidence of such emergency preparedness.

NMED Response: Preparedness for fire protection includes either automatic sprinklers or fire extinguishers or both as indicated in the comment. Hower, additional fire protection resources are available: alarm systems, water hydrants at hazardous waste management units in developed areas of the Facility, engineered fire suppression systems (e.g. sprinkler systems) at some hazardous waste management units, and the ability to summon emergency assistance from the KAFB Fire Department, which is co-located with SNL.

Furthermore, the comment correctly indicates that the Permittees have emergency response resources and that the Permittees have agreements with KAFB to provide additional emergency resources should they be needed. Permit Section 2.12.6 and Section D.3.4 of Permit Attachment D require that the Permittees attempt to secure such agreements or provide written documentation that such agreements were sought but could not obtained due to no fault of their own. Coordination agreements include the entities listed in Table D-1of Permit Attachment D. While the Permittees are required to maintain such agreements for emergency assistance, there is no need for the agreements to be included in the Permit. Instead, they are to be maintained in the Operating Record and are subject to inspection by the Department as proof of compliance with the aforementioned Permit conditions.

No modification to the Permit was made based on this comment.

171. **Comment:** Citizen Action commented that storage facility personnel have access to communication to contact and warn other SNL personnel or to summon additional assistance; in other words, they have a phone and can make a call. Such minimal

preparedness remains wholly inadequate in relation to the serious risk posed by SNL's stored waste contents.

NMED Response: Facility personnel are to have access to communication devices as required under Permit Section 2.11.3. However, communication devices are not the full extent of emergency preparedness. In addition to the many requirements under Permit Sections 2.11 and 2.12 that are designed to prevent undue hazards and emergencies from arising, Permit Section 2.13 and the Contingency Plan in Permit Attachment D set forth many additional requirements to ensure adequate emergency preparedness, for example, general emergency procedures and special procedures for fires, explosions, and uncontrolled releases, chain of command, emergency equipment, personnel evacuation, and post emergency response procedures. Additionally, initial and repeated training of personnel concerning emergency response is provided for in Section F.6 of Permit Attachment F.

No modification to the Permit was made based on this comment.

172. **Comment:** Citizen Action commented that the scope of public participation remains limited to information sharing by SNL to public stakeholders through the Community Relations Plan, sharing that has significantly decreased. The provisions of the 2007 permit should be contained in the 2012 proposed permit. These included: The 2007 draft permit establishes that the Community Relations Plan (CRP) has to address five elements: (1) establish an open working relationship [between SNL and the stakeholder public]; (2) keep the public informed about permit actions; (3) attempt to resolve differences with communities and the interested public; (4) provide a mechanism

for a timely response to individual requests; and (5) provide a mechanism for semi-annual feedback.

NMED Response: The Permittees have provided information at regularly scheduled public meetings regarding corrective action activities for many years. NMED expects this to continue. In addition to information about corrective action, the newly issued Permit (in Section 1.18) now provides that the Permittees establish and implement a Community Relations Plan (CRP) to describe how they will keep the public informed of other Permit-related activities, including waste management, closure, and post-closure care activities.

Furthermore, the five cited elements of the CRP mentioned in the comment as being present in the 2007 draft permit are part of the final Permit and are found in the second paragraph of Permit Section 1.18.

No modification to the Permit was made based on this comment.

173. **Comment:** Citizen Action commented that semi-annual feedback for members of the public -- through workshops and briefings for corrective action -- are not in the 2012 draft permit. The 2007 draft permit specified that tours of SNL are to be offered; in the 2014 draft permit, no tours are to be offered. The 2007 community relations plan requirements in the 2007 draft permit were limited to investigation and remediation activities and results; thus, the proposed tours were limited to corrective action only. Tours of Sandia operations should be provided for the public to understand the full operations that impact public health and the environment at Sandia Labs.

NMED Response: The Permit contains a provision that the Permittees seek at least semi-annual feedback from the public (see Permit Section 1.18(5). Whether this is conducted in the form of meetings or workshops or both will be provided for in the CRP.

The proposed requirement in the 2007 draft permit to conduct tours for the public was not acceptable to the Permittees, and NMED does not have authority to impose such requirements as they are not necessary for the protection of human health and the environment. Additionally, the regulations do not require a Permittee to conduct tours for the public. However, based on comments received from the public, NMED met with the Permittees to discuss this topic. The Permittees indicated that public tours are difficult for them to host (even if limited to just tours of hazardous waste management units and corrective action sites) due to national security concerns and limits on resources and interference with business operations. Tours must be conducted in a manner that meets DOE rules intended to ensure national security and the safety of visitors.

Although tours are clearly difficult for the Permittees to conduct for the reasons specified above, the Permittees did not rule out the possibility of conducting tours outside of a permit requirement for special circumstances and provided the resources were available to conduct the tours within the bounds of DOE rules and safety requirements.

No modification to the Permit was made based on this comment.

174. **Comment:** Citizen Action commented that an important part of the community relations planning would be the identification of the environmental justice community. Nothing in the permit identifies the concerns of the environmental justice community. At

the hearing, an NMED witness could not answer whether the NMED had identified the environmental justice community relevant to the SNL permit.

NMED Response: The Permit contains requirements that the Permittee must meet to protect the environment and human health of all citizens, regardless of their social or financial situation. Because a list of community concerns does not constitute requirements for management of hazardous waste, such a listing would not add appreciably to the content or enforceability of a hazardous waste permit. Although the NMED witness mentioned in the comment that he was not personally aware of whether the Department has identified environmental justice concerns specific to the SNL Facility, the Department does work with communities regarding environmental justice issues to ensure that all New Mexico community concerns are considered and addressed as necessary to protect human health and the environment.

The NMED witness also stated at the hearing that the CRP should contain provisions that the Permittees attempt to locate and engage communities with environmental justice concerns.

No modification to the Permit was made based on this comment.

175. **Comment:** Citizen Action commented that with regard to community relations, documents submitted to the NMED regarding off-site releases and corrective action beyond the facility boundary under the Compliance Order on Consent (concerning corrective action) are outside the scope of the permit.

NMED Response: The comment is incorrect. Community relations are covered under Permit Section 1.18. Furthermore, Permit Section 1.18(2) states that the Community

Relations Plan must describe how the Permittees will keep the public informed of permit actions of interest, which by specific example in the requirement, includes clean-up activities (corrective action). Permit Section 1.18(2) does not limit the requirement to inform the public of corrective action activities to those that take place only within the Facility boundary.

No modification to the Permit was made based on this comment.

176. **Comment:** Citizen Action commented that according to Ms. Janet Greenwald (a party to the hearing), in the 2007 draft Permit an e-mail list of stakeholders was augmented by a "snail" (written) mail list; however, in the draft 2012 Permit, no snail mail list exists. Both the 2007 and 2012 draft Permits include notification of the location for the information repository by snail mail to all persons on the facility mailing list, a list maintained by NMED. Notifications to the persons on that list are always sent by snail mail. Notices of permit modification activities would be sent only to that snail mail list. Also, according to Janet Greenwald concerning the draft 2007 Permit, permit-related activities such as waste management milestones, e.g., closure and post-closure, were conveyed to a stakeholder e-mail list. However, in the draft 2012 Permit, permit-related activities are not conveyed to a stakeholder e-mail list.

NMED Response: Permit modification requests are to be maintained in the Information Repository (see Permit Section 1.17(2)). It is correct that such requests are required to be mailed in written form to interested citizens and other entities on the mailing list. However, in addition to mailing of a written notification, in accordance with Permit Section 1.17.2.1 the Permittees must send an email notification to everyone on the email

list maintained under the provisions of Permit Section 1.17.2.1 within 30 days of submission to the Department of any document required to be included in the IR.

No modification to the Permit was made based on this comment.

177. **Comment:** Citizen Action commented that SNL notes that permit-related activities will be conveyed to interested persons who sign up for an e-mail list as part of the information repository requirements in Section 1.17 of the draft Permit, a requirement, in fact, included in the Permit. Persons lacking email should be provided for notice of activities.

NMED Response: Regulations do not require email notifications. Certain permit actions, such as permit modification requests (including such requests concerning corrective action) will be noticed to the public via written mailings as required under the regulations at 20.4.1.500 NMAC incorporating 40 CFR 270.42.

No modification to the Permit was made based on this comment.

178. **Comment:** CARD commented that, regarding the Thermal Treatment Unit, as a good neighbor and to comply with Resource Conservation and Recovery Act (RCRA) regulations at 40 CFR § 254.601 (c)(5), SNL should compile a comprehensive report of all air emissions from the Facility.

NMED Response: The citation to the regulation contains a typographical error and should read 40 CFR § 264.601 (c)(5). NMED believes that the Permittee complied with the cited regulation. The Permittees monitor air quality at several locations at the Facility, and produces reports of air quality. Operation of the Thermal Treatment Unit (TTU) is not expected to appreciably degrade air quality based on modeling studies done by SNL

and the NMED. A permit condition to conduct air sampling at the TTU to confirm the conservative assumptions used in the modeling studies was added to the second paragraph of Permit Section 5.1.

No modification to the Permit was made based on this comment.

179. **Comment:** CARD commented that SNL's Lurance Canyon Burn Site emits perchlorate. The Burn Site is upstream of the Tijeras Arroyo. The Tijeras Arroyo flows through the Mountain View Community, a well-known Environmental Justice Community, between the Rio Grande and the freeway, Rio Bravo, and Isleta Pueblo. We know that source wells in this community are contaminated with perchlorate, a dangerous unregulated chemical. SNL and NMED should investigate this contamination and remediate it.

NMED Response: Perchlorate contamination in groundwater, which occurs at the site at low levels, is being investigated as part of the Burn Site Ground-Water Investigation. The site is listed as a miscellaneous area of concern in Table K-1 of Permit Attachment K as subject to corrective action. No modification to the Permit was made based on this comment.

180. **Comment:** CARD commented that after Environmental Justice communities/neighborhoods are identified, announcement of the comment period should be made in the language or languages of that community. NMED, to their credit, printed comments of the hearings in both Spanish and English, but the inhabitants of the International District, directly to the north of Kirtland Air Force Base, where the SNL Facility is housed, are also Asian and Indigenous people.

NMED Response: The NMED notice of hearing met regulatory requirements. The Department does its best to include everyone through its notice of hearings, but it is not possible to publish a notice in all foreign and native languages due to limitations on resources. English and Spanish are by far the more common languages used by members of the community, which is why the Department published the notice in these languages.

No modification to the Permit was made based on this comment.

181. **Comment:** CARD commented that the International District is located over the Kirtland Aviation Spill (more commonly referred to as the "jet fuel spill" or officially the "Bulk Fuels Facility Spill"), a well-known facility violation, which contaminates groundwater under the neighborhood, and is a threat to Albuquerque's water supply.

NMED Response: The Bulk Fuels Facility Spill is a threat to Albuquerque's water supply and protecting that water supply is among NMED's highest priorities. However, cleanup of the Bulk Fuels Facility Spill is the responsibility of the U. S. Air Force. NMED is requiring corrective action for the spill under the requirements of the Air Force's RCRA permit, which is a different permit than that issued to SNL. The release was not caused by the Permittees, and did not happen on land they control.

No modification to the Permit was made based on this comment.

182. **Comment:** CARD commented that the Community Relations Plan in the draft Permit is a preliminary document pending Community input. In the preliminary document, mention of outreach to Isleta Pueblo is stated but no mention is made of outreach to the International District.

NMED Response: Permit Section 1.18 contains provisions for submitting a Community Relations Plan for NMED approval. The Permit does not contain a preliminary plan as the plan does not yet exist in any form. Permit Section 1.18(2) provides that communities, the Pueblo of Isleta, and interested members of the public are to be informed of permit actions of interest (e.g., clean-up activities, implementation of the Contingency Plan, Permit modification requests). Although the International District is not specifically mentioned by name, it is captured under the general language calling for communities to be kept informed.

No modification to the Permit was made based on this comment.

183. **Comment**: CANM commented that regarding the Thermal Treatment Unit (TTU), Subpart X at 40 CFR 264.601 (a), (b) and (c) provides for the prevention of any release to air, soil or groundwater that may have adverse effects on human health or the environment.

NMED Response: The regulation is not properly interpreted by the commenter. The regulations state that protection of human health and the environment includes prevention of any releases that may have adverse effects on human health or the environment. In other words, releases which do not have adverse effects on human health or the environment may be acceptable depending upon a consideration of all of the information required by the regulations. The NMED believes that the TTU can be operated in a manner that prevents adverse effects on human health or the environment based on a consideration of all information required by the regulations. NMED has determined that the TTU can be operated within an acceptable level of risk to human health and the environment.

No modification to the Permit was made based on this comment.

184. **Comment**: CANM commented that regarding the Thermal Treatment Unit (TTU), the effects for the TTU have not been considered in relationship to the health concerns that may affect low-income or minority communities.

NMED Response: Operation of the Thermal Treatment Unit (TTU) is not expected to appreciably degrade air quality based on modeling studies done by SNL and the NMED. Analytical results for surface soil samples indicate that little contamination is emitted by the TTU, and the TTU is located many miles from the nearest community. The NMED believes that the TTU can be operated safely under the Permit in a manner that protects all citizens in all communities, regardless of their social, ethnic, or financial status.

No modification to the Permit was made based on this comment.

185. **Comment:** CANM commented that the Thermal Treatment Unit (TTU) as an open burn unit requires SNL to demonstrate that alternate technologies are unavailable or infeasible. 40 CFR § 264.601(c) requires considering "the effectiveness and reliability of systems and structures to reduce or prevent emissions of hazardous constituents to the air." Additionally, permits for regulation of Subpart X units can request analysis of alternatives. Also, SNL requests another eight-year extension for investigation of alternatives for open burning in the draft Permit.

NMED Response: The citation to the regulation is incomplete and the regulation is not correctly interpreted by the commenter. The regulation concerns what constitutes the protection of human health and the environment for a Subpart X unit, which includes, but is not limited to, prevention of any releases that may have adverse effects on human

health or the environment, in consideration of seven different factors. The listed factors are intended to assist the decision on whether there is likely to be an adverse effect on human health or the environment for a Subpart X unit. The cited regulation does not require the Permittee to demonstrate that alternate technologies are unavailable or infeasible.

SNL presented considerable information in their testimony at the hearing on the possible use of other technologies in lieu of open burning for their particular situation, including noting significant disadvantages with regard to other options they addressed. NMED found this testimony to be credible.

Nonetheless, Permit Section 5.5 provides that the Permittees submit an open burn alternative treatment assessment report to the Department no later than the eighth anniversary of the effective date of the Permit. The assessment report is to include an analysis of risk to human health and the environment for each alternative discussed. The eight year time period for submittal of the alternative assessment is intended to provide more time for potential new technologies to be developed to provide alternatives to open burning for the particular and unusual waste stream treated at the TTU.

No modification to the Permit was made based on this comment.

186. **Comment:** CANM commented that continued use of the Thermal Treatment Unit (TTU) does not comply with RCRA requirements to minimize waste.

NMED Response: The regulations at 20.4.1.500 NMAC incorporating 40 CFR § 264.73(b)(9) are the relevant requirements for waste minimization planning and form the basis of Permit Section 2.5. Permit Section 2.5 requires that the Permittees implement

and maintain a waste minimization program to reduce the volume and toxicity of hazardous and mixed wastes generated at the Facility. The waste minimization program is to include proposed, practicable methods of treatment and storage currently available to the Permittees to minimize the present and future threat to human health and the environment. Note that this requirement applies to the total volume and overall toxicity of generated waste for all of the Facility, not just that for the TTU.

The Permittees have had such a plan in place for many years, and have met the requirements at 20.4.1.500 NMAC incorporating 40 CFR § 264.73(b)(9) in the past.

No modification to the Permit was made based on this comment.

187. **Comment:** CANM commented that at the hearing, with respect to the Thermal Treatment Unit (TTU), an alternative treatment technology for turning explosives and propellants into fertilizer exists. The alternative was not considered. Also, detonation units can be used that pass gasses through filters.

NMED Response: Silver is a component of the waste stream (i.e., SASN or SASN bearing waste) treated at the TTU; the silver becomes trapped in the ash when the waste is burned at the TTU. Although some ash undoubtedly escapes the burn pan and the cage surrounding the TTU, some of the ash, and in some cases possibly most of it, remains in the burn pan and is recovered to be treated via other means prior to disposal.

The alternative proposed by CANM may not adequately treat the silver, and thus, any fertilizer produced from utilizing the method would add all of the silver that would otherwise be treated at the TTU as contamination to soil wherever the fertilizer is applied.

Depending on the concentration of silver and its leaching characteristics in the fertilizer, the fertilizer may pose unacceptable risk to human health or the environment.

Nonetheless, the method suggested as an alternative treatment method could possibly work if additional steps can be reasonably taken that could ensure that the silver is removed or rendered less toxic in the fertilizer. The Permittees could explore this further and report back to the NMED in the alternative assessment report required under Permit Section 5.5. In the meantime, the TTU does not pose unacceptable risk.

The method utilized at the TTU intentionally burns reactive and ignitable wastes to avoid large scale detonation of the wastes. To pass gases through filters to remove particulates in emissions requires a closed system to capture the gases. This in turn would require considerable modification to the TTU for little additional protection to human health and the environment, given the small amounts of ash that is produced. Nonetheless, again, the Permittees could explore this further and report back to the NMED in the alternative assessment report required under Permit Section 5.5.

Furthermore, an applicant seeking a permit to treat hazardous waste does not necessarily have to implement the best (which is usually the most expensive) technology. Instead, an applicant need only demonstrate that waste can be treated safely and adequately for the intended purpose of the treatment, and in a manner that is protective of human health and the environment.

No modification to the Permit was made based on this comment.

188. **Comment:** CANM commented that the Thermal Treatment Unit (TTU) is a hazardous waste management unit, not a solid waste management unit (SWMU), and therefore should be included within the Permit.

NMED Response: NMED agrees with the comment. The TTU is covered extensively in the draft and final Permit (see Permit Part 5 for example) as a hazardous waste management unit.

No modification to the Permit was necessary based on this comment.

189. **Comment:** Risk assessment and screening analysis for the Thermal Treatment Unit (TTU) by AQS (a contractor to the NMED) raised concerns for exposure to biphenyls, hydrogen cyanide, silver, and silver cyanide to onsite workers and nearby residents.

NMED Response: AQS concluded that operation of the TTU in compliance with the Permit would not pose unacceptable risk to human health (of onsite workers and residents) or the environment. NMED agrees with this conclusion. No modification to the Permit was made based on this comment.

190. **Comment:** CANM commented that an inhalation pathway exists for contaminants from the Thermal Treatment Unit (TTU). Airborne contamination can be spread for 10 to 50 kilometers from its source, and the model used for the TTU could not address that cumulative effect upon the community.

NMED Response: AQS, NMED's contractor, concluded that operation of the TTU in compliance with the Permit would not pose unacceptable risk to human health and the environment. NMED agrees with this conclusion. In support of this conclusion, AQS

used conservative assumptions and data to model emissions from the TTU. Additionally, the model code is state of the art, and is approved by the U. S. Environmental Protection Agency. No modification to the Permit was made based on this comment.

191. **Comment:** CANM commented that a soil pathway exists for exposure to Thermal Treatment Unit (TTU) contamination. Exceedances were found for PETN and silver that could potentially impact groundwater. Additionally, fate and transport work was not conducted by AQS (a contractor for the NMED), and there is uncertainty about what's going on in the subsurface. Pursuant to 40 CFR § 264.601 (a), the environmental performance standards to issue a permit for the Thermal Treatment Unit (TTU) have not been met for the ground water and subsurface environment.

NMED Response: In addition to air emissions, AQS and the NMED did consider fate and transport of contaminants in soil and whether groundwater was threatened. Based on experience, the small amounts of contaminants detected in soil are highly unlikely to migrate to the water table, which is approximately 500 feet below ground surface. Contrary to the comment, the Permittees did meet the regulations at 40 CFR § 264.601 (a). However, in response to public concern, and as a conservative precaution to secure additional data to ensure groundwater protection, NMED required in Permit Section 5.9.1 that subsurface soil samples be collected and analyzed for contaminants. No modification to the Permit was made based on this comment.

192. **Comment:** CANM commented that neither vegetative sampling nor animal tissue sampling have been conducted at the Thermal Treatment Unit (TTU). In fact, no animal surveys of any sort have been conducted. Thus, the actual and potential harmful effects of TTU emissions into the biotic environment have not been examined as required

for damage to domestic animals, wildlife, crops, and vegetation. The TTU has not met the environmental performance standards required by 40 CFR 264.601(a)(9).

NMED Response: NMED did not require plants or animals to be harvested for analysis of hazardous constituents. No standards are available to compare to the results of such analysis, and such analysis is not required under RCRA to meet information requirements set forth in the cited regulation. Instead, NMED and the Permittees employed standard industry and EPA- approved methods to estimate the risk of TTU operations, and found that operation of the TTU in compliance with the Permit would not pose unacceptable risk to human health and the environment. No modification to the Permit was made based on this comment.

193. **Comment:** CANM commented that it is reasonable for the Environment Department to impose sampling and monitoring requirements for the Thermal Treatment Unit (TTU) in the Permit.

NMED Response: NMED agrees with this comment as authorized under 20.4.1.900 NMAC incorporating 40 CFR § 270.32. No modification to the Permit was made based on this comment.

194. **Comment:** CANM commented that the cumulative effects of any contaminant releases upon SNL workers or nearby residents through 44 years of operation of the Thermal Treatment Unit (TTU) has not been examined by AQS's analysis (AQS is a contractor for the NMED).

NMED Response: NMED disagrees with the comment. Operations at the TTU have not significantly changed, and are not expected to change appreciably over the life of the Permit. The modeling conducted by AQS indicates that operation of the TTU in

compliance with the Permit would not pose unacceptable risk to the health of a SNL worker or the environment. AQS also found that there was no unacceptable risk to a resident, even if a resident lived immediately adjacent to the fence surrounding the TTU site (the nearest actual resident lives several miles away).

It is also reasonable to conclude from the aforementioned analysis that past operations of the TTU, which were similar to the operations analyzed, also posed no unacceptable risk to SNL workers or residents.

No modification to the Permit was made based on this comment.

195. **Comment:** CANM commented that there is a quantity limit of 55 gallons of hazardous waste that can be stored at Building 6715, but there is no 90-day time limit for storage of such hazardous waste.

NMED Response: The comment is not related to a permit. In any case, wherever hazardous waste is generated, (and SNL also generates wastes in Building 6715 that are not treated at the TTU) a generator may store up to 55 gallons of non-acute hazardous waste without a permit. There is no time limit to ship such waste offsite or move it to a less-than-or-equal-to-90-day storage area (which also does not require a permit) until the maximum of 55 gallons of waste is reached. See 20.4.1.300 NMAC incorporating 40 CFR § 262.34(c)(1).

No modification to the Permit was made based on this comment.

196. **Comment:** CANM commented that no one on the SNL panel during the hearings is a toxicologist.

NMED Response: While evaluating risks uses information generated by toxicologists, the actual procedures employed to assess risk are well-standardized and documented and do not require that the person doing an assessment be trained specifically as a toxicologist in order to properly conduct the assessment. In the environmental field, few risk assessments are actually prepared by or reviewed by a toxicologist. Instead, they are commonly prepared or reviewed by scientists in other fields that are also specifically trained to conduct risk assessments. No modification to the Permit was made based on this comment.

197. **Comment:** CANM commented that open burn operations may be taking place at the Lurance Canyon Burn Site that are not described in the Permit.

NMED Response: Open burn tests conducted at the Lurance Canyon Burn Site are not for the purpose of treating hazardous waste and therefore do not fall under the jurisdiction of RCRA. Thus, a hazardous waste management permit to conduct such tests is not required.

Any solid wastes generated as a result of open burn tests would be subject to RCRA Subtitle C or D. But being subject to RCRA does not necessarily mean a permit is required to manage a waste generated at an open burn test. No modification to the Permit was made based on this comment.

The New Mexico Environment Department's Responses to Comments
On Class III Permit Modification Request for Granting Corrective Action Complete Status
for 24 Solid Waste Management Units/Areas of Concern
January 2015

The initial comment period on the request to grant Corrective Action Complete (CAC) status for 24 Solid Waste Management Units (SWMUs)/Areas of Concern (AOCs) began on September 17, 2012, and was scheduled to terminate on November 16, 2012. Requests for extending the comment period were received by the New Mexico Environment Department (Department or NMED), and the Department Secretary granted an extension of an additional 90 days until February 14, 2013, for a total comment period of 150 days. Some comments were submitted during an earlier comment period from December 10, 2007 to February 8, 2008. Those that submitted earlier comments were not required to resubmit their comments.

A hearing on this matter was held at the request of the public from May 5-8, 2014.

Comments received from the public and the NMED's responses thereto are presented below. No comments were received on LTES-1 (Cable Debris Site). After consideration of all comments, each of the 24 SWMUs/AOCs was granted CAC status by the NMED.

1. **Comment:** Citizen Action requests a public hearing because the New Mexico Environment Department (NMED) and Sandia National Laboratories (SNL) asserts that this is a Class III Permit Modification request (March 2006) of the SNL Resource Conservation Recovery Act (RCRA) Part B Permit.

NMED Response: Although the Department met with Citizen Action and other interested members of the public in accordance with 20.4.1.901.A(4), opposition to the Corrective Action Complete (CAC) petitions was not resolved. Thus, a hearing was scheduled and held on May 5-8, 2014, in accordance with the public's request.

2. **Comment:** Citizen Action states that the RCRA Part B Permit must be modified to accomplish this action.

NMED Response: A RCRA permit must be modified for a facility to obtain CAC status for a SWMU or AOC. In this case, a renewal permit was being issued at the same time as the request for CAC status. Because the relevant procedures for conducting a Class 3 permit modification are essentially the same as that for a permit renewal, the Department addressed the petitions for CAC status and permit renewal simultaneously. The old permit was not modified; instead, it was replaced in its entirety by the new Permit.

3. **Comment:** Citizen Action disagrees that Module IV is a part of the SNL RCRA Part B Permit.

NMED Response: Module IV is a part of the now-expired 1992 permit which was replaced by the new Permit. Module IV contained the requirements for conducting corrective action at the Facility. Corrective action requirements are now provided in the Consent Order and Permit Part 8.

4. **Comment:** Citizen Action states that the Consent Order does not meet the requirements of 40 CFR § 270.1(c)(7) for an enforceable document.

NMED Response: The Consent Order was issued under the authority of the HWA, NMSA 1978, § 74-4-10 and the New Mexico Solid Waste Act, NMSA, 1978 § 74-9-36(D). Under 40 CFR § 271.16 (e), an enforceable document must have available the following remedies: (1) Authority to sue in courts of competent jurisdiction to enjoin any threatened or continuing violation of the requirements of such documents, as well as authority to compel compliance with requirements for corrective action or other emergency response measures deemed necessary to protect human health and the

environment; and (2) Authority to access or sue to recover in court civil penalties, including fines, for violations of requirements in such documents. New Mexico is an authorized State under RCRA and has available under its authorities the aforementioned remedies, which are found listed in the Consent Order under Sections III.I.5 and III.U. Thus, the Consent Order is an enforceable document.

5. **Comment:** Citizen Action states that most of the SWMUs are actually "regulated units" that must be closed under the requirements of 40 CFR Part 264 Subparts F and G, with monitoring well networks in place. The SWMUs are required to immediately close by clean closure via submittal of a post-closure care plan, or a document in lieu thereof. None of this was accomplished, and the SWMUs were operated illegally. The SWMUs are still required to close under 40 CFR § 270.1.

NMED Response: Regulated Units are defined in 20.4.1.500 incorporating 40 CFR § 264.90(a)(2) as surface impoundments, waste piles, land treatment units or landfills that received hazardous wastes after July 26, 1982.

None of the SWMUs and AOCs included in this Class III modification request for CAC status is a regulated unit. Instead, they are subject to corrective action under the regulations at 20.4.1.500 NMAC incorporating 40 CFR § 264.101. Because the SWMUs/AOCs are not regulated units, they are not subject to 40 CFR Part 264 §§ 90-100 in Subpart F and 40 CFR Part 264 Subpart G. They were not operated illegally. The contention that some or all of the SWMUs are regulated units was addressed in more detail in the Department's Closing Argument and Proposed Findings of Fact and Conclusions of Law.

6. **Comment:** Citizen Action states that there exists no technical basis for granting Corrective Action Complete status (No Further Action) for these SWMUs.

NMED Response: The technical basis for granting CAC status for any SWMU/AOC is based upon historical and current site information and/or the collection and analysis of samples. Each SWMU/AOC is characterized for the presence of releases of hazardous waste and hazardous constituents. Corrective action is required when SWMUs/AOCs exhibit or potentially exhibit concentrations of contaminants at levels that pose unacceptable risk to human health or the environment.

Criteria used to propose CAC status for each of the SWMUs/AOCs included in the Permit modification request are located in Table 1 of the Fact Sheet/Statement of Basis. In this case, each SWMU/AOC was petitioned for CAC status because each has been characterized or remediated in accordance with current applicable state and/or federal regulations, and the data indicate that detected contaminants do not pose an unacceptable level of risk under current and projected future land use.

7. **Comment:** Citizen Action states that in order to qualify for Corrective Action Complete status, it must be shown that there are no releases. This cannot be demonstrated for the SWMUs at issue.

NMED Response: CAC status can be granted for SWMUs where a release of a contaminant has occurred provided the concentration of the contaminant does not pose an unacceptable level of risk to human health or the environment (under current and projected future land use).

8. **Comment:** Citizen Action states that there is no regulatory authority under RCRA for the Permit to now include the SWMUs. Most of the SWMUs were in operation in

December 1988 after the September 1988 EPA declaration in the Federal Register that mixed waste landfills would have to comply with Part A and Part B permitting requirements once their State was authorized to regulate mixed waste.

NMED Response: The NMED has the authority to include SWMUs and set forth corrective action requirements in the Permit (see 20.4.1.500 NMAC incorporating 40 CFR § 264.101(b)). Corrective action requirements are addressed by the SNL Consent Order, an enforceable document, except as provided in Permit Section 8.1.1.

The SWMUs/AOCs are not subject to permitting requirements.

9. **Comment:** Citizen Action states that the SWMUs received both mixed waste and hazardous waste during the period July 26, 1982, to December 1988 making them "regulated units" under 40 CFR 270.1 and 40 CFR 264.90. On or about July 25, 1990, New Mexico received its authority to regulate mixed waste. SNL never submitted a RCRA Part A application or a Part B application for the SWMUs within the 12 month time period required, at the latest by July 25, 1991.

NMED Response: The SWMUs/AOCs are not regulated units (see Response to Comment 5 above). Because the SWMUs/AOCs were not and are not hazardous waste management units (HWMUs), the Permittees were not and are not obligated to submit Part A or Part B applications for the sites.

10. **Comment:** Citizen Action states that statistical knowledge of a contaminant population is not acceptable to show that a site has been fully characterized with respect to Contaminants of Concern (COCs).

NMED Response: Characterization was based upon historical and current site information and the collection and analysis of discrete samples. The determination of the horizontal and vertical

extent of contamination at each SWMU/AOC varied depending on the conceptual site model for the SWMU/AOC that was being investigated. At some large sites, such as SWMU 91, soil samples were collected from numerous locations and at various depths. In the case of small septic systems and other sites, fewer samples are needed because it is possible to specifically target locations likely to have received the most waste. If contaminant levels are sufficiently low at these specifically targeted locations, further characterization is unnecessary.

Statistical descriptors for central tendency were used in the case of some SWMUs to estimate risk. This is a common practice, especially where larger numbers of samples have been collected. However, for the majority of the SWMUs/AOCs included in the CAC proposals, risk analysis was done using the maximum levels of contaminants detected.

11. **Comment**: Citizen Action states that collectively, billions of gallons of toxic radioactive liquid waste have been discharged beneath Sandia without groundwater monitoring networks in place to investigate contamination. Absence of record keeping for the discharges demands that groundwater wells be installed at the SWMUs.

NMED Response: Site history at the most of the SWMUs/AOCs, especially those that comprise small septic systems, is poorly known. No records were kept of the volume of discharges or the types of wastes disposed of in the septic systems, which is typically the case for such SWMUs/AOCs. Groundwater was investigated at SWMUs/AOCs where needed. However, some SWMUs are co-located in areas covered under the Tijeras Arroyo and Technical Area V Groundwater Investigations. Groundwater contamination at these latter SWMUs is being investigated and will be remediated under separate corrective actions.

12. **Comment:** Citizen Action states that often CAC status relies on collection of soil and septic samples at the current time that have no bearing on the hazardous wastes released at the sites over 5 decades ago.

NMED Response: Because site history is usually poorly known, to ensure nothing of significance was missed soil samples were analyzed for a wide range of potential contaminants (chemical and radioactive). Boreholes were purposely advanced through or along the sides of seepage pits and across drainfields to target the locations where the highest levels of contaminants are most likely to occur. Contaminants were detected in soil at the SWMUs/AOCs even though these hazardous constituents were released into the environment perhaps decades ago. The data are considered to be valid and representative of what contaminants occur in the soil.

13. **Comment:** Citizen Action states that the vertical and horizontal extent of contamination must be characterized with properly installed monitoring well networks at the SWMUs.

NMED Response: The determination of the horizontal and vertical extent of contamination at each SWMU varied depending on the conceptual site model of the SWMU that was being investigated. See also Responses to Comments 10, 11, and 14.

14. **Comment:** Citizen Action states that NMED was cognizant in 1997 of the need for groundwater characterization. Unfortunately, adequate characterization of groundwater has not been achieved for most of the SWMUs. The potential for groundwater contamination from the enormous annual liquid discharges stretching over 50 years is required to be monitored by 40 CFR §§ 264.90-100 (Subpart F) for closure of these facilities because Sandia is seeking a Part B RCRA Permit. The SWMUs show

statistically significant evidence of contamination but lack both detection and compliance monitoring programs required under 40 CFR 264 Subpart F.

NMED Response: Not all sites were found to be contaminated at levels requiring the installation of groundwater monitoring wells, including SWMUs that are septic systems that are designed to release liquid wastes into the environment (wastes in solid form are captured in the septic tank). In the case of small septic systems, criteria used to decide whether wells would be required for a site are documented in *Sampling and Analysis Plan (SAP) for Characterizing and Assessing Potential Releases to the Environment from Septic and Other Miscellaneous Drain Systems at Sandia National Laboratories/New Mexico* (1999). The SAP took into account whether groundwater was shallow or deep, and whether highly permeable lithologies and fractured bedrock were likely to be present that could provide favorable flow paths to groundwater. Criteria for allowable concentrations of contaminants for subsurface soil were set at very low levels where septic systems overlie shallow groundwater. Somewhat higher levels were allowed where septic systems overlie deep groundwater, where much more natural attenuation of contamination would be expected to occur in the vadose zone.

The SWMUs/AOCs are not subject to the groundwater monitoring requirements under 20.4.1.500 NMAC incorporating 40 CFR §§ 264.90-100 (Subpart F). No significant contamination was found at any of the SWMUs/AOCs proposed for CAC status, except at SWMU 91 where unacceptable levels of lead contamination in soils were removed by excavation.

15. **Comment:** Citizen Action states that where monitoring wells do exist they are most often very distant from the SWMU that is to be monitored. In one instance, contamination from a SWMU was “watched for” by a monitoring well, TJA-6, that is upgradient from SWMU 46. Monitoring wells must be at the release sites to assess

contamination at the various SWMUs. The monitoring wells have to be close to the release for early detection. That is also required by DOE Orders.

NMED Response: NMED does not enforce compliance with DOE Orders. The regulations governing corrective action (20.4.1.500 NMAC incorporating 40 CFR § 264.101) do not specify how close wells must be to a SWMU. NMED has discretion under the corrective action rules to require groundwater monitoring wells at locations where needed.

For small septic systems, NMED selected well locations to take into account that contaminant plumes may have migrated a considerable distance from the discharge points given that the discharges occurred perhaps some 20 or more years ago and that shallow groundwater likely flows at relatively high velocities. This is why wells are not located immediately adjacent to the discharge points. In an effort to minimize the number of wells needed, wells were placed at locations believed to be in a downgradient direction from sites as based on site-wide potentiometric-surface maps and/or local topography, and thus, at locations mostly likely to detect contaminated groundwater, if it exists.

16. **Comment:** Citizen Action states that the descriptions of the SWMUs are too vague for the public to determine whether the SWMUs are safe. Generally, the Fact Sheet fails to present information such as exact types of Contaminants of Concern (COCs) and their volumes; the locations of drain fields on maps; the depth of septic tanks, seepage pits, piping, and drain systems; the positions of monitoring wells (if they exist); drilling methods; type of well construction; depth to ground water; statistical water sampling data; direction of groundwater flow; volumes of waste water, and the wastes discharged. Typical descriptions of the COCs give no breakdown for the types of radionuclides that are at the various SWMUs.

NMED Response: The Fact Sheet/Statement of Basis provides a description of the permit modification request, how the public may participate in the final decision, and a brief summary of the investigations and any remediation conducted at each site. They meet the requirements of 20.4.1.901(D) NMAC. Details, to the extent that they are known, are included in the individual RCRA Facility Investigation (RFI) Reports and related documentation for each SWMU/AOC. The RFI Reports are available for review as indicated in the Fact Sheet/Statement of Basis. Additionally, several of the parameters referenced in the comments as missing are actually provided in the Fact Sheet/Statement of Basis (for example, potential contaminants, locations of drainfields and other septic system components and their depths). However, some details, such as the types of wastes or volumes of wastewater discharged into the small septic systems are not known and will likely never be known.

17. **Comment:** Citizen Action states that, apparently, Sandia has no intention of protecting the public from radionuclide contamination. DOE Order 450.1 is ignored. The NMED should file a complaint with the NM Attorney General, the DOE IG, and the U. S. Attorney General that the DOE is failing to comply with DOE Orders 5400.5 and 450.1.

NMED Response: The NMED does not enforce DOE Orders.

18. **Comment:** Citizen Action states that SNL should furnish the regulatory history of each SWMU.

NMED Response: From an environmental standpoint, there is no regulatory history for each SWMU/AOC, aside from being subject to corrective action under 20.4.1.500 NMAC incorporating 40 CFR § 264.101.

19. **Comment:** Citizen Action states that the industrial standard leaves everyone, especially children, at higher risks of cancer, disease, and birth defects. Sandia has failed to consider Executive Order 13045 that requires federal agencies "to identify and assess environmental health risks and safety risks that may disproportionately affect children." Remediation to industrial risk levels does not take into account the sole source drinking water aquifer.

NMED Response: Industrial land use is the designated land use for the foreseeable future for much of the Facility. Corrective Action Complete status can be granted on the basis of industrial land use subject to requirements in the Consent Order concerning land conveyance and transfer.

Contaminant concentrations in groundwater are based on residential use of the water as a drinking water source. However, none of the SWMUs/AOCs proposed for Corrective Action Complete status is a threat to groundwater, including those that have soil contamination at levels limiting land use to industrial purposes.

NMED does not enforce Executive Orders issued by the federal government.

20. **Comment:** Citizen Action states that RCRA identifies high levels of contamination measured in the boreholes of SWMUs as "Statistically Significant Evidence of Contamination." 40 CFR §264.98 requires for SWMUs with "statistically significant evidence of contamination" that a detection monitoring program be put into place.

NMED Response: The phrase "statistically significant evidence of contamination" refers to sampling results for indicator parameters in groundwater, not the results of soil samples recovered from boreholes. The regulation cited in the comment (40 CFR

§264.98) does not apply to any of the 24 SWMUs/AOCs proposed for Corrective Action Complete.

21. **Comment:** Citizen Action and Citizens for Alternatives to Radioactive Dumping (CARD) request an extension of time for the public comment period and opportunity to request a public hearing for the Granting of Corrective Action Complete Status ("CAC") for the Solid Waste Management Units/Areas of Concern. Citizen Action requests that a 90-day extension to February 14, 2013, for submission of comments be granted.

NMED Response: For the Corrective Action Complete proposals, the regulation at 20.4.1.901.A(3) NMAC requires a public comment period of 45 days.

The initial comment period began on September 17, 2012, and was scheduled to terminate on November 16, 2012. The Secretary granted an extension of an additional 90 days until February 14, 2013, for a total comment period of 150 days.

22. **Comment:** Citizen Action and CARD state that the full documentation necessary for review of the CAC petitions has not been posted on the NMED website and the SNL website.

NMED Response: The Administrative Record is complete. NMED does not have the resources to make the full Administrative Record available online, nor is there a requirement to do so.

23. **Comment:** Citizen Action and CARD state that there are no maps with coordinates of each SWMU and pertinent monitoring wells. Without this information, the public cannot verify whether any unit is ready for a CAC status. Groundwater sampling data for individual SWMUs are not included.

NMED Response: A coordinate system (eastings and northings in NM State Plane Coordinates) is shown on the maps provided in the Fact Sheet/Statement of Basis. Thus, it is possible to accurately estimate the coordinates for the locations of the SWMUs/AOCs and any associated wells.

Details applicable to each site, including groundwater sampling data, are also included in the individual RCRA Facility Investigation (RFI) Reports and related documentation for each SWMU/AOC. The RFI Reports, a part of the Administrative Record, are available for review as indicated in the Fact Sheet/Statement of Basis.

24. **Comment:** Citizen Action and CARD state that referring to the transfer of property issue, during negotiations four years ago, the Permittees had no plan for keeping people (especially children) out of areas designated for industrial use. We do not see this lack of planning corrected in the current draft permit.

NMED Response: Due to the nature of its business operations, which includes national security matters, and its location on and within Kirtland Air Force Base, SNL has stringent internal procedures in place throughout the Facility to provide for security and site controls. No matter whether a site is granted CAC status on a residential or industrial land-use scenario, unauthorized people will not be able to easily gain access to the sites. Anyone that does gain access to a site, either legally or through criminal or unintentional trespass, will not be significantly exposed to residual contamination during the limited amount of time they would likely spend at a site.

25. **Comment:** Citizen Action resubmits its comments for the SWMUs dated February 8, 2008.

NMED Response: NMED has accepted the comments and has added them to the Administrative Record. This document constitutes the Department's response to Citizen Action's comments, as well as comments received from others on this matter.

26. **Comment:** Citizen Action states that the locations of the various SWMUs are not provided on a map. COCs that exceed water quality standards are present in the 2012 Annual Ground Water Monitoring Report but are not listed in relation to the various SWMUs.

NMED Response: See Response to Comment 23 concerning the locations of SWMUs/AOCS. Water quality standards are not being exceeded at any of the SWMUs/AOCs that were proposed for Corrective Action Complete Status where it was deemed necessary for groundwater monitoring wells to be installed. Where wells were not required at a SWMU/AOC, it is unlikely that the release at the SWMU/AOC would have caused groundwater to become contaminated. Some SWMUs are co-located in areas covered under the Tijeras Arroyo and Technical Area V Groundwater Investigations. Groundwater contamination at these latter SWMUs is being investigated and will be remediated separately from these SWMUs.

27. **Comment:** The Permittees generally object to any restrictions related to radiological constituents. The radiological concerns of any given site are the jurisdiction of the U. S. Department of Energy (DOE), not NMED.

NMED Response: NMED concedes that it generally does not possess the authority to place restrictions on SWMUs/AOCs related to the risk of radiological contaminants. However, nothing prohibits NMED from offering its opinion on whether site characterization and remediation of radioactive contaminants are adequate, whether a remedial effort is protective of

human health and environment, and whether DOE should place its own restrictions on land use to account for radiological contamination. The Department has done so, as appropriate, with respect to some of the SWMUs/AOCs.

28. **Comment:** DOE has agreed to provide information to the NMED on radiological constituents, but such information is not subject to enforcement under the Order.

NMED Response: NMED agrees that information concerning radiological constituents is not subject to enforcement under the Consent Order.

29. **Comment:** Please note that the pertinent reference value that has been agreed to between NMED and DOE regarding the discussion of radiological aspects of CAC documents is dose, not risk.

NMED Response: The U. S. EPA and the NMED assess risk. The NMED is aware that the DOE typically assesses dose for radiological contaminants and has its own procedures and standards for assessing risks from radiological contamination. For most of the SWMUs/AOCs being petitioned for CAC status, risk for radiological constituents was reported by the Permittees in addition to dose. The NMED appreciates that the Permittees provided this extra information.

SWMU 4

30. **Comment**: Citizen Action commented that coolant water that was discharged from the SERF reactor has a history of being contaminated by hexavalent chromium which was present at SWMU 4. PCBs were identified at Impoundment 2. Especially high values for beryllium were measured (4.9 mg/kg).

NMED Response: The maximum concentrations of hexavalent chromium (11.2 mg/kg) and beryllium (4.9 mg/kg) contribute little to the excess cancer risk or the hazard index (HI), respectively under both the industrial and residential land use scenarios. Thus, the

levels of both contaminants do not pose unacceptable risk, and they are not among the contaminants detected at SWMU 4 contributing most to risk.

Aroclor-1260, the only PCB detected, was found in soil at a maximum concentration of 0.071 mg/kg, which poses no significant risk to human health or the environment.

31. **Comment:** Citizen Action commented that the wastes from 1963 to 1967 were discharged to a drainfield, but it is not identified on Figure 3.

NMED Response: The drainfield is identified as SWMU 5 on Figure 3 of the document Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012) . A larger illustration of the drainfield is presented on Figure 4 of the same document.

32. **Comment:** Citizen Action commented that SWMU 4 operated illegally by receiving hazardous waste without a RCRA Permit. A post-closure care permit is needed. The surface impoundments operated from 1967 to 1992.

NMED Response: Coolant water from the SERF was discharged to SWMU 4 until 1972 when the reactor was shut down. There is no evidence that the coolant water from the SERF was a hazardous waste. SWMU 4 continued to receive waste from drains and sinks in TA-V until 1992. There is no evidence that SWMU 4 was operated illegally. Additionally, SWMU 4 is not a regulated unit, and was not subject to the requirements for a RCRA permit or post-closure care.

33. **Comment:** Citizen Action commented that there is no discussion of the direction of groundwater flow, well construction, well development information or monitoring data

for monitoring well LWDS-MW2. This well does not meet the requirements for a point of compliance.

NMED Response: Direction of groundwater flow, well construction and monitoring data for well LWDS-MW2 are included in SNL's Justification for Class III permit Modification March 2006, SWMU Operable Unit 1307 LWDS Surface Impoundments, the Current Conceptual Model of Groundwater Flow and Contaminant Transport at Sandia National Laboratories/New Mexico Technical Area V, SAND2004-1470, April 2004, and SNL's annual groundwater reports. These documents are available at the NMED Hazardous Waste Bureau offices in Santa Fe.

Nitrate has been detected in groundwater at LWDS-MW2 at concentrations of about 7 mg/L, which is less than the EPA MCL and the New Mexico Water Quality Control Commission (NMWQCC) standard of 10 mg/L. The well is constructed using polyvinyl chloride (PVC) casing with a 304 stainless-steel screen. The groundwater flow direction is northwest.

In an email from SNL received March 26, 2009, well development was described as follows: The well was developed via SNL standard operating procedures using a submersible pump and the surge-block and bailing method. These procedures included initial bailing to remove the heavy sediment that may have accumulated in the well sump, running a surge block up and down in the screened portion of the well to draw fines out of the gravel pack into the well interior, and then cycling with bailing and surge blocking until sediments are precluded to the extent possible from moving into the well. A submersible pump was then lowered down to the screened portion of the well, and the

well was pumped until the water eventually cleared, and stabilization of field parameters was achieved.

LWDS-MW2 was installed less than 100 feet to the north of the surface impoundments and is adequately located to monitor groundwater at the SWMU and for the TA-V area in general.

34. **Comment:** Citizen Action commented that a monitoring well network compliant with 40 CFR §§ 264.90-100 is required to be installed.

NMED Response: The cited regulations do not apply. SWMU 4 is not a regulated unit. Groundwater contamination at TA-V is being addressed separately at TA-V from SWMU 4; see Table K-1 of Permit Attachment K.

35. **Comment:** Citizen Action commented that the well (LWDS-MW2) has a stainless-steel well screen that is no doubt corroded and not capable of detecting contamination.

NMED Response: The commenter provides no evidence that the well screen is corroded. Groundwater in a well with a corroded screen would be expected to contain appreciable levels of metals such as chromium and nickel. For the April 2011 groundwater sample, chromium was detected at 2.27 µg/L (J); the maximum background concentration for chromium for this area is 43 µg/L. Nickel was detected at 1.38 µg/L (J); the maximum background concentration for nickel is 28 µg/L. Thus, there is no evidence that the screen for LWDS-MW2 suffers any significant corrosion.

36. **Comment:** Citizen Action commented that human and ecological risks are not acceptable to grant this SWMU CAC status.

NMED Response: NMED disagrees. The risk to human health is acceptable under an industrial land-use scenario, which is the current and projected future land use.

Ecological risks are considered to be low as summarized in the Statement of Basis. A human health risk screening assessment was performed to evaluate the potential for adverse health effects. For the industrial land-use scenario, the hazards index (HI) and the estimated excess cancer risk are acceptable (see Table 2 of Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012)) , and are 0.24 and 6E-7, respectively.

SWMU 5

37. **Comment:** Citizen Action commented that SWMU 5 has not been properly investigated for contamination.

NMED Response: SNL has collected and analyzed subsurface soil samples from four borings (depths of sampling from 25 feet to 90 feet below ground surface [bgs]) and from the borehole of well TAV-MW6 (depth of sampling from 20 to 500 feet bgs) in areas likely to have received the highest levels of contaminants. NMED believes the investigation of SWMU 5 was adequate.

Groundwater contamination at TA-V is being addressed separately at TA-V from SWMU 5; see Table K-1 of Permit attachment K.

38. **Comment:** Citizen Action commented that monitoring well TAV-MW6 exists within the boundaries of SWMU 5. The construction details of well MW6 are not provided, and no data are presented for the well. MW6 cannot be found on Figure 4.6. The flow direction of groundwater is not provided.

NMED Response: TAV-MW6 is shown on Figure 4, Site Map for SWMU 5 in the Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action

Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012)). Well construction data for TAV-MW6 can be found in Appendix A of SNL's Summary of Monitoring Well Drilling Activities TA-V Groundwater Investigation, October 2001. The well is screened from 507 feet to 527 feet with 20-slot schedule 80 PVC screen installed above a 5-feet-long sump. The primary filter pack from 502 feet to 534 feet is 10/20 silica sand. The secondary filter pack from 498 feet to 502 feet is 30/70 silica sand. The sealed interval from 492 feet to 498 feet consists of 3/8" bentonite chips. The grout/backfill interval behind the 5-inch inside diameter schedule 80 PVC riser was placed from 2 feet to 492 feet. The stickup is -0.26 feet below the concrete pad, which is located in an asphalt parking lot (the wellhead is a below-grade completion).

The flow direction of groundwater can be found in Figure 3-5, Potentiometric surface at SNL/NM TA-V, September 2003, in SNL's Current Conceptual Model of Groundwater Flow and Contaminant Transport at Sandia National Laboratories/New Mexico Technical Area V, April 2004, Sandia Report SAND2004-1470. Groundwater at TAV-MW6 is currently flowing towards the south-southeast.

As listed in the 2011 SNL Annual Groundwater Report , Table 5A-1, p. 5A-7, VOCs detected at TAV-MW6 include trichloroethene (TCE) (MCL of 5µg/L) at 15.1 µg/LL and cis-1,2-dichloroethene (MCL of 70 µg/L) at 2.3 µg/LL. Table 5A-3, p.5A-12 lists analytical results for nitrate plus nitrite (MCL 10.0 mg/L) as 9.8 and 10.2 mg/L for the sample and its duplicate. TAV-MW6 is included in the system of wells being used to characterize groundwater beneath Technical Area-V. Groundwater contamination at TA-V is being addressed separately at TA-V from SWMU 5.

39. **Comment**: Citizen Action commented that an earlier well, LWDS-MW1 installed in 1992, supposedly shows evidence of releases from the site. The trichloroethene (TCE) was detected above the EPA Maximum Contaminant Level (MCL) in water samples collected from well LWDS-MW1. LWDS-MW1 is also not identified as to its location in the Fact Sheet.

NMED Response: A discussion of LWDS-MW1 can be found in the Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012).

Trichloroethene (TCE) contamination is present in the groundwater at LWDS-MW1 exceeding the EPA Maximum Contaminant Level of 0.005 mg/L. SNL's Current Conceptual Model of Groundwater Flow and Contaminant Transport at Sandia National Laboratories/New Mexico Technical Area V, April 2004, Sandia Report SAND2004-1470 states : "The maximum May 2003 TCE concentration in water from well LWDS-MW1 was 20.9 µg/L. The peak TCE concentration at TA-V was reported as 23 to 26 µg/L from LWDS-MWl on November 13, 2000".

The TCE concentration reported in the 2011 SNL Annual Groundwater Report for the 7/21/11groundwater sample is 16.0 µg/L. Monitoring well LWDS-MW1 is included in the system of wells being used to characterize groundwater beneath Technical Area-V. Groundwater contamination at TA-V is being addressed separately at TA-V from SWMU 5. The location of LWDS-MW1 is shown on Figure 3-5.

40. **Comment:** Citizen Action commented that cobalt-60 and cesium-137 were found in the drainfield sampling.

NMED Response: In general, NMED does not regulate radionuclides at DOE facilities. Nonetheless, for radiological constituents (cesium-137, cobalt-60, thorium-232, radium-226, tritium and uranium-235), the TEDE is 5.5E-6 mrem/year. The excess cancer risk is 1.2E-10, which is acceptable for residential land use. In August 2003, the DOE approved unrestricted radiological release for the site, using 25 mrem/yr as the threshold guidance. See Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012)), page 12.

SWMU 46

41. **Comment**: Citizen Action commented that the depth to groundwater at this location is critical but not stated.

NMED Response: Depth to groundwater is discussed in SNL's Tijeras Arroyo Groundwater Investigation Report, November, 2005, and Table 2.4.2-1 which states the perched groundwater near the northern end of the site is at about 300 feet bgs and regional groundwater is at about 500 feet bgs.

42. **Comment:** Citizen Action commented that the total volume of wastewater released at the site and the quantity of contaminants released was not provided.

NMED Response: An estimated 130,000 gallons per day of wastewater was discharged at SWMU 46. Additionally, the 2011 Annual Groundwater Monitoring Report, p. 6-17, states "An estimated 1.3 billion gallons of wastewater from six TA-I research/office buildings (839, 840, 841, 860, 863, and 892) discharged into the three outfall ditches at the south end of SWMU 226." SWMU 46 is the outfall at the south end of SWMU 226.

The quantity of contaminants in the wastewater discharged at SWMU 46 is unknown and likely will never be known. Thus, the investigation of SWMU 46 was tailored to include the sampling and analysis of all potential contaminants that could have been released at the outfall.

The groundwater where SWMU 46 is located is being addressed separately from SWMU 46 under the Tijeras Arroyo Groundwater Investigation.

43. **Comment:** Citizen Action commented that the current condition of the ditches is not sufficiently described nor are they characterized for the wastes in each ditch.

NMED Response: Each of the three outfall ditches were unlined (earthen) ditches were approximately 3 feet deep and 5 feet wide. Nearly the entire length of each outfall ditch was backfilled with soil during TA IV construction in the mid-1980s. See Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012), page 23. Some of the original area occupied by the ditches is now under buildings.

Potential contaminants at the SWMU 46 include metals, HE, VOCs, SVOCs, PCBs, and radionuclides. A total of 327 soil samples collected from a variety of depths were used in the human health risk assessment. Figure 1.1-1 of the Voluntary Corrective Action Plan, Solid Waste Management Unit 46 – Old Acid Waste Line Outfall, August 2003, shows sample locations. NMED considers the sampling to be adequate and notes that sampling conducted in the areas at the head of the outfall and the lower reach of the ditches should reasonably represent releases that occurred at the site.

Groundwater where SWMU 46 is located is being investigated under the Tijeras Arroyo Groundwater Investigation.

44. **Comment:** Citizen Action commented that the types and amounts of RCRA wastes within the 3 ditches have only been sparsely sampled.

NMED Response: Sampling events took place in 1998, 1999, 2001, 2002, and 2003. Soil samples were collected from over 60 locations and analyzed for VOCs, SVOCs, PCBs, and metals.

NMED believes the sampling conducted was adequate. Groundwater, where SWMU 46 is located, is being addressed separately from SWMU 46 under the Tijeras Arroyo Groundwater Investigation.

45. **Comment:** Citizen Action commented that only soil-vapor sampling at two vapor wells has been conducted.

NMED Response: Soil-vapor samples were collected in 1998 at four Geoprobe™ boreholes, a passive soil-vapor survey was conducted in an area covering approximately seven acres in 1999, and soil-vapor samples were collected from two soil-vapor monitoring wells. Soil-vapor samples were also collected from 37, 97, 137, 197, 237, and 312 feet below ground surface (bgs) from the pilot borehole for TJA-3. The boreholes and groundwater monitoring sampled for soil vapor showed similar patterns, with higher TCE concentrations encountered at middle depths and much lower concentrations found above the perched groundwater.

46. **Comment:** Citizen Action commented that groundwater monitoring is required due to the significant evidence of contamination present at SWMU 46.

NMED Response: There are two groundwater monitoring wells within the boundary of SWMU 46, TJA-3(regional) and TJA-7 (perched). An additional well is located nearby (TJA-6, a regional well). Each of the wells is being monitored as part of the Tijeras Arroyo Groundwater (TAG) Investigation. SNL's Annual Groundwater Monitoring Report for Calendar Year 2011, dated June 2012, Table 1-3, indicates for the two wells within the boundary of SWMU 46 that only nitrate at TJA-7 exceeds an EPA maximum contaminant level (MCL).

Groundwater monitoring at and in the vicinity of SWMU 46 is being conducted as part of the TAG Investigation.

47. **Comment:** Citizen Action commented that there is a claim of a monitoring well TJA-6 but that well cannot be located for SWMU 46 on Figure 5. Direction of groundwater flow is not indicated either. The single groundwater monitoring well, TJA-6 is claimed for SWMU 46, but no information about the construction details, depth of the well or sampling data are provided in the fact sheet. Citizen Action also commented that no data for VOCs are presented from TJA-6.

NMED Response: The location of TJA-6 can be found on Plate 1 of SNL's Tijeras Arroyo Groundwater Continuing Investigation Report, November, 2002. The direction of groundwater flow is discussed in Section 3 of the 2002 report, and well construction data is found in Annex E of the report. The regional groundwater flow direction in the TJA-6 vicinity is westerly to northwesterly. The well was constructed with a sump of approximately 6-feet long (474.9 feet-480.7 feet), a 20-feet long section of schedule 80 PVC screen (454.9 feet – 474.9 feet), approximately 30 feet of primary filter pack consisting of 10-20 silica sand (451 feet- 480.7 feet), approximately 5 feet of secondary

filter pack comprised of 20-40 silica sand (446.5 feet – 451 feet), approximately 5 feet of 1/4" bentonite pellets (441feet – 446.5 feet), grout/backfill Volclay Grout (0 feet-441 feet), and schedule 80 PVC pipe riser with 2.5 feet of stickup.

The 4/22/04 groundwater sample for TJA-6 reported in SNL's Tijeras Arroyo Groundwater Investigation Report, November, 2005, for example, indicates low-level detections of VOCs including acetone (5µg/LL B,J), carbon tetrachloride (0.88µg/LL B,J) and trichloroethene (1.2 µg/LL B, J). Of these, trichloroethene (TCE) is the only significant VOC of concern for the TAG area.

48. **Comment:** Citizen Action commented that TJA-6 is greater than 500 feet from SWMU 46, and thus not at the point of compliance for SWMU 46.

NMED Response: The point of compliance rule at 20.4.1.500 NMAC incorporating 40 CFR § 264.95 applies to regulated units. SWMU 46 is not a regulated unit.

TJA-6 was placed at a location downstream of the outfall. Contaminants were not detected in the regional groundwater. Nonetheless, groundwater monitoring is being conducted in the general area as part of the Tijeras Arroyo Groundwater Investigation, which is meant to investigate both perched and regional groundwater in the area. Although it is possible that SWMU 46 may have been one of perhaps several historical sources of groundwater contamination in the TAG area, NMED believes that no significant source remains in the unsaturated zone at SWMU 46.

49. **Comment:** Citizen Action commented that groundwater flow direction is not provided on Figure 18.

NMED Response: Groundwater flow is westerly to northwesterly in the regional groundwater and southeasterly in the perched groundwater. See Figures 3.1.3-3 and 3.1.3-4 in SNL's Tijeras Arroyo Groundwater Investigation Report, November, 2005.

50. **Comment:** Citizen Action commented that RCRA requires one upgradient and three downgradient monitoring wells at the point of compliance for SWMU 46.

NMED Response: The regulations in this case do not require at least one upgradient and three downgradient wells be installed at SWMU 46. SWMU 46 is not a regulated unit under RCRA and is not subject to the groundwater regulations at 20.4.1.500 NMAC incorporating 40 CFR §§ 264.90-100. Nonetheless, groundwater monitoring is being conducted in the general area as part of the Tijeras Arroyo Groundwater Investigation.

51. **Comment:** Citizen Action commented that the locations of the septic tanks, drain fields, and the direction of groundwater flow are not provided on Figure 5.

NMED Response: There are no septic tanks or drainfields associated with SWMU 46. SWMU 46 is comprised of three outfall lines (ditches) connected to a pipeline (the pipeline is a separate SWMU under the Permit – SWMU 226).

Groundwater flow is westerly to northwesterly in the regional groundwater and southeasterly in the perched groundwater. See Figures 3.1.3-3 and 3.1.3-4 in SNL's Tijeras Arroyo Groundwater Investigation Report, November, 2005.

52. **Comment:** Citizen Action commented that TJA-6 is claimed to be part of the Tijeras Arroyo Groundwater (TAG) monitoring network, however, the location and details of the TAG network are not provided on Figure 5. Nor is there any indication that the TAG network is at the point of compliance for SWMU 46.

NMED Response: TJA-6 is a part of the well network included in the Tijeras Arroyo Groundwater Investigation. Tijeras Arroyo Groundwater information is found in SNL's Tijeras Arroyo Groundwater Continuing Investigation Report, November, 2002, SNL's Tijeras Arroyo Groundwater Investigation Report, November, 2005 and SNL's Annual Groundwater Monitoring Reports. Documents concerning Tijeras Arroyo Groundwater Investigation are available for public inspection at the HWB office in Santa Fe. The Tijeras Arroyo Groundwater Investigation encompasses a much larger area than that at SWMU 46, and is being investigated as an area of concern subject to the SNL Consent Order.

See Responses to Comments 47 and 48 above regarding the location of TJA-6 and point of compliance.

53. **Comment:** Citizen Action commented that the contaminants identified are mercury, cyanide, 17 VOCs (including high levels of TCE in soil gas 115 feet below ground surface), SVOCs, PCBs, RCRA metals, and radionuclides.

NMED Response: Although a number of contaminants were detected in soil and soil gas, the levels found do not pose unacceptable risk under an industrial land-use scenario. Groundwater was analyzed for a wide variety of contaminants, including VOCs, nitrate plus nitrite, anions, metals (plus uranium), gross alpha/beta activity, tritium and gamma spectroscopy. Groundwater contamination above a water quality standard was detected in only one of the three groundwater monitoring wells in the area (TJA-3, TJA-6, and TJA-7). Groundwater at and in the vicinity of SWMU 46 is being addressed under the Tijeras Arroyo Groundwater AOC.

54. **Comment:** Citizen Action commented that the abbreviation "VCA" is used but not listed in the Table of Abbreviations.

NMED Response: The abbreviation VCA (voluntary corrective action) was not defined in the text or the Table of Abbreviations found in Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012). NMED regrets the oversight.

55. **Comment:** Citizen Action commented that the September 1994 soil samples were collected from a storm run-off ditch and did not address the acid waste line discharges.

NMED Response: The September 1994 soil samples were taken from a storm run-off ditch that was not associated with SWMU 46. The results of this soil sampling event were not used in the assessment of soil contamination at SWMU 46. Additional soil sampling at SWMU 46 was performed in 1998, 1999, 2000, 2001 and 2003. See Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012).

56. **Comment:** Citizen Action commented that TCE levels from soil vapor sampling at 30 feet were 55 ppb by volume. According to another NMED report, Henry's Law predicts a concentration of TCE contamination in groundwater of > 100 ppb, more than 20 times higher than the Maximum Contaminant Level (MCL) for drinking water.

NMED Response: TCE was detected in soil vapor at a depth of 30 feet in August 1998 at a concentration of 55 ppbv. By application of Henry's Law, a concentration of 55 ppbv TCE in soil vapor is not high enough to cause groundwater contamination to exceed

the Environmental Protection Agency (EPA) maximum contaminant level (MCL) of 0.005 mg/L for TCE in groundwater. The minimum level that TCE could become of concern (assuming that the vapor was situated on the water table) is about 0.4 ppmv (400 ppbv).

57. **Comment:** Citizen Action commented that at LANL for MDA H, for a measurement of TCE at 2.6 ppb, NMED demanded a remedy of complete encapsulation.

NMED Response: The remedy of encapsulation was favored at Los Alamos National Laboratory (LANL) MDA H due to concerns about buried pyrophoric metals that could possibly ignite upon exposure to the atmosphere, not VOCs, and has since been withdrawn. VOCs at MDA H are not considered a concern at this point.

A TCE vapor concentration of 2.6 ppbv is too low to cause groundwater contamination that can exceed the Environmental Protection Agency (EPA) maximum contamination level (MCL) of 0.005 mg/L. See Response to Comment 56.

58. **Comment:** Citizen Action commented that soil vapor sampling from April 2001 through March 2002 showed enormous concentration levels of TCE at levels up to 46,000 ppbv at a depth of 115 ft. These high values are alarming and require serious investigation of contamination in groundwater.

NMED Response: Samples from both above and below 115 feet in vapor wells 46-VW-01 and 46-VW-02 exhibited notably lower concentrations of TCE. The maximum soil-vapor TCE concentration at 265 feet in 46-VW- 01 was 387.3 ppbv, which is much less than that at 115 feet.

At 46-VW-01 soil vapor samples were collected over 5 periods from April 2001 to March 2002 at depths of 15, 65, 115, 165, 215, and 265 feet. The maximum TCE

concentration at each depth was 2258.9; 12,523; 48,380; 22,060; 1,141.6; and 387.3 ppbv, respectively. At 46-VW-02 samples were collected at depths of 46, 96, 146, 196, and 246 feet. The maximum TCE concentration at each depth was 378.2, 702.6, 560.9, 462.3, and 503.0 ppbv, respectively. Note that the unit of measurement is ppbv, not ppmv.

Soil Vapor TCE concentrations listed in SNL's Tijeras Arroyo Groundwater Investigation Report, November 2005 , for the period of December 2004-January 2005 for 46-VW-01are 960; 8700; 30,000; 14,000; 1,200; and 220 ppbv for the respective depths listed above. Soil Vapor TCE for 46-VW-02 are 160, 360, 79, 240, 490, and 5 ppbv for the respective depths listed above. Given these low concentrations and natural attenuation, residual VOCs in the vadose zone at SWMU 46 are unlikely to cause groundwater contamination exceeding a water quality standard.

Nonetheless, groundwater monitoring in the area is being conducted under the Tijeras Arroyo Groundwater Investigation. For example, for the six quarters (July 2003 to December 2004) reported in SNL's Tijeras Arroyo Groundwater Investigation Report, November 2005, Table 4.2.3-1, TCE had not been detected in TJA-3 and TJA-6. For those six quarters TCE has been detected on and off at TJA-7 at levels below the MCL (1.46 µg/L, ND (not detected), 0.43µg/L, ND, 0.53µg/L, and ND).

59. **Comment:** Citizen Action commented that cancer risks for residential land-use are unacceptable.

NMED Response: SWMU 46 is proposed for Corrective Action Complete under an industrial land use scenario.

60. **Comment:** Citizen Action commented that human health and ecological risks are not acceptable to release this SWMU for CAC status.

NMED Response: Under an industrial land use scenario, a HI of 0.13 and an excess cancer risk of 1E-6 were calculated for SWMU 46. These values meet the acceptable risk levels for human health under an industrial land use scenario.

Ecological risks are negligible because the ditches have been backfilled with clean soil as discussed in the summary of the risk assessment found for SWMU 46 in Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012)).

61. **Comment**: U.S. Department of Energy/Sandia Corporation commented that for SWMU 46, the individual HQ for cadmium is 1.03. NMED judges the nonradiological risk for this site to be unacceptable for residential land-use. DOE and Sandia do not object to the imposition of land use controls for SWMU 46 based on nonradiological risk.

NMED Response: SWMU 46 has been granted corrective action complete status but with an industrial land use restriction. This decision is based on the risk for nonradiological contaminants.

62. **Comment:** U.S. Department of Energy/Sandia Corporation contest the discussion of and conclusions regarding radiological risk in the Statement of Basis (SOB). The activities of the radiological COCs were used to calculate a TEDE of 55 mrem/yr which is below the 75 mrem/yr value, the threshold action level for residential land use. The radiological standards have been met for this site for residential land use.

NMED Response: The decision to grant CAC status for SWMU 46 under an industrial land use scenario (therefore with controls) was based on the risk for nonradiological contaminants. The Hazard Index for noncarcinogens is not acceptable for residential land use.

63. **Comment:** U.S. Department of Energy/Sandia Corporation commented that as a result of the cadmium HQ, SWMU 46 should be listed on the permit as CAC with Controls. However, the radiological standards have been met at this site for residential land use and should be stated as such in a correction to the Statement of Basis.

NMED Response: See Responses to Comment 62.

SWMU 52

64. **Comment:** Citizen Action commented that a specific network of monitoring wells is necessary at the location of SWMU 52. Monitoring wells cannot be claimed for SWMU 52 that exist at other location distant from the release. The monitoring wells have to be close to the release for early detection.

NMED Response: The holding tanks and associated piping which comprise SWMU 52 were connected to a drainfield (SWMU 5) and to a set of surface impoundments (SWMU 4). Note that SWMUs 4 and 5 are significantly more important SWMUs associated with the Liquid Waste Disposal System (LWDS) because they were specifically designed and utilized to discharge wastewater into the environment.

Characterization of subsurface soil surrounding the tanks was conducted, and little contamination was detected. Thus, groundwater monitoring wells are not needed for the purpose of completing site characterization at SWMU 52. However,

contaminated groundwater beneath Technical Area-V, where SWMU 52 is located, is being addressed for corrective action under the Consent Order.

65. **Comment**: Citizen Action commented that the volume of wastes discharged by the LWDS during the years 1971 to 1992 is not described.

NMED Response: The total volume of wastewater discharged into the Liquid Waste Disposal System is unknown and likely will never be known. A broad range of constituents (VOCs, SVOCs, metals, radionuclides) were analyzed in soil samples, which were collected adjacent to the tanks in the areas most likely to encounter contamination, if the tanks had leaked. As indicated above, no significant contamination was detected.

66. **Comment:** Citizen Action commented that the total years of operation for the LWDS is not described in the Fact Sheet.

NMED Response: The Liquid Waste Disposal System operated from 1962 to 1992 as reported in SNL's Results of the Liquid Waste Disposal System RCRA Facility Investigation, Sandia National Laboratories, Albuquerque, New Mexico; September 1995. Tank 1 is still in service as part of the Liquid Effluent Control System.

67. **Comment:** Citizen Action commented that the actual sources of the discharges are not described for the tanks or the surface impoundment.

NMED Response: The information requested in the comment is found on page 34 in the Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012). The LWDS was designed to receive, monitor and discharge radioactive effluent from the Sandia Experimental Reactor Facility (SERF). Since the decommissioning of the SERF in 1971, nonradioactive wastewaters from various

buildings in TA-V were drained to the holding tanks. The tanks were periodically pumped to the LWDS drainfield until its collapse in 1967. Wastewater was then pumped to the surface impoundments until October 1992.

68. **Comment:** Citizen Action commented that the tanks, drainfield and surface impoundments received RCRA wastes without logs to record nature, amounts frequency and activity.

NMED Response: The Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012) states "During this time, no logs were maintained to record the frequency of operation and activity measurements." However, the *Results of the Liquid Waste Disposal System RCRA Facility Investigation, September 1995* report states that from 1963 until 1971, the LWDS received approximately 19 million gallons of waste water contaminated with approximately 35 curies of radionuclides.

There is no evidence that hazardous wastes were disposed of in the tanks, drainfield, or surface impoundments. Because the system did not require a RCRA permit to operate, record keeping requirements under RCRA were not imposed on the Facility to operate the Liquid Waste Disposal System.

69. **Comment**: Citizen Action commented that the age and ASME qualifications and condition of the tanks are not provided.

NMED Response: Two concrete tanks with capacities of 2,000 (Tank #1) and 6,000 gallons (Tank #2) were installed in 1963. A third steel tank with a capacity of 30,000 gallons was installed in 1968 to increase holding capacity. The tanks were not designed

for, and did not store, hazardous wastes, and thus, were not required to meet safety, leak detection, secondary containment, and other requirements under the regulations at 20.4.1.500 NMAC incorporating 40 CFR Part 264 Subpart J.

Tanks #2 and #4 have been filled with a lean cement mixture (see report Solid Waste Management (SWMU) Unit 52: Filling Tanks 2 and 4 with a Permanent Insoluble Material, September 2013). Tank #1 continues to be used as a holding tank for storm water that accumulates in the basement of Bldg. 6588 during occasional strong precipitation events, and condensate water from cooling equipment. Wastewater in the tank is regularly monitored, and when it reaches a specified level in the tank, it is pumped from the tank to the Liquid Effluent Control System (LECS) for disposal into the Albuquerque-Bernalillo County Water Utility Authority's sewer system.

70. **Comment:** Citizen Action commented that SWMU 52 must be closed as a landfill under 40 CFR 264 Subpart N along with the tanks and collapsed drainfield which constitute landfills.

NMED Response: SWMU 52 and associated SWMUs 4 and 5 are not landfills, and they are not regulated units under RCRA Subtitle C. They are SWMUs subject to corrective action under 20.4.1.500 NMAC incorporating 40 CFR § 264.101 and the SNL Consent Order.

71. **Comment:** Citizen Action commented that eight RCRA listed metals (arsenic, barium, beryllium, cadmium, total chromium, copper, nickel and vanadium) exceeded background values. No statement is provided as to the margin of exceedance.

NMED Response: The maximum concentrations for the metals referenced in the comment are found in Table 7, page 35, of the Fact Sheet/Statement of Basis, Sandia

National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012) .

Some metals exceed their approved background levels. The risk assessment indicated a HI of 0.63 using maximum concentrations, and a HI of 0.32 using the upper confidence limit (UCL) of the mean concentrations under a residential land use scenario. The risk assessment indicated an excess cancer risk of 2E-5 using maximum concentrations, and 4E-7 using concentrations expressed as the UCLs of the means under a residential land use scenario. NMED accepts the level of risk based on a residential land use scenario and the UCLs of the means.

72. **Comment**: Citizen Action commented that three VOCs and two SVOCs were detected in soil samples. The amounts detected are not provided.

NMED Response: Three VOCs (acetone, 2-butanone and methylene chloride) and 2 SVOCs (bis [2-ethylhexyl] phthalate and di-n-butyl phthalate) were detected in soil samples as indicated in Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012)).

The maximum concentrations detected are included in Table 7 of the aforementioned document. Acetone was detected at 0.15 mg/kg, an order of magnitude higher than the VOCs 2-butanone and methylene chloride. Bis(2-ethylhexyl) phthalate was detected at 1.3 mg/kg, two orders of magnitude higher than di-n-butyl phthalate at 0.051 J mg/kg. The VOCs and SVOCs do not pose a significant threat to human health or the environment.

73. **Comment:** Citizen Action commented that TCE has been detected at the site at concentrations from 12 to 16 ppb with other organic contaminants, but the extent of vertical contamination cannot be known unless monitor wells are installed at the location.

NMED Response: TCE was not detected in soil samples collected in the subsurface from borings advanced to a depth of 50 feet below ground surface. TCE has been detected in groundwater at Technical Area-V, but the investigation conducted at SWMU 52 does not definitively indicate that it was the source of the release. However, contaminated groundwater beneath Technical Area-V, where SWMU 52 is located, is being addressed for corrective action under the Consent Order.

74. **Comment:** Citizen Action commented that tritium and thorium-232 exceed background levels. All this is significant evidence of contamination requiring monitor wells compliant with the requirements of 40 CFR §§ 264.90-100.

NMED Response: NMED does not generally regulate radionuclides at DOE facilities. The maximum activity for tritium (0.041 pCi/g) and Th-232 (1.3 pCi/g) exceeded maximum background activities, which are 0.021 pCi/g for tritium and 1.01 pCi/g for Th-232. Such levels do not represent evidence of significant contamination. Furthermore, SWMU 52 is not subject to the groundwater regulations found at 20.4.1.500 NMAC incorporating 40 CFR §§ 264.90-100.

75. **Comment**: Citizen Action commented that human and ecological risks are not acceptable to release SWMU 52 for CAC status.

NMED Response: For nonradiological contaminants the excess cancer risk using the UCL of the mean for the main contributor to excess cancer risk (arsenic) is acceptable

under a residential land use scenario. For radiological constituents (thorium-232 and tritium), the TEDE is 1.7 mrem/yr, which is acceptable under a residential land use scenario according to DOE procedures and standards. See Fact Sheet/Statement of Basis, Sandia National Laboratories Proposal for Corrective Action Complete Status for 24 Solid Waste Management Units / Areas of Concern (September 17, 2012)).

As all contaminants were detected at depths greater than 5 feet below ground surface (because the tanks are below ground surface), there is no complete pathway for exposure for ecological receptors. Therefore, ecological risks are negligible.

76. **Comment:** U.S. Department of Energy/Sandia Corporation commented that the TEDE for SWMU 52 is less than the residential standard of 75mrem/yr. The radiological standards have been met at this site for residential land use.

NMED Response: SWMU 52 has been approved for Corrective Action Complete status on the basis that the levels of contaminants detected at the site do not pose significant risk to human health or the environment based on a residential land use scenario.

SWMU 196

77. **Comment**. Citizen Action commented that no records of discharges were maintained.

NMED Response: SNL's Results of the Technical Areas III and V RCRA Facility Investigation, dated June 1996, states that about 5 gallons of waste oil per week were discharged into the Cistern from 1978 until1989, when the source of the discharges (the PROTO 1 Facility) was closed.

NMED questioned the Permittees as to why such a large cistern was constructed to hold such small discharges. Their response was that the cistern was to be used on an emergency basis to hold the bulk of the transformer oil from the PROTO I Facility.

While that may have been the intent, records of discharges were not kept, and NMED believes that more waste oil and/or waste water was actually discharged into the cistern because contamination was found to extend to a depth of several hundred feet.

SNL's response to NMED's Request for Supplemental Information of November 2004 states that from 1978 to 1989, the cistern received insulating oil and wash water from PROTO 1. The cistern also served as an emergency catch basin for the series of underground storage tanks (SWMU 37) previously connected to PROTO 1. The PROTO 1 facility used Univolt™, a petroleum-based, electrical insulating oil manufactured by the Exxon Corporation that contained no polychlorinated biphenyl (PCB), metal, or radionuclide additives.

Personnel interviews state that occasional, small quantities of insulating oil containing wash water (and possibly Freon™) were discharged into the cistern. The cistern was not connected to any surface water collection systems.

In summary, the amount of contaminants and wastewater discharge into the cistern is unknown and likely to remain unknown. However, the sampling conducted is adequate to characterize what was released.

78. **Comment:** Citizen Action commented that data from soil sampling shows that TPH was found at high levels of 60,500 mg/kg. U-235 and U-238 and tritium were detected above background levels from the bottom of the Cistern. Five VOCs were detected.

NMED Response: TPH at 60,500 mg/kg was detected in a sample from the bottom of the cistern. However, no VOCs, PCBs, or SVOCs were detected above MDLs from the grab sample collected at the bottom of the cistern. Uranium-235, tritium, and five metals with concentrations above background levels were detected during the initial

investigation of the bottom of the cistern. As a result of these detections, the Permittees were required to advance deeper borings to determine the vertical extent of the soil contamination.

For the radiological contaminants (tritium, uranuim-233, uranium-235 and uranium-238), the TEDE is 1.2E-1 mrem/yr. The excess cancer risk is 1.0E-6, which is an acceptable level of risk. NMED does not generally regulate radionuclides at DOE facilities.

High concentrations of total petroleum hydrocarbons (TPH) were documented as a result of soil sampling. In 2003, a 300 foot soil boring detected TPH above 100 mg/kg at a depth of 260 feet. The analysis of TPH was used as a screening tool only.

Five VOCs (carbon disulfide, ethylbenzene, methylene chloride, toluene and xylene) were detected in 1999 from boreholes drilled in the upper 75 feet of the vadose zone. In 2003 additional VOCs (1,1,1-trichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, 1,2-dichloropropane, 2-butanone, chloromethane, tetrachloroethene, and trichloroethene) and six SVOCs (chrysene, pyrene, diethylphthalate, bis(2- Ethylhexyl) phthalate, fluoranthene and phenanthrene) were detected in soil samples from deeper boreholes, primarily in the depth range of 100-200 ft, most with J codes indicating that the concentrations of these substances were less than the laboratory reporting limits.

79. **Comment:** Citizen Action commented that a large drill rig was used to collect samples from 300 feet bgs and 20 feet west of the cistern. VOCs such as TCE, toluene, xylene, methylene chloride and six SVOCs were detected at that depth.

NMED Response: Volatile organic compounds (VOCs) such as TCE, toluene, xylene, methylene chloride and semi-volatile organic compounds (SVOCs) were not detected at

300 feet in soil. The maximum depth of detection for VOCs was 210 feet below ground surface, corresponding to a concentration for TCE at 0.66 J µg/kg. The deepest non J-coded detections for VOCs were at 150 feet below ground surface for butanone and methylene chloride. The maximum depth of detection for SVOCs (bis[2-Ethylhexyl]phthalate) was at a depth of 280 feet with a concentration of 120 J µg/kg. The deepest non J-coded detection for SVOCs was at 200 feet for diethylphthalate (390 µg/kg).

For an industrial land-use scenario the Hazard Index is 0 .03 and the excess cancer risk is 3E-6. For a residential land-use scenario the Hazard Index is 0.27 and the excess cancer risk is 6E-6. The levels of risk for both the industrial and residential land use scenarios are acceptable. However, the high concentrations of TPH in the soil preclude future use of the site without controls. Thus, SWMU 196 has been granted CAC status under an industrial land use scenario.

Of the VOCs and SVOCs, only TCE has been detected in groundwater beneath Technical Area-V, where SWMU 196 is located. However, contaminated groundwater beneath Technical Area-V is being addressed for corrective action under the Consent Order.

80. **Comment:** Citizen Action commented that the depth to groundwater was not provided.

NMED Response: The depth to groundwater is approximately 500 feet (see SNL's Supplemental Response and Proposal for No Further Action, Solid Waste Management Unit 196, Building 6597 Cistern, October 2004, page 3-1, last sentence). (Administrative Record, SNL 1169, p. 311)

81. **Comment:** Citizen Action commented that there is a release of contamination from the Cistern that requires groundwater monitoring wells to be placed at the site.

NMED Response: Residual subsurface soil contamination at SWMU 196 is not expected to cause groundwater contamination in the future. However, contaminated groundwater beneath Technical Area-V is being addressed for corrective action under the Consent Order.

82. **Comment**. Citizen Action commented that backfill of the Cistern does nothing to stop the plume of contaminants that are heading for the groundwater.

NMED Response: The maximum depth that contamination was detected was 280 feet below ground surface. Depth to groundwater is approximately 500 feet below ground surface. Backfilling the cistern will significantly restrict infiltration and percolation of water into site, retarding potential further movement of TPH contamination deeper into the vadose zone.

83. **Comment:** Citizen Action commented that there is no basis for providing CAC status for SWMU 196.

NMED Response: Characterization data indicate that the contaminants detected at the site pose an acceptable level of risk under an industrial land-use scenario. Thus, CAC status is justified.

84. **Comment**: Citizen Action commented that this is a chemically and radioactively contaminated site with the potential to contaminate the groundwater with no monitoring in place. An appropriate groundwater investigation must be provided with at least 1 upgradient and 3 downgradient monitoring well network.

NMED Response: Residual subsurface soil contamination at SWMU 196 is not expected to cause groundwater contamination in the future. However, contaminated groundwater beneath Technical Area-V is being addressed for corrective action under the Consent Order.

85. **Comment:** Citizen Action commented that Sandia provides no information as to what radionuclides were found at the 300 ft depth.

NMED Response: NMED generally does not regulate radionuclides at DOE facilities. Radionuclides were detected only at low activity levels in samples collected at the bottom of the Cistern. No radionuclide samples were collected from the 300 ft depth. In April 1995, two composite soil samples were collected from the bottom of the Cistern for radionuclide analyses. U-235 was detected at an activity level slightly above its corresponding maximum background value. Tritium exceeded its corresponding maximum background level. For radiological contaminants, the TEDE was calculated to be 1.2 E-1millirem/year. Thus, radionuclides do not pose a significant risk.

86. **Comment:** Citizen Action commented that the SWMU needs to be remediated under post-closure mechanisms as a regulated unit.

NMED Response: SWMU 196 is not a regulated unit, and is not subject to post-closure care under RCRA.

AOC 1090

87. **Comment:** Citizen Action commented that characterization is not sufficient for this SWMU.

NMED Response: AOC 1090 has been adequately characterized via soil sampling conducted at locations most likely to contain the highest concentrations of contaminants.

Characterization data indicate that the contaminants detected at the site pose an acceptable level of risk under an industrial land-use scenario.

88. **Comment:** Citizen Action commented that the SWMU has no groundwater monitoring well and that the description of operations requires groundwater monitoring.

NMED Response: Based upon the low levels of contaminants detected, the depth to groundwater on the order of 500 feet bgs, and natural attenuation processes, groundwater monitoring wells are not needed.

89. **Comment:** Citizen Action commented that the amounts of discharges are not set forth.

NMED Response: The total amount of wastewater discharged is not known and likely never will be known.

90. **Comment:** Citizen Action commented that the SWMU operated from 1959 to the early 1990s and was thus a regulated unit that must be closed with long-term monitoring in place.

NMED Response: AOC 1090 is not a regulated unit and also is not subject to the post-closure care permit requirements. Under corrective action authority, the NMED can impose long-term monitoring for a site. However, in this case, the low levels of contaminants present at the site indicate that long-term monitoring is not needed to ensure protection of human health or the environment.

91. **Comment:** U.S. Department of Energy/Sandia Corporation commented that it is believed that the SVOC compounds detected in the samples represent residual drainfield pipe fragments and do not indicate significant or widespread SVOC contamination that could pose a threat to human health or the environment -- additional

sampling detected no SVOCs in soil samples. AOC 1090 should be designated as CAC without Controls.

NMED Response: Other than SVOCs, arsenic is only other risk driver, but the maximum concentration of arsenic (4.96 ppm) is J-coded as an estimated value. Thus, NMED is willing to grant corrective action complete status for AOC 1090, provided it is subject to an industrial land use restriction.

92. **Comment:** U.S. Department of Energy/Sandia Corporation commented that with the removal of the SVOC concentrations, arsenic is the only significant contributor to the cancer risk. The UCL of the arsenic concentration from AOC 1090 is below the background concentration; thus arsenic can be removed from consideration as a contributor to cancer risk for the residential land-use scenario.

NMED Response: See Response to Comment 91.

SWMU 49

93. **Comment:** Citizen Action commented that SWMU 49 contains RCRA constituents including VOCs, SVOCs, metals, hexavalent chromium, cyanide, High Explosive (HE) residues, and radionuclides. There is inadequate characterization of SWMU 49 and it should not be provided CAC status. Potential surface contamination from explosives testing was not included as part of the assessment activities as it should be.

NMED Response: Explosive testing was not conducted at SWMU 49; rather Building 9820 was used to synthesize high explosive compounds. NMED disagrees that the site was inadequately characterized. Sampling was conducted at areas at the site most likely to have received contaminants. Low levels of contaminants were detected in soil at an outfall connected to drains and a sink in Building 9820 and from a drain in a trailer that

was used for developing photographs. Soil borings were advanced at the trailer site and the outfall. Two soil samples were collected from each boring to characterize the releases. Additionally, groundwater monitoring was conducted in well CYN-MW5 for eight quarters.

Confirmatory soil sampling and analysis in October 1994 and May 1995 showed the presence of the organic compounds methylene chloride and toluene in a trip blank (TB) and equipment blank (EB). Bis(2-Ethylhexyl) phthalate was detected in soil samples collected at the surface discharge and outfall locations. No cyanide or HE compounds were detected in any of the samples collected from the boreholes. Mercury and silver were detected (0.077J mg/kg and 1.7 mg/kg) above their approved maximum background concentrations (0.055 mg/kg and <0.5 mg/kg) but below the upper 95th percentile for background (1.2 mg/kg and 4.0 mg/kg, respectively) and below Subpart S action levels (20 mg/kg and 400 mg/kg, respectively); all other metal concentrations were less than their corresponding maximum background concentrations.

For the radiological contaminants the TEDE is 0.23 mrem/ yr. The corresponding excess cancer risk is 2.3E-6, which is an acceptable level of risk for residential land use. Furthermore, eight quarters of groundwater monitoring at well CYN-MW5 were conducted. Acetone was the only VOC detected in groundwater sample collected in July 2002 (14.1 µg/L). However, acetone was not detected in groundwater samples collected during the other 7 sampling events, suggesting that the detection of acetone was a result of laboratory contamination.

One SVOC [bis(2-Ethylhexyl) phthalate] was detected in the groundwater sample collected in April 2004, but the concentration detected was less than the EPA MCL of 6.0

µg/L. Bis(2-Ethylhexyl) phthalate was not detected in groundwater samples collected during the other 7 sampling events. Barium slightly exceeded the approved maximum background concentration for all eight quarters of sampling, but was below the EPA MCL of 2.0 mg/L. The detected barium concentrations are considered to be representative of background conditions. Hexavalent chromium exceeded the approved maximum background concentration in the first sample collected in July 2002 at 0.015 mg/L (value was below the reporting limit and therefore was an estimate), but was less than the MCL of 0.1 mg/L. Hexavalent chromium concentrations in all other samples are at background level and do not exceed the MCL.

A risk assessment for chemical contaminants resulted in a HI of 0.0 and an excess cancer risk of 5E–8 which is an acceptable level of risk for residential land use.

94. **Comment:** Citizen Action commented that the volumes of discharges from a former trailer used as a darkroom and Building 9820 are not described for the period of operation of the site. The period of operation was also not described.

NMED Response: The volumes of the discharges are not known and are unlikely to ever be known. As indicated in the Statement of Basis made available with the public notice, the drain outfall at SWMU 49 was in use from 1958 to 1988, and the surface discharge at the trailer occurred from the mid-1970s until 1988.

95. **Comment:** Citizen Action commented that monitoring well CYN-MW5 is located over 1,350 feet from SWMU 49. There is no compliance with the requirement under RCRA that the well be located at the point of compliance. Flow direction of the groundwater is not indicated so one cannot determine that MW5 was placed at the correct location.

NMED Response: The location of groundwater monitoring well CYN-MW5 was chosen to allow the well to serve as a monitoring point for the middle reach of Arroyo del Coyote, as well as serve to monitor groundwater near SWMU 49. The location of this SWMU in a canyon suggests that potential groundwater impacts can be assessed using one downgradient well, as the groundwater flow direction in a canyon is typically controlled by topography. If groundwater had become contaminated as a result of discharges at SWMU 49, it is the NMED's opinion that such groundwater contamination would migrate rapidly away from the site, in a direction towards the northwest (down gradient from the small drainage where the outfall is located), given that the geologic conditions (gravel overlying shallow bedrock on a steep slope) at the site would promote rapid migration. Considerable time has passed since the outfall was active. Thus, the well was purposely placed farther from SWMU 49 than normal in order to have the best chance of intercepting a contaminant plume, should one exist.

The point of compliance provisions applicable to regulated units do not apply to this SWMU.

96. **Comment:** Citizen Action commented that no background monitoring well is present.

NMED Response: A background well is not needed. No definitive evidence of groundwater contamination was found at the downgradient well, and the concentrations of contaminants in soil are low.

97. **Comment:** Citizen Action commented that even though distant from SWMU 49, CYN-MW5 detected hexavalent chromium at a level that exceeded the approved regulatory background concentration level. All barium and one hexavalent chromium concentrations exceeded approved background values. This is statistically significant

evidence of contamination, and monitoring wells should have been placed at SWMU 49 for detection monitoring at the point of compliance.

NMED Response: See NMED's Response to Comment 95 concerning the location of well CYN-MW5.

Hexavalent chromium was not detected in soil samples collected at SWMU 49. Hexavalent chromium was detected once in groundwater at a concentration of 0.015 mg/L, above the maximum background concentration of 0.010 mg/L during the first of eight quarterly sampling events. Hexavalent chromium was detected at a maximum of 0.008 mg/L, less than the background level, during the next seven quarterly events. Barium was detected at 0.176 to 0.200 mg/L, above the maximum background concentration of 0.12 mg/L during each of eight quarterly sampling events. All concentrations of barium in groundwater were below the EPA MCL of 2.0 mg/L for the eight groundwater sampling events. However, barium concentrations observed in water samples from CYN-MW5 are likely representative of background conditions, as the approved background level for this area seems unusually low for the Kirtland Air Force Base area, where the maximum concentration measured by a NMED groundwater study was found to be 0.237 mg/L.

98. **Comment:** Citizen Action commented that SWMU 49 has not been characterized or remediated in accordance with state and/or federal regulations. The required monitoring has not been performed, and there has been no remediation whatsoever.

NMED Response: SWMU 49 was investigated and characterized via soil and groundwater sampling. Only low levels of contaminants were detected in soil.

Additionally, groundwater monitoring was conducted in well CYN-MW5 for eight quarters. No definitive evidence of groundwater contamination was found.

Soil contamination at the site does not pose unacceptable risk under a residential land use scenario.

SWMU 101

99. **Comment:** Citizen Action commented that this is a RCRA regulated unit without monitoring wells. The dump received RCRA contaminants illegally without a RCRA permit.

A monitoring network compliant with the requirements of 40 CFR §§ 264.90-100 is required to be installed at SWMU 101 with at least one upgradient and three downgradient wells. SWMU 101 must have network of monitoring wells put in place because releases have been identified that include VOCs, SVOCs, cyanide, chromium and selenium.

NMED Response: SWMU 101 is not a regulated unit and is not subject to the groundwater monitoring and corrective action requirements of 20.4.1.500 incorporating 40 CFR §§ 264.90-100. NMED has no evidence that hazardous wastes were illegally discharged to the septic system. The presence of hazardous constituents does not mean that the constituents were derived from the disposal of hazardous waste.

Additionally, SWMU 101 is not subject to the groundwater monitoring and corrective action requirements of 20.4.1.500 incorporating 40 CFR §§ 264.90-100.

The organic compounds acetone, chloromethane, chrysene, methylene chloride, phenanthrene and toluene were detected in soil samples. Of the inorganic compounds, total chromium, cyanide, selenium and silver exceeded approved background levels.

Risk analysis yielded a HI of 0.00 and excess cancer risk of 1E-7 for all contaminants which is an acceptable level of risk for residential land use.

100. **Comment:** Citizen Action commented that the volume of liquid discharges to the sumps and drains from Building 9926 and the explosive room in Building 9926A need to be described or the amount of contaminants indicated.

NMED Response: The exact volume and amount of wastewater and that for the contaminants contained within the wastewater are not known and likely will not ever be known. It is not necessary to know the volume of liquid discharged in order to assess the concentrations of residual contaminants currently present at the site.

101. **Comment:** Citizen Action commented that the depth to groundwater is not described for the location. The nearest groundwater monitoring well is approximately 0.7 mi southwest of the site.

NMED Response: Groundwater at SWMU 101 is approximately 420 feet below ground surface as measured at well CTF-MW3, approximately 0.5 miles southeast of SWMU 10

102. **Comment:** Citizen Action commented that operational records are not available. Methanol, TCE, toluene, acetone and isopropyl alcohol, hydrochloric, nitric and sulfuric acid along with high explosive compounds were handled.

NMED Response: The Statement of Basis indicated that the buildings were constructed in 1960 and the septic system installed at the same time. The discharges were connected to the sewer system in 1991, and the septic system abandoned in place in 1996. As operational records for SWMU 101 were not available, the site investigation was designed to evaluate for all potential contaminants.

103. **Comment:** Citizen Action commented that high levels of PCE were identified in soil gas.

NMED Response: Tetrachloroethene (PCE) was identified in a passive soil-gas survey in 1994 using PETREX sampling tubes. The results for one sample identified PCE in soil gas above 10 E5 ion counts. However, ion counts from a passive soil-gas survey cannot be used to quantify the actual amount of a contaminant that is present. Chemical analysis of soil samples collected at SWMU 101 did not detect PCE, indicating that PCE, if still present, occurs only in trace amounts at the site.

104. **Comment:** Citizen Action commented that tritium is above background levels although the amount is not described. U-235 and U-238 are above background levels.

NMED Response: NMED does not generally regulate radionuclides at DOE facilities. Tritium, uranium-238, and uranium-235 are radionuclides. Tritium was detected at 0.0245 pCi/g, slightly above the maximum background activity level of 0.021 pCi/g. Uranium-235 and uranium-238 were not detected in soil samples collected at the site. The minimum detectable activities (MDAs) for uranium-235 and uranium-238 (0.320 pCi/g and 4.52 pCi/g) slightly exceeded the maximum background level for each radionuclide (0.16 and 1.4 pCi/g, respectively). Therefore, the MDAs for uranium-235 and uranium-238 were included in the risk analysis as a conservative measure. The cancer risk for radiological constituents is acceptable under a residential land use scenario.

105. **Comment:** Citizen Action commented that soil samples have been collected at shallow depths to no more than 26 feet. Testing has been at a sparse number of

locations. The information presented for soil sampling only says what was tested for, not the levels that were found.

NMED Response: The soil sampling that was conducted was adequate for SWMU 101. NMED and SNL personnel developed a staged approach and specific procedures for investigating and characterizing small drain and septic system (DSS) sites. The RCRA Facility Investigation Report contains information on the concentrations and activities of the chemical and radiological constituents, respectively. Maximum values are summarized in the Statement of Basis.

106. **Comment:** Citizen Action commented that the ecological risks stated for SWMU 101 are not based on field data from plants and animals. Human and ecological risks are not acceptable to release this SWMU for Corrective Action Complete status because there is insufficient data to characterize the site.

NMED Response: Benchmark toxicity values are based on lowest-observed-adverse-effect levels for plants and on no-observed-adverse-effect levels for wildlife. These values, which are based on field data for key plant and animal species, are used to model the ecological risks of site specific contaminant concentrations on the plant and wildlife receptors at the site. Radiological and nonradiological contaminants of concern were used in the ecological risk assessment.

The major route of exposure for plants and animals is the direct uptake of contaminants from soil. Field data for plants and animals were used in the calculations for ecological risk, where possible. Based upon the analysis, ecological risks are low.

Additionally, site characterization data are adequate; the investigation focused on where the highest concentrations of contaminants should be found. There are no

contaminants posing unacceptable levels of risk at SWMU 101 based on a residential land use scenario.

SWMU 116

107. **Comment:** Citizen Action commented that SWMU 116 has a groundwater monitoring well (CTF-MW1) that is 500 feet from SWMU 116. CTF-MW1 is too far from the point of compliance.

NMED Response: If groundwater had become contaminated as a result of discharges at SWMU 116, it is the NMED's opinion that such groundwater contamination would migrate rapidly away from the site, in a direction towards the west (downgradient along a small drainage adjacent to the SWMU), and given that the geologic conditions (gravel overlying shallow bedrock) at the site that would promote rapid migration. Thus, the well was purposely placed farther from SWMU 116 than normal in order to have the best chance of intercepting a contaminant plume, should one exist.

The location of this SWMU, situated at the head of a drainage and surrounded on three sides by hills, suggests that potential groundwater impacts can be evaluated using one downgradient well, as the groundwater flow direction would be expected to be controlled by topography.

108. **Comment:** Citizen Action commented that although the monitoring well is 500 feet from SWMU 116, samples show that selenium was detected in seven of eight groundwater samples exceeding background levels.

NMED Response: Definitive evidence of groundwater contamination was not found. Selenium was detected in groundwater samples in seven of the eight quarters at concentrations ranging from 0.00536 mg/L to 0.0072 mg/L, which is slightly above the

approved maximum background concentration of 0.005 mg/L. These values are likely representative of background levels and are below the EPA MCL of 0.05 mg/L.

109. **Comment:** Citizen Action commented that no background well is present for SWMU 116.

NMED Response: A background well is not needed. No definitive evidence of groundwater contamination was found at the downgradient well. SWMU 116 is not a regulated unit.

110. **Comment:** Citizen Action commented that no groundwater flow direction is indicated on Figure 13 to determine if CTF-MW1 is downgradient from SWMU 116.

NMED Response: The groundwater flow direction is most likely away from the mountain front to the west-southwest. See also Response to Comment 107.

111. **Comment:** Citizen Action commented that no RCRA monitoring network consisting of 1 upgradient and 3 downgradient wells is in place despite the significant evidence of contamination, especially given that selenium could be contaminating the groundwater beneath the SWMU.

NMED Response: A groundwater monitoring well network as referenced by the comment is not required because the SWMU is not a regulated unit and is not warranted based on the lack of evidence of groundwater contamination.

112. **Comment:** Citizen Action commented that the use of Building 9990 and the volume of waste water and quantities of contaminants that were discharged are not identified.

NMED Response: Building 9990, the Electroexplosive Research Facility, was used for explosives testing until 1986, and unspecified activities from 1986-1994. Reportedly,

there has been no significant activity at Building 9990 since 1994. One of the seepage pits received waste water from a darkroom sink and drains. No operational records are available. The total amount of wastewater or wastes discharged and the quantities of contaminants will likely never be known.

113. **Comment:** Citizen Action commented that the claim that risk is acceptable is unsupportable given the lack of a RCRA well monitoring network to characterize the contamination in the groundwater at SWMU 116. Human and ecological risks are not acceptable to release this SWMU for CAC status.

NMED Response: See Responses to Comments 107 and 108. SWMU 116 was investigated and characterized via soil and groundwater sampling. A human health risk screening was performed. For the residential land use scenario, the HI was 0.01 and the excess cancer risk was 4E-8. The SWMU does not pose unacceptable risk to human health under a residential land use scenario. Because all contaminants are located at depths below 5 feet, there is no complete exposure pathway, and thus, ecological risk is negligible.

SWMU 138

114. Citizen Action commented that SWMU 138 received metals, HE compounds, VOCs, SVOCs and radionuclides from its construction in 1959 until about 1991. The SWMU has not been adequately characterized for Corrective Action Complete status. Since it received hazardous waste after July 26, 1982, a RCRA permit was required but not obtained for SWMU 138. SWMU 138 is required to close with a post-closure permit.

NMED Response: NMED disagrees that the site was inadequately characterized. Sampling was conducted at areas at the site most likely to have received contaminants. Low levels of contaminants were detected in soil samples collected from the septic system drainfield and from below the septic tank; however, all contaminants were detected at concentrations that meet acceptable risk levels for residential use.

SWMU 138 is not a regulated unit and was not and is not subject to the requirements for a RCRA permit or RCRA post-closure care permit. NMED has no evidence that hazardous wastes were disposed of in the septic system. The presence of hazardous constituents does not mean that the constituents were derived from the disposal of hazardous waste.

115. **Comment:** Citizen Action commented that the aqueous discharges from Building. 6630 are not described for volume or types of waste constituents.

NMED Response: Site operational history is not well known. The Statement of Basis for SWMU 138 describes potential constituents of concern as metals, HE compounds, VOCs, SVOCs and radionuclides. The exact volume and amount of liquid waste and contaminants are not known and will likely not ever be known.

116. **Comment:** Citizen Action commented that septic tank sampling detected PCBs. Soil sampling was only conducted to a depth of 16.5 feet. The soil samples detected three VOCs, three SVOCs, and three RCRA metals above approved background levels.

NMED Response: The PCB Aroclor 1254 was detected in tank sludge at 700 µg/kg in May 1994. The septic tank sludges were removed and the tank cleaned on October 10, 1995. Three VOCs (acetone, methylene chloride and toluene) were detected in the soil samples. All but toluene were also detected in the associated TB or EB samples. Three

SVOCs [bis(2-ethylhexyl) phthalate, 2-chloronaphthalene and phenol] were detected in the soil samples. No PCBs were detected in any of the samples collected from the boreholes. Barium, nickel and silver were detected above their approved maximum background levels in all three boreholes. All other metal concentrations were less than their corresponding approved maximum background concentrations. For radionuclides, no activities above background levels were detected in any of the samples analyzed. However, although not detected, the MDA for tritium analyses exceeded its respective background activity; as a result, the MDA for tritium (0.125 pCi/g) was used in the risk assessment as a conservative measure.

The risk assessment for SWMU 138 resulted in a HI of 0.20 and an excess cancer risk of 6E-8, which is acceptable for residential land use.

117. **Comment:** Citizen Action commented that although statistically significant evidence of contamination was detected at SWMU 138, no groundwater monitoring has been conducted for the site and compliance monitoring is required under RCRA.

NMED Response: SWMU 138 is not a regulated unit and is not subject to the groundwater monitoring and corrective action requirements of 20.4.1.500 incorporating 40 CFR §§ 264.90-100. Although contamination was detected in soil at SWMU 138, the levels of contamination are not significant.

118. **Comment:** Citizen Action commented that human and ecological risks are not acceptable to release this SWMU (138) for CAC status.

NMED Response: A human health risk screening assessment was performed. For a residential land-use scenario, the HI is 0.2 and the excess cancer risk is 6E-8. The level of risk is acceptable for residential land use. Because all contaminants are located at

depths below 5 feet, there is no complete exposure pathway, and thus, ecological risk is negligible.

SWMU 140

119. **Comment:** Citizen Action commented that the abandoned drain systems, seepage pit and drywell are not described as to depth. The volume of discharges is not described.

NMED Response: As indicated in the RCRA Facility Investigation Report (September 1999), the depth of the bottom of the septic tank is seven feet below ground surface, the drywell eight feet, and the seepage pit 11 feet below ground surface. The volume of discharge is estimated to be between 70,000 and 3,500,000 gallons (RSI Response and Proposal for CAC, Drain and Septic Systems SWMU 140, Bldg. 9965 Septic System, September 2005). However, the actual amount of wastewater or wastes discharged will likely never be known.

120. **Comment:** Citizen Action commented that the drain systems, seepage pit, and drywell received RCRA hazardous waste without obtaining a permit.

NMED Response: There are no records that hazardous wastes were disposed of in the SWMU 140 septic system. The presence of hazardous constituents does not mean that they were derived from the disposal of hazardous waste.

121. **Comment:** No monitoring well has been provided as it should because of significant evidence of contamination exists at the site. Four VOCs, cyanide, three RCRA metals, U-235 and U-238 were detected in soil samples. Septic tank sampling

identified VOCs (TCE), pesticides, cyanide, oil and grease. Upgradient and downgradient monitoring wells are needed at both the seepage pit and drywell.

NMED Response: Soil sampling results from areas most likely to have received the highest levels of contaminants demonstrate that only low levels of contaminants are present. Thus, groundwater monitoring wells are not needed. An assessment of risk demonstrates that SWMU 140 does not pose unacceptable risk to human health or the environment.

122. **Comment:** Citizen Action commented that the data to evaluate risk are not present. The five assessment investigations do not provide the necessary knowledge to characterize nature and extent for potential or existing contamination of the groundwater.

NMED Response: Samples were collected and analyzed from locations most likely to have received the highest concentrations of contaminants. These data are adequate to complete the investigation of the site and evaluate risk.

AOC 1117

123. **Comment:** Citizen Action commented that SWMU 1117 is an abandoned drywell 4 feet in diameter and 11 feet deep. The condition of the drywell is not described to know if the well is even covered.

NMED Response: NMED personnel inspected this particular drywell and it did have a cast iron cover in good condition. It was dry at the time of the inspection (1999).

124. **Comment:** Citizen Action commented that the drywell was constructed in 1980 and ceased receiving liquid wastes by August 1999. The drywell is thus a regulated unit that must close with groundwater monitoring.

NMED Response: Dry wells, or French drains, are typically connected to floor drains or air-conditioner condensate drains – not to septic systems or sinks - and were not designed to continuously receive liquids. The drywell is not a regulated unit as it was not used for the disposal of hazardous waste, is not subject to the groundwater monitoring requirements of 20.4.1.500 incorporating 40 CFR §§ 264.90-100, and is not subject to the closure requirements for hazardous waste management units.

125. **Comment:** Citizen Action commented that the SWMU is one of five shallow groundwater Drains and Septic Systems (DSS) sites that had 2-butanone soil sample concentrations above the 10 microgram/kg VOC trigger level specified in the DSS sampling and analysis plan (SAP).

NMED Response: The contaminant released, 2-butanone (methyl ethyl ketone or MEK), is a common laboratory contaminant. The compound was detected in samples from five DSS sites that were submitted together in 1999 for laboratory analysis. The MEK data for the 1999 samples are considered erroneous because of laboratory contamination and were rejected. MEK was not detected in soil samples collected in 2005.

SWMU 91

126. **Comment:** Citizen Action commented that the 20 acre site amounts to multiple landfills operating to receive waste after July 26, 1982 and should be required to have a

RCRA Part B Permit. SWMU 91 must be closed as a landfill under 40 CFR 264 Subpart N.

NMED Response: SWMU 91 originated from the Flyer Plate Test Site which was active from 1962 until the late 1980's. In 1979 steel-jacketed lead barrels weighing 1,000 to 4,000 pounds were used in the tests, which also utilized 200 to 1,000 pounds of high explosives per test. These tests resulted in the release of large amounts of lead into the environment.

According to the RCRA Facility Investigation Report (Final Investigation Report, June 2005; , after each test, an effort was made to pick up large pieces of debris between tests, but apparently not all debris was located and removed from the site. Heavy equipment used to prepare the site between tests spread debris and small particles of lead on the surface and buried them to shallow depths.

NMED does not consider SWMU 91 to be a landfill because no systematic attempt was made to bury debris in a concentrated area for the purpose of disposal. Debris and contaminated soil exhibiting unacceptable levels of lead contamination was subsequently removed through the corrective action completed at SWMU 91. SWMU 91 is not a regulated unit under 20.4.1.500 NMAC incorporating 40 CFR § 264.90(a)(2). Instead, SWMU 91 is subject to corrective action under 20.4.1.500 NMAC incorporating § 40 CFR 264.101. SWMU 91 is also not subject to RCRA permit requirements.

127. **Comment:** Public comment was received from Citizen Action asserting that groundwater monitoring is required as part of the closure.

NMED Response: Groundwater monitoring wells are not needed at SWMU 91. Given the climatic and geologic conditions at the site, there is little potential for residual elemental lead to migrate to groundwater which occurs at a depth in excess of 485 feet below ground surface.

128. **Comment:** Citizen Action commented that the number of tests performed involving the masses and types of material are not provided. The mass of differing materials used in the tests needs to be quantified.

NMED Response: The exact quantities of materials used in the tests will likely never be known. A total of 13 documented lead barrel/flyer plate tests were conducted at SWMU 91 during the 1980's. The total amount of high explosives used in the documented tests was 7,400 pounds, while the total amount of lead that was used is 102,000 pounds. Earlier testing from 1962 to the 1980's used undetermined amounts of high explosives, aluminum, lucite, and cast iron. Characterization of SWMU 91 indicates that the only significant contaminant detected at the site is lead.

129. **Comment:** Citizen Action commented that lead, arsenic, beryllium, cadmium, selenium, silver, barium and chromium were detected "above background values." It must be presented how far above background values all RCRA metals were detected.

NMED Response: Lead is the main contaminant. The Upper Confidence Limit of the mean concentration of lead is less than the construction worker clean-up goal of 750 mg/kg and the industrial land-use scenario of 1,500 mg/kg, and thus is an acceptable level of risk.

The concentrations of metals are presented in Table 8 in the Statement of Basis, as well as in other documentation related to the RCRA Facility Investigation. The

approved maximum background concentrations are 4.4 mg/kg for arsenic; 214 mg/kg for barium; 0.65 mg/kg for beryllium; <1 mg/kg for cadmium; 15.9 mg/kg for chromium; 11.8 mg/kg for lead; <1 mg/kg for selenium; and, <1 mg/kg for silver. The maximum concentrations of arsenic (14.5 mg/kg), beryllium (3.1 mg/kg), cadmium (5 mg/kg), lead (6,800 mg/kg), selenium (55 mg/kg), silver (5.4 mg/kg), barium (250 mg/kg) and chromium (1.7 mg/kg) detected at SWMU 91 were evaluated in the risk assessment. Lead, arsenic, beryllium, cadmium, selenium, silver, barium and chromium were detected above their corresponding maximum background values, but only lead and arsenic failed acceptable risk levels for residential land use. However, arsenic concentrations likely reflect background concentrations. The risk level for residual lead contamination is acceptable for industrial land use, which for the foreseeable future is SNL's intended land use for SWMU 91.

130. **Comment:** Citizen Action commented that no subsurface testing has been performed below a depth of 5 feet although contamination with RCRA metals and radionuclides such as U-235, U-238, Cs-137 and thorium-232 has been detected in these samples. Contamination must be investigated at depths greater than 5 feet as tests were conducted in a trench 6 to 8 feet deep. Testing and monitoring at greater depths is required under RCRA to determine if groundwater contamination is present.

NMED Response: Subsurface soil samples were collected at depths of 5, 10, 15, and 20 feet during site investigations conducted in 1992 and 1995. Samples had a maximum lead concentration in soil of 17 mg/kg at 20 feet below ground surface, which is representative of background conditions. Analytical results indicate that most soil contamination occurs at shallow depths (< 2 feet). Geophysical surveys were also performed in 2004 to look

for buried debris. These surveys indicated that the depth of debris was limited to 2 to 3 feet below ground surface. In 2004, soil was excavated to remove debris and contaminated soil with levels of lead exceeding 750 mg/kg, the acceptable concentration for lead for a construction worker at an industrial location.

Surface radiological surveys were conducted in 1993 and 1994 at 6-foot centers (100% coverage). While the radionuclides U-235, U-238, Cs-137, and Th-232 were detected above background levels, radiological materials were reportedly not used in the tests conducted at SWMU 91. Radiological contamination may have originated at SWMUs 17A, 17B and 194 which are adjacent to or near SWMU 91 and which were reported to have released radiological materials and could have been deposited on the ground surface of SWMU 91. The level of risk posed by residual contamination at these SWMUs was acceptable, and they were granted Corrective Action Complete status without controls.

131. **Comment:** Citizen Action commented that the travel of the fine particles of RCRA metals and radionuclides into the air pathway should be considered.

NMED Response: The fate and transport of the fine particles of metals and radionuclides through air was evaluated. Additionally, inhalation of airborne compounds (vapor phase or particulates) of both nonradiological and radiological contaminants was one of the potential exposure routes evaluated in the risk assessment.

The level of risk for industrial purposes is acceptable for nonradiological contaminants. SWMU 91 has been released for unrestricted land use for radiological contaminants by the DOE under its self-implementing regulations.

132. **Comment:** Citizen Action commented that Figure 10 does not show the sampling locations at SWMU 91.

NMED Response: Figure 10 in the Statement of Basis illustrates the location of SWMU 91 and the area of the excavation relative to the test area. Soil sampling, surface radiological surveys, geophysical surveys, and a UXO/HE survey were conducted in 1992, 1993, 1994, 1995, 1996, 1999 and 2000. Figures 2.3.1-1, 2.3.3-1, 2.3.3-2, 2.3.3-3, 2.3.3-4, 2.3.3-5, 2.4.1-1, 2.4.2-2, 2.4.2-3, 2.4.3-1, 2.4.6-1, 5-15.1.3-1, 5.1.4-1, 5.3.2-1 illustrate individual surveys, sampling locations and excavations (Final Investigation Report for SWMU 91, June 2005). Hundreds of soil samples were collected and analyzed during the investigations conducted at the site. Detailed results are presented in the Final Investigation Report for SWMU 91, June 2005, including maps showing the locations of soil samples collected.

133. **Comment:** Citizen Action commented that Figure 10 does not show the proximity to lands that are offsite of SNL to SWMU 91. Testing of the offsite lands to the west and south should be required due to the proximity of this site and the lengthy period of explosive operations that volatilized numerous RCRA metals and radionuclides and may have resulted in off-facility deposits.

NMED Response: A map showing the location of SWMU 91 relative to Kirtland Air Force Base and surrounding areas is in the Final RCRA Facility Investigation Report and Proposal for Corrective Action Complete, June 2005. SWMU 91 is located in a remote part of the Kirtland Air Force Base. Given the large distances to the nearest off-site receptors, there is little potential that soil contamination from SWMU 91 would be

discovered at Isleta Pueblo, Albuquerque, or other populated areas located in any direction from the site.

134. **Comment:** Citizen Action commented that the ecological risks stated for SWUM 91 are not based on factual field data from plants and animals.

NMED Response: The only significant contaminant at SWMU 91 is lead. Benchmark toxicity values are based on lowest-observed-adverse-effect levels for plants and on no-observed-adverse-effect levels for wildlife. These values, which are based on field data for key plant and animal species, are used to model the ecological risks of site specific contaminant concentrations on the plant and wildlife receptors at the site. Radiological and nonradiological contaminants of concern were used in the ecological risk assessment. The major route of exposure for plants and animals is the direct uptake of contaminants from soil. Field data for plants and animals was used in the calculations for ecological risk, where possible. Based upon the analysis, ecological risks are low.

135. **Comment:** Citizen Action commented that the proximity of five other SWMUs to SWMU 91 should be examined as to the potential for enhanced migration of contaminants and cumulative risk.

NMED Response: The five SWMUs (6, 17, 56, 89 and 194) nearest to SWMU 91 have all been approved for Correction Action Complete without controls status. Like SWMU 91, they have been evaluated for human and ecological risk on an individual basis in accordance with NMED and EPA guidance.

136. **Comment:** Citizen Action commented that cancer risks for residential land-use are unacceptable and need to be quantified for all contaminants identified and remaining at the site.

NMED Response: SWMU 91 is being approved for Corrective Action Complete status based on an industrial land-use, construction worker scenario. Industrial use is the most likely use for the land in the foreseeable future; a construction worker is considered to be a more sensitive receptor compared to a typical industrial worker. The risk assessment considered all contaminants identified at the site, although only lead was significant.

SWMU 105

137. **Comment:** Citizen Action commented that Bldg. 6536 operated during the period that it would require a RCRA permit as a regulated unit.

NMED Response: SWMU 105 does not meet the definition for a regulated unit. The spill originated from a mercury bath used to measure pressure in equipment.

138. **Comment:** Citizen Action commented that the quantity of the mercury spill is not described. One cubic yard of mercury contaminated soil was removed but that gives no indication of the amount of mercury released.

NMED Response: Site history at SWMU 105 is poorly known. The mercury bath was examined and determined to contain 10 to 13 pounds less mercury than full capacity. An estimate of the volume of mercury spilled could have been made based upon the capacity of the mercury bath used in the experiments, but exact the volume lost is not known and will likely never be known. Because site history is poorly known, soil samples were analyzed for a range of potential contaminants including RCRA metals to ensure nothing of significance was overlooked. Boreholes were purposely advanced in a grid below the footprint of the building and around the perimeter of the building to locate soil contamination for removal, as needed.

139. **Comment:** Citizen Action commented that the other chemicals and metals used for high heat experiments are not described.

NMED Response: The only significant contaminant of concern is mercury. Initial sampling included the metals mercury, arsenic, barium, cadmium, chromium, lead, and selenium. Subsequent analysis showed that all metals other than mercury occur at background level concentrations, and thus, the other metals are not contaminants of concern at the site.

140. **Comment:** Citizen Action commented that the method for disposal of the liquid waste stream from this building is not set forth.

NMED Response: The mercury release was not to a septic system or drain. The spill occurred on the floor of the building. It was released to the environment via cracks in the concrete floor.

141. **Comment:** Citizen Action commented that no monitoring wells are present and a minimum of three downgradient and one upgradient monitoring wells are required.

NMED Response: SWMU 105 is not a regulated unit. One hundred forty three boreholes were advanced at the site to a maximum depth of 11 feet below ground surface, and subsurface soil was sampled at depths of 0, 2, 4, 6, 8 and 11 feet. Over 560 soil samples were collected to characterize the site. Of the samples collected, the maximum detected concentration of mercury in the soil was 318 mg/kg at the ground surface. The maximum detected concentration of mercury at 11 feet bgs was 0.0574 mg/kg. These results indicate that most of the soil contamination occurred at a shallow depth (Voluntary Corrective Action Work Plan for SWMU 105, September 2005).

Groundwater monitoring wells are not needed at SWMU 105. Limited precipitation, high evapotranspiration, fine-grained soil, a likely small source, the shallow

depth of soil contamination and the depth to groundwater (approximately 490 feet below ground surface) preclude groundwater as a viable exposure pathway.

142. **Comment:** Citizen Action commented that the cleanup of the site to only an industrial standard allows water that will be used for residential purposes to be contaminated to an industrial level.

NMED Response: The soil at SWMU 105 was cleaned up to industrial standards. The groundwater beneath SWMU 105 is unlikely to become contaminated. Regardless, groundwater standards such as EPA Maximum Contaminant Levels and New Mexico Water Quality Control Commission human health standards (20.6.2.3103 NMAC) are promulgated based on residential use of the water as a drinking water source.

SWMU 150

143. **Comment:** Citizen Action commented that the volume of liquid waste discharged is not provided.

NMED Response: The total amount of wastewater discharged is not known and likely will never be known. The system was designed with an estimated discharge rate ranging from 20 to 400 gallons per day based upon the number to people who worked at the facility.

144. **Comment:** Citizen Action commented that this was a RCRA regulated unit and needs to be closed under post-closure requirements.

NMED Response: SWMU 150 is not a regulated unit. SWMU 150 is subject to corrective action under 20.4.1.500 NMAC incorporating § 40 CFR 264.101. SWMU 150 is also not subject to the post-closure care permit requirements.

145. **Comment:** Citizen Action commented that the depth to groundwater is not provided for the location.

NMED Response: Groundwater at SWMU 150 is approximately 315 feet bgs based on the water level observed at the nearest monitoring well, CTF-MW2, which is approximately 1,950 feet northwest of the site.

146. **Comment:** Citizen Action commented that four VOCs were detected in soil samples, but no data are provided for the detection levels.

NMED Response: The four VOCs detected are acetone, MEK, methylene chloride and toluene with detection limits of 10, 10, 5 and 5 µg/kg, respectively (see Fact Sheet/Statement of Basis – Proposal for CAC Status for 24 SWMUs/AOCs, September 2012). Lists of detection limits for all VOCs are found in Tables 3-2A, 3-2B, and 3-2C (reporting limits) in Environmental Restoration Project Responses to NMED Request for Supplemental Information to No Further Action Proposals Dated 1997, September 1999.

147. **Comment:** Citizen Action commented that a deep sample was not collected from the seepage pit (maximum sample depth was only 8 feet) or the drainfield (maximum sampling depth was only 4 feet).

NMED Response: The Geoprobe met refusal at six different locations at depths ranging from 6.5 to 9 feet. Digging with a backhoe later demonstrated that caliche or cemented conglomerates prevented the collection of deeper soil samples at the seepage pits and drainfield. Soil samples were collected at the depth corresponding to the bottom of each pit or drainfield (see Proposal for No Further Action Environmental Restoration Project Site 150, Building 9939/9939A Septic System, June 1997). Caliche or cemented conglomerate would retard the migration of wastewater (and contamination) deeper into the vadose zone. Thus, the maximum levels of contaminants associated with the septic system were likely found at the depths that were sampled.

148. **Comment:** Citizen Action commented that groundwater monitoring wells need to be installed. A septic plume considered to exist was not investigated for its extent.

NMED Response: Groundwater at SWMU 150 is approximately 315 feet bgs. A layer of caliche or caliche cemented conglomerate starts 10 feet bgs as detected during drilling. The caliche or caliche cemented conglomerate and natural attenuation processes would likely preclude the minor amounts of contaminants reported from soil samples from moving into the groundwater. Thus, groundwater monitoring wells are not needed.

149. **Comment:** Citizen Action commented that the data for SWMU 150 is over a decade old.

NMED Response: The data are still valid. These samples are considered representative of any releases of hazardous wastes or hazardous waste constituents that may have occurred at any given time at the SWMU. As the septic system was abandoned prior to the collection of the soil samples, no additional releases have occurred at the site since the samples were collected.

150. **Comment:** Citizen Action commented that no information is provided for the radionuclides detected.

NMED Response: NMED generally does not regulate radionuclides at DOE facilities. Thorium-234, potassium-40, radium-226 and tritium were detected in subsurface soil samples at levels below background levels. However, for uranium-235 and uranium-238, their minimum detectable activities (MDA's) slightly exceeded their maximum background levels. To account for the latter, risk estimates assumed that uranium-235 and uranium-238 were present at their respective MDAs to be conservative. The cancer risk was estimated to be 1.6E-6, which is acceptable for residential land use.

SWMU 161

151. **Comment:** Citizen Action commented that the septic system is a regulated unit.

NMED Response: SWMU 161 is not a regulated unit.

152. **Comment:** Citizen Action commented that the volume of liquid discharges is not provided.

NMED Response: The total volume of wastewater discharges into the septic system is not known and will likely never be known.

153. **Comment:** Citizen Action commented that the depth of the septic tanks and drainfields is not provided.

NMED Response: The bottom of the septic tank was 7.5 feet below ground surface. The bottom of the drainfield was at a depth of 10 feet bgs. (Sandia National Laboratories Environmental Restoration Project, Request for Supplemental Information Responses and Proposals for Corrective Action Complete Drains and Septic Systems SWMUs 49, 101, 116, 138, 149, 154, and 161, Round 9, June 2005).

154. **Comment:** Citizen Action commented that eight RCRA metals were detected in septic sludge.

NMED Response: Seven metals were detected in a sludge sample obtained from the septic tank, and one metal was detected in the liquid fraction in the tank. The samples were collected for waste characterization purposes. The contents of the tank were removed for disposal.

155. **Comment:** Citizen Action commented that VOCs and cyanide were detected in soil samples from 1994.

NMED Response: VOC s and cyanide were detected in the soil samples collected from the soil borings. The maximum concentrations detected were evaluated in the risk assessment for SWMU 161. The human health risk is acceptable under a residential land use scenario for the contaminants detected.

156. **Comment:** Citizen Action commented that the data for SWMU 161 is more than a decade old.

NMED Response: The data are still valid. These samples are considered representative of any releases of hazardous wastes or hazardous waste constituents that may have occurred at any given time at the SWMU. As the septic system was abandoned prior to the collection of the soil samples, no additional releases have occurred at the site since the samples were collected.

157. **Comment:** Citizen Action commented that no monitoring well network exists for SWMU 161 to determine if releases to groundwater occurred.

NMED Response: Groundwater at SWMU 161 is approximately 466 feet bgs. The depth to groundwater and natural attenuation processes would likely preclude the minor amounts of contaminants reported from soil samples from migrating to groundwater. Thus, groundwater monitoring wells are not needed.

158. **Comment:** Citizen Action commented that the depth to groundwater is not provided.

NMED Response: Groundwater at SWMU 161 is approximately 466 feet below ground surface, based on the depths to groundwater in monitoring wells at the Chemical Waste Landfill located 3,500 feet southeast of SWMU 161.

159. **Comment:** Citizen Action commented that there is no basis for providing CAC status to SWMU 161.

NMED Response: Characterization data indicate that the contaminants detected at the site pose an acceptable level of risk under a residential land-use scenario. Thus, granting Corrective Action Complete status is justified.

AOC 1101

160. **Comment:** Citizen Action commented that the site is a regulated unit that is required to close under a post-closure permit.

NMED Response: AOC 1101 is not a regulated unit and is not subject to post-closure care permit requirements.

161. **Comment:** Citizen Action commented that the volume of liquid waste is not set forth for operations.

NMED Response: The volume of wastewater discharges into the septic system is not known and will likely never be known.

162. **Comment:** Citizen Action commented that the amounts of COCs are not set forth.

NMED Response: The amounts of contaminants discharged into the septic system are not known and will likely never be known.

163. **Comment:** Citizen Action commented that there are no monitor wells.

NMED Response: Given the depth to groundwater, the lack of appreciable soil contamination, and natural attenuation processes, it is unlikely that any contamination has reached the water table. Thus, groundwater monitoring wells are not needed.

164. **Comment:** Citizen Action commented that there is no evidence set forth to prove that the seepage pits or tanks were removed before the area was paved over. Where are the excavation records to make the conclusion?

NMED Response: The septic system serving Building 855 was connected to the publicly owned treatment works in 1988 (at that time the City of Albuquerque sewer system). A backhoe excavation was conducted in March 2002 to locate the septic system in the area that construction records indicated that it was located. The excavation exposed the old drain line and followed it until it reached the paved parking lot. A section of the pavement overlying where the southwest pit was presumed to lie was excavated in 2006. Again, an effort was made to find the septic system components, but this effort was also unsuccessful. The information available suggests that the components had been already removed prior to construction of the paved parking lot, but no other information is available. Soil samples were collected from both boreholes believed to be at the locations for the now-removed septic system components.

In summary, NMED believes that the Permittees made a reasonable attempt to locate the septic system components, and sampled the area most likely to have contained the septic system components based on available information.

165. **Comment:** Citizen Action commented that the site is insufficiently characterized or monitored to release it as CAC.

NMED Response: AOC 1101 has been adequately characterized. A total of six soil samples were collected from the soil excavations and boreholes. These samples were collected at locations where contaminants were most likely to be found, based on available information. Characterization data indicate that the contaminants detected pose

an acceptable level of risk under a residential land-use scenario. Thus, granting CAC status is justified.

166. **Comment:** Citizen Action commented that the risk assessment for residential use cannot be justified on the basis of the absence of data for this facility.

NMED Response: See Response to Comment 165.

SWMU 28-2

167. **Comment:** Depleted uranium was found at the entry to the mineshaft.

NMED Response: NMED generally does not have the authority to consider depleted uranium (DU), which is a radioactive substance, when making CAC determinations. DU was found in soil near and at the portal to the adit to the mine. The soil was excavated, and sampling and analysis of soil samples collected from the excavated area indicate that DU contamination was still present at a maximum activity level of 452 pCi/g. This level of remaining DU contamination was determined by the Permittees, via their own risk assessment procedures and standards, to pose no threat to human health and the environment. For the radiological contaminants the TEDE is 3.2E-1 mrem/ yr, which is significantly less than the numerical guidance of 75 mrem/yr.

168. **Comment:** Depth to groundwater is not known; therefore a minimum of two wells in a phased approach would be necessary to characterize and investigate groundwater contamination.

NMED Response: Although the depth of groundwater in the canyon near the mine is unknown, it probably occurs at a relatively shallow depth. The mine exploited an epithermal vein containing fluorite and subordinate galena. Small amounts of barite and chalcopyrite are also present. Metals, particularly lead, barium, zinc, silver, and copper

would be expected to exceed normal background conditions for the Kirtland Air Force Base-area because of the natural concentration of these metals in the vein.

The only contamination observed at the mine that is believed to be anthropogenic, aside from DU, is residual high explosives (HE). The residual HE is located in a small area at the end of the mine tunnel. Given that there is only a small amount of HE contamination, that little moisture is present where the contamination is located, and that the residual HE is surrounded by bedrock, contamination of groundwater is unlikely to occur. Thus, groundwater monitoring wells are not needed to monitor for HE contamination at SWMU 28-2. Additionally, removing the small amount of residual HE from the tunnel cannot be justified given the hazards that would be inherent to working in an abandoned mine and given the little benefit to be gained by such an undertaking.

169. **Comment:** The site is not suitable for CAC, especially for residential use and given that it is on U.S. Forest Service land.

NMED Response: HE contamination detected at SWMU 28-2 does not pose an unacceptable risk to human health or the environment, and thus, CAC status is justified. With arsenic removed from the equation, as it should be, the risk assessment for contaminants at the site resulted in a HI of 0.51 and an excess cancer risk of 1E–7 which is an acceptable level of risk for residential land use.

170. **Comment:** Constituents of concern include HE compounds, metals, and radionuclides.

NMED Response: Potential contaminants included radionuclides, HE, and metals. The only radionuclides detected above Department-approved background levels were uranium-235, uranium-238, and thorium-232, which were detected on the surface at and

in the vicinity of the mine portal. HE was detected underground in one small area. Some of the metals found at the mine site occur at levels that exceed background conditions that are typical for the Kirtland Air Force Base-area. In this case, the concentrations detected are likely representative of natural conditions where metals have been concentrated within the vein by hydrothermal fluids.

171. **Comment:** The site requires further investigation.

NMED Response: The place in the mine where the HE contamination occurs is the only area that was found underground that warranted investigation, and the only area that showed signs of testing activity. This area was adequately investigated via soil sampling, as the area containing HE contamination was easily visible (as black sooty material covering the ribs, back, and floor of the end of the tunnel) behind a concrete mass. The area that was contaminated with DU occurs outside the mine and was also investigated by soil sampling. However, NMED generally does not have the authority to consider depleted uranium (DU) when making CAC determinations.

SWMU 147

172. **Comment:** RCRA metals, VOCs, and HE were received by this site from 1959 to the late 1980s, during the period a permit was required to operate.

NMED Response: Hazardous constituents do not necessarily originate from the disposal of hazardous wastes. A RCRA permit was not and is not required for SWMU 147 as it is not a regulated unit.

173. **Comment:** There are no monitor wells present.

NMED Response: Based upon the low levels of contaminants detected and natural attenuation processes, groundwater monitoring wells are not needed at this SWMU. For

residential land-use scenarios, the HI and excess cancer risks (ECR) are acceptable (HI = 0.07 and ECR = 5E-8).

174. **Comment:** The amount of liquid discharge is not provided.

NMED Response: The amount of wastewater discharged at SWMU 147 is not known and likely will never be known.

175. **Comment:** Collecting septic samples at this time has no bearing on the wastes that were released over several decades of use. Most of the data is over a decade old and does not include necessary groundwater monitoring data.

NMED Response: A wide suite of chemical analyses were performed on soil samples collected from SWMU 147. These samples were collected at areas in the drainfields that are expected to be the locations where the highest concentrations from releases would occur, no matter the timing of the releases.

176. **Comment:** The depth to groundwater is not stated.

NMED Response: Groundwater at SWMU 147 is approximately 56 feet below ground surface, based on the water level at well KAFB-1903, and located approximately 1,300 feet to the south of SWMU 147 (see *Compilation of Monitoring Well Construction Diagrams Contained in the SNL/ER Database*, SNL, February 2004).

177. **Comment:** Human and ecological risks are not acceptable to release this SWMU for CAC Status.

NMED Response: Sampling results provided in the Fact Sheet/Statement of Basis indicate that the contaminant levels in soil pose an acceptable level of risk under a residential land-use scenario (HI = 0.07 and ECR = 5E-8). Because of the depth being

greater than five feet below ground surface, no complete exposure pathway exists for ecological receptors. Thus human and ecological risks are acceptable.

AOC 1094

178. **Comment:** This system began discharges in 1983 and is still active. It is illegally operating without a RCRA permit.

NMED Response: The septic system was not and is not operating illegally. It does not require a RCRA permit as it is not a regulated unit.

179. **Comment:** This AOC is not sufficiently characterized for CAC status. By what rationale are SNL and the Department proposing to close this operating landfill without groundwater monitoring being conducted? Based on the description of operations, this AOC requires groundwater monitoring.

NMED Response: AOC 1094 is not a landfill and it has been adequately characterized. Based upon the low levels of contaminants detected, the depth to groundwater, and natural attenuation processes, groundwater monitoring wells are not needed.

AOC 1095

180. **Comment:** Operational history is not provided nor are the amounts of discharges.

NMED Response: Available information indicates that Building 9938 was constructed in 1971 and it is assumed that the seepage pit was constructed at the same time. Building 9938 is currently a support building at the Large Melt Facility. The facility is currently inactive and the seepage pit was removed and the excavation backfilled on August 19,

2005. The amount of wastewater discharged at AOC 1095 is not known and likely will never be known.

181. **Comment:** There are no monitor wells present. The description of operations requires groundwater monitoring.

NMED Response: Based upon the low levels of contaminants detected and natural attenuation processes, groundwater monitoring wells are not needed at this SWMU.

182. **Comment:** This AOC is not sufficiently characterized for CAC status.

NMED Response: AOC 1095 has been adequately characterized via soil sampling conducted at locations most likely to contain the highest concentrations of contaminants. Characterization data indicate that the contaminants detected at the site pose an acceptable level of risk under a residential land-use scenario (HI = 0.00 and ECR = 6E-10).

AOC 1114

183. **Comment:** No RCRA groundwater monitoring is apparent for operation from 1971 and amount and type of discharges have not been provided.

NMED Response: The amount and types of wastewater discharged at AOC 1114 are not known and likely will never be known. Based upon the low levels of contaminants detected and natural attenuation processes, groundwater monitoring wells are not needed at this SWMU.

184. **Comment:** This AOC is not sufficiently characterized for CAC status.

NMED Response: AOC 1114 has been adequately characterized via soil sampling conducted at locations most likely to contain the highest concentrations of contaminants.

Characterization data indicate that the contaminants detected at the site pose an acceptable level of risk under a residential land-use scenario (HI = 0.00 and ECR = 1E-10).

AOC 1116

185. **Comment:** This facility is illegally operating without a RCRA Part B permit. It cannot be closed as a SWMU.

NMED Response: The septic system was not and is not operating illegally. The septic system does not require a RCRA permit as it is not a regulated unit. It is still in operation, but the septic system does not receive hazardous waste.

186. **Comment:** This AOC requires an operating permit, a closure plan, post-closure permit and a long-term groundwater monitoring network.

NMED Response: Based upon the low levels of contaminants detected and natural attenuation processes, groundwater monitoring wells are not needed at this SWMU. Additionally, a RCRA operating permit, closure plan, post-closure permit, and long-term groundwater monitoring well network are not needed or required for AOC 1116 as it is not a regulated unit.