June 16, 2017

Jeffrey P. Harrell  
Manager  
U.S. Department of Energy  
NNSA / Sandia Site Office  
P.O. Box 5400, MS 0184  
Albuquerque, NM 87185-5400

Jaime L. Moya  
Director  
Environment, Safety, and Health  
Sandia National Laboratories  
P.O. Box 5800, MS 0725  
Albuquerque, NM 87185

RE: APPROVAL OF CLASS 1 PERMIT MODIFICATION (WITHOUT PRIOR APPROVAL), SANDIA NATIONAL LABORATORIES/NEW MEXICO  
EPA ID# NM5890110518  
HWB-SNL-17-007

Dear Mr. Harrell and Mr. Moya:

The New Mexico Environment Department (NMED) has completed review of the “Notification of Class 1 Modifications to Hazardous Waste Permits, Sandia National Laboratories/New Mexico (SNL/NM)”. The request for Permit Modification was submitted by the Department of Energy/National Security Administration (DOE/NNSA) and Sandia Corporation (collectively the Permittees). NMED received the request for permit modification on May 2, 2017.

In the request the Permittees proposed modifications to the following permits:

1. Resource Conservation and Recovery Act Facility Operating Permit (Permit) at SNL/NM; and
2. Hazardous Waste Post-Closure Care Permit (PCCP) for the Chemical Waste Landfill (CWL) at SNL/NM.
The Permittees request the changes to reflect the change in the name of the Operator at Sandia National Laboratories. The current Operator is Sandia Corporation. On May 1, 2017, the name of the Operator was changed from Sandia Corporation to National Technology and Engineering Solutions of Sandia, LLC (NTESS). The Permittee added that the Operator under each of the two permits will remain the same; and that this is a change in name only.

Details of the permit modifications are documented in the enclosed Attachments, which the Permittees must incorporate into the appropriate sections of the current operating permit and into the appropriate sections of the Post-Closure Care Permit for the Chemical Waste Landfill upon receipt of this letter. The subject changes are summarized in the following bulleted items.

- Facility operating Permit Parts 1, 3, and 8, and Permit Attachments A and D, with the proposed revisions shown in redline/strikeout format. The finalized Permit Parts and Attachments of these Parts and Attachments are also included.

- Revised pages of the Post-Closure Care Permit for the Chemical Waste Landfill Parts 1 and 2, and Permit Attachments 1 and 6 with the proposed modifications are shown in redline/strikeout format. The revised pages of these PCCP with the modifications in final form are also attached.

Since the Permit Modification is a self-implementing change that does not require approval from NMED, the Permittees must, pursuant to 40 CFR §270.42(a)(ii), send out a notice of the Permit modification to all persons on the Facility mailing list previously received from the Department. This notification must be made within 90 calendar days after the change is put into effect.

Further, the New Mexico Hazardous Waste Management Fee Regulations 20.4.2 NMAC require assessment of fees when administrative review of a document is complete. NMED has attached an invoice to this letter. Payment of the fees is due within sixty (60) calendar days from the date that you receive the invoice.

If payment is by check, then you must provide the invoice number on the check. If payment is transmitted electronically, then you must submit a letter to Mr. James Valdez, NMED Hazardous Waste Bureau, indicating the invoice number, payment amount, and the assessed activity prior to transferring funds.

Should the Permittees need to request an extension of the sixty-day period the request must be submitted at least seven days prior to the end of the sixty-day period. Should the Permittees disagree with the fee assessed you may file an Administrative Appeal under the provisions of 20.4.2.302 NMAC.
If you have any questions regarding this correspondence, please contact Cornelius Amindyas of my staff at (505) 222-9543.

Sincerely,

John Kieling
Chief
Hazardous Waste Bureau

cc:  D. Cobrain, NMED HWB
     C. Amindyas, NMED HWB
     A. Reiser, SNL
     L. King, EPA, Region 6 (6MM-RC)

File:  SNL 2017 and Reading
New Mexico  
Environment Department  
Hazardous Waste Bureau  

Sandia National Laboratories  
Sandia Site Office, NNSA  
P.O. Box 5400, MS 0184  
Albuquerque, NM 87185-5400  

Attn: Messrs. Beausoleil and Hazen  

Invoice # - HWB-SNL-17-007  

Notification of Class 1 Modifications to Hazardous Waste Permits, Sandia National Laboratories, New Mexico  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Item</th>
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<th>Total Cost</th>
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<td>2</td>
<td>Class 1 (without prior approval)</td>
<td>$500.00</td>
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</table>

Total Fees: $1,000.00  
Adjustment: $0.00  
Pay This Amount: $1,000.00  

Make Checks Payable to: NMED/HWB  
Mail Checks and Invoice to:  
New Mexico Environment Department, HWB  
Attn: James Valdez  
2905 Rodeo Park Drive East, Bldg 1  
Santa Fe, NM 87505  

When you provide a check as payment, you authorize the State of New Mexico to either use information from your check to make a one-time electronic fund transfer from your account or to process the payment as a check transaction.  

Check Number:  
Amount Received:  
Date Received:  

June 15, 2017
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 National Technology and Engineering Solutions of Sandia, LLC (NTESS), operator of SNL (EPA ID Number NM5890110518).

This Permit authorizes DOE and NTESS (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.

“Area of Concern” (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.

“Consent Order” 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.

“Corrective Action” 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.

“Corrective Action Complete” means the requirements for corrective action have been satisfied by the Permittees as determined by the Department.

“Days” refers to calendar days unless specified otherwise in this Permit.

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

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

“EPA” means the United States Environmental Protection Agency and any successor or predecessor agency.

“Facility” 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).

“Federal Facility Compliance Order” (FFCO) means the Order issued by the Department to the United States Department of Energy, and Sandia Corporation (which is now doing business as NTESS, LLC) on October 4, 1995 pursuant to section 3012(b) of RCRA, 42 U.S.C. § 6939(c), as

“Foreign Source” means a hazardous waste source outside the United States.

“Groundwater” means water below the land surface in a zone of saturation.

“Hazardous Constituent” or “Hazardous Waste Constituent” 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 I of 40 CFR § 261.24. For purposes of corrective action, “hazardous constituent” and “hazardous waste constituent” also means any constituent identified in 40 CFR Part 264 Appendix IX.

“Hazardous Waste” 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.

“Hazardous Waste Management Regulations” means the New Mexico Hazardous Waste Management Regulations, 20.4.1 NMAC.

“Hazardous Waste Management Unit” 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.

“Mixed Waste” 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.).

“National Technology and Engineering Solutions of Sandia, LLC (NTESS),” formerly known as Sandia Corporation, means a limited liability company organized under the laws of the State of Delaware, doing business in the State of New Mexico as a wholly owned subsidiary of Honeywell International, and the management and operating contractor at Sandia National Laboratories (SNL); Sandia Corporation is identified on the Part A application submitted pursuant to 40 CFR § 270.13.

“Off-Site Source” 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 Permittees’ Facility boundary.

“Permit” 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.
“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).

“Permittees” mean NTESS and the United States Department of Energy (DOE). Permittees are jointly and severally subject to the conditions of this Permit.


"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.

“Solid Waste Management Unit” (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)).

“Technical Area” (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 Permittees’ 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 reissuance, 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 Department’s 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 Bureau’s 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:
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 Department’s written approval, all submittals and associated schedules shall become enforceable as part of this Permit in accordance with the terms of the Department’s 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 “confidential business information” 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
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 Department’s 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 Permittees’ 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 Department’s 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 Permittees’ 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 Permittees’ web page of the existence of the IR; and
4. In the public notice for any of the Permittees’ 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 Permittees’ 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 Permittees’ 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 Department’s 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 Secretary’s determination.

1.19.2 Agreement or Disagreement between the Parties
The Department and the Permittees shall have thirty (30) calendar days from the Department’s 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 owner’s 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., “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]”).

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 owner’s 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 owner’s 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 Facility’s 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 entity’s 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 DOE’s 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 entity’s 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 entity’s 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 entity’s 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 Department’s stated concerns. The Department reserves its right to take any action, including administrative or judicial action, to address the contrary land use.
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) 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 container’s 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 “Hazardous Waste” 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 manufacturer’s 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 (see 40 CFR § 264.175(c)(1)); or
2. The containers are elevated or otherwise protected from contact with accumulated liquids (See 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.

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 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 Permittees’ 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

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 Department’s 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 NMED’s 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 Department’s 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 “n” (non-carcinogen effects) or ten times the EPA RSL for compounds designated “c” (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. EPA’s ECO-SSLs with the Department approval. The Permittees shall derive a screening level using the methodology in the Department’s 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 Department’s 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 Permittees’ 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 “corrective action required” to “corrective action complete.” 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 Department’s 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 Department’s 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 Department’s 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 Department’s 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**


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 Department’s decision on the final remedy or remedies shall follow the requirements under section 20.4.1.901 NMAC, Secretary’s Decision. The Department will issue a response to public comments at the time of the Department’s 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 Department’s 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 responsible officials of the Permittees (owner/operator), stating: “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to 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.”

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 Plan’s 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 manufacturer’s 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 manufacturer’s 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:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Analyte</th>
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<tbody>
<tr>
<td>sulfate</td>
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<tr>
<td>sodium</td>
<td>manganese</td>
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<tr>
<td>magnesium</td>
<td>calcium</td>
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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 Department’s Position Paper “Use of Low-Flow and other Non-Traditional Sampling Techniques for RCRA Compliant Groundwater Monitoring” (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.

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.iii  Surface Water Sample Collection

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 Encore™ 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 Fantastik™, 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 (μg/L)); vapor sample results in consistent units (ppm or μg/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


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


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 “not detected” 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

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

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 ≥ 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 noncarcinogenic (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:


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
A 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 material’s 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 “O” rings can also be used to ensure a tight fit and minimize leakage. “O” 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 manufacturer’s 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 manufacturer’s 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 representatives of the Permittees 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

8.12.2.6.1 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 screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data; and
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;
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 representatives of the Permittees 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 site’s 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 report.
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 isoconcentration 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 representatives of the Permittees 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 system’s 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 representatives of the Permittees 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 “non-detect” 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 Department’s SSLs for residential and industrial soil shall be used to screen soil for human health using EPA’s Risk Assessment Guidance for Superfund (RAGS), Volume I, Part A, 1989 as updated. For those contaminants not appearing on the Department’s SSL table, the EPA Region 6 soil screening value adjusted to meet the Department’s 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. EPA’s ECO-SSLs, or derive a screening level using the methodology in the Department’s Guidance for Assessing Ecological Risks Posed by Chemicals: Screening–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 representatives of the Permittees 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.
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 operated by National Technology and Engineering Solutions of Sandia, LLC (NTESS).

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 NTESS, a wholly owned subsidiary of Honeywell International 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 (ft²) 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 ft², 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-ft² 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 ft², 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. Pentacynitritol 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 ft².

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 ft². Building 6926 also has a total storage area of approximately 4,000 ft². 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, 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
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 repackageing 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 Auxilary 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,
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 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

<table>
<thead>
<tr>
<th>Agency or Facility</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>The New Mexico Department of Homeland Security and Emergency Management</td>
<td>Mutual aid involving an actual or potential emergency, assistance in training and emergency response.</td>
</tr>
<tr>
<td>The 377th Air Base Wing, Kirtland Air Force Base</td>
<td>Various types of support, including fire protection, police services, communications, and utilities.</td>
</tr>
<tr>
<td>The U.S. Forest Service†</td>
<td>Cooperative fire fighting arrangement between the USFS and KAFB for wild land fires.</td>
</tr>
<tr>
<td>The City of Albuquerque</td>
<td>Mutual support and responsibilities during a potential or actual emergency requiring the combined resources of DOE and the City of Albuquerque.</td>
</tr>
<tr>
<td>Lovelace Medical Center</td>
<td>Mutual cooperation and assistance in providing timely and effective emergency medical services.</td>
</tr>
<tr>
<td>Presbyterian Health Care Services</td>
<td>Mutual cooperation and assistance in providing timely and effective emergency medical services.</td>
</tr>
</tbody>
</table>

† 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

<table>
<thead>
<tr>
<th>Item or Equipment</th>
<th>Description/Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emergency Vehicles</strong></td>
<td></td>
</tr>
<tr>
<td>Emergency Response Vehicle</td>
<td>Mobile Command Post equipped with communications equipment, located at the Facility. Facility Emergency Response System — Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td>Ambulance</td>
<td>Typically located at SNL medical facility. SNL Emergency Response System — Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td><strong>Security Vehicles</strong></td>
<td></td>
</tr>
<tr>
<td>Security Vehicles</td>
<td>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</td>
</tr>
<tr>
<td><strong>Fire Trucks (owned by KAFB Fire Department)</strong></td>
<td>Fire-fighting vehicles outfitted with equipment for fighting fires, located at KAFB fire stations.</td>
</tr>
<tr>
<td><strong>Medical Supplies</strong></td>
<td></td>
</tr>
<tr>
<td>Stretchers/Stokes Litter</td>
<td>Equipment for movement of injured personnel. Stokes litter will immobilize personnel so they may be moved vertically. Typically located in ambulance or at medical facility. SNL Emergency Response System — Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td>Blankets</td>
<td>Normal blankets, located in ambulance or at SNL medical facility. SNL Emergency Response System — Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td>Medical Kits</td>
<td>Emergency first-aid supplies, located in ambulance or at SNL medical facility. SNL Emergency Response System — Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td><strong>Safety Supplies</strong></td>
<td></td>
</tr>
<tr>
<td>Air Packs</td>
<td>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</td>
</tr>
<tr>
<td>Monitoring Instruments</td>
<td>Typically located in ambulance or emergency response vehicle. SNL Emergency Response System — Call 911 or (505) 844-0911</td>
</tr>
</tbody>
</table>

Note: The Facility EOC is located at Technical Area I (TA-I).
TABLE D-3
Emergency Response System Notification

<table>
<thead>
<tr>
<th>Method</th>
<th>Emergency Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone (at Unit)</td>
<td>911</td>
</tr>
<tr>
<td>Mobile Telephone</td>
<td>(505)-844-0911</td>
</tr>
<tr>
<td>Portable Radio</td>
<td>NA</td>
</tr>
<tr>
<td>Automatic notification of emergency response when smoke detector or pull station is activated and/or water flows in sprinkler system, except as noted</td>
<td>NA</td>
</tr>
</tbody>
</table>

**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 firefighting. Permittees’ 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>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building 958</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spill Control and Decontamination Equipment</td>
<td>Fixed shower / eyewash</td>
<td>Near south entrance</td>
</tr>
<tr>
<td></td>
<td>Recovery drums and containers</td>
<td>In equipment storage at the HWHU</td>
</tr>
<tr>
<td></td>
<td>Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)</td>
<td>In equipment storage at the HWHU</td>
</tr>
<tr>
<td></td>
<td>Spill cleanup items (mops, brooms, and/or shovels)</td>
<td>In equipment storage at the HWHU</td>
</tr>
<tr>
<td></td>
<td>Self-contained breathing apparatus (SCBA)</td>
<td>At south entrance</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous personal protective equipment</td>
<td>In equipment storage at the HWHU</td>
</tr>
<tr>
<td></td>
<td>(protective suits, goggles, and/or safety glasses, gloves)</td>
<td></td>
</tr>
<tr>
<td><strong>Internal Communication</strong></td>
<td>Voice command</td>
<td></td>
</tr>
<tr>
<td><strong>and Alarm System</strong></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>On the walls near north and south personnel doors</td>
</tr>
<tr>
<td></td>
<td>Audible fire alarms</td>
<td></td>
</tr>
<tr>
<td><strong>External Communication System</strong></td>
<td>Telephones – unlimited employee access</td>
<td>One on the interior walls near the north and south entrances</td>
</tr>
</tbody>
</table>
### TABLE D-4

**Emergency Equipment to be Maintained at the HWHU**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fire Extinguishers</strong></td>
<td>Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>On the walls near north and south personnel doors</td>
</tr>
<tr>
<td></td>
<td>Portable (A-B-C)</td>
<td>One at both the north and south entrances</td>
</tr>
<tr>
<td><strong>Fire Suppression</strong></td>
<td>Automatic wet-pipe water sprinkler system, with heat-actuated sprinklers</td>
<td>Coverage throughout the building</td>
</tr>
<tr>
<td></td>
<td>Water supplied by fire hydrants</td>
<td>One hydrant, location shown in Figure 44 of Permit Attachment L (Figures)</td>
</tr>
<tr>
<td><strong>Spill Control and Decontamination Equipment</strong></td>
<td>Fixed shower/eyewash</td>
<td>Near south entrance</td>
</tr>
<tr>
<td></td>
<td>Recovery drums and containers</td>
<td>In equipment storage at the HWHU</td>
</tr>
<tr>
<td></td>
<td>Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)</td>
<td>In equipment storage at the HWHU</td>
</tr>
<tr>
<td></td>
<td>Spill cleanup items (mops, brooms, and/or shovels)</td>
<td>In equipment storage at the HWHU</td>
</tr>
<tr>
<td></td>
<td>SCBA</td>
<td>In equipment storage at the HWHU</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous personal protective equipment (protective suits, goggles, and/or safety glasses, gloves)</td>
<td>In equipment storage at the HWHU</td>
</tr>
<tr>
<td><strong>Internal Communication and Alarm System</strong></td>
<td>Voice command</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).</td>
<td>On the walls near each personnel door and one inside the office area</td>
</tr>
<tr>
<td></td>
<td>Audible fire alarms</td>
<td></td>
</tr>
<tr>
<td><strong>External Communication System</strong></td>
<td>Telephones – unlimited employee access</td>
<td>One in the office</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).</td>
<td>On the walls near each personnel door</td>
</tr>
<tr>
<td><strong>Fire Extinguishers</strong></td>
<td>Portable (A-B-C)</td>
<td>One at both the north and south entrances</td>
</tr>
<tr>
<td></td>
<td>Portable (D)</td>
<td>One in the general use area, one in the office</td>
</tr>
<tr>
<td><strong>Fire Suppression</strong></td>
<td>Automatic wet-pipe water sprinkler system, heat-actuated sprinklers</td>
<td>Coverage throughout the building</td>
</tr>
<tr>
<td></td>
<td>Water supplied by fire hydrants</td>
<td>One hydrant, location shown in Figure 44 of Permit Attachment L (Figures)</td>
</tr>
</tbody>
</table>
### TABLE D-4
**Emergency Equipment to be Maintained at the HWHU**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Modular Storage Buildings (958B and 958C)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 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**

<table>
<thead>
<tr>
<th>HWHU Emergency Coordinator</th>
<th>Office Phone</th>
<th>Home Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Susan Johnson</td>
<td>(505) 844-1396 (office)</td>
<td>(505) 690-4755</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>(505) 690-4755 (cell)</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, New Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>First Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chris Dean</td>
<td>(505) 284-8083 (office)</td>
<td>(505) 350-4982</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>(505) 639-3202 (cell)</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, New Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Second Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mary Ann Krauss</td>
<td>(505) 845-9997 (office)</td>
<td>(505) 299-0793</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>(505) 250-2422 (cell)</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, New Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Third Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Therese Martinez-Loner</td>
<td>(505) 284-5028 (office)</td>
<td>(505) 401-0381</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>(505) 573-0562 (cell)</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, New Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fourth Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angel Ripoll</td>
<td>(505) 284-5334 (office)</td>
<td>(505) 573-0562</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>(505) 501-0381 (cell)</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, New Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fifth Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tony Mocadlo</td>
<td>(505) 844-0564 (office)</td>
<td>(505) 720-1722</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>(505) 720-1722 (cell)</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, New Mexico</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Page 91
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>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety and Decontamination Equipment</td>
<td>Permanent eyewash/hand-held deluge showers</td>
<td>Building 6715</td>
</tr>
<tr>
<td></td>
<td>First aid kit</td>
<td>Building 6715</td>
</tr>
<tr>
<td></td>
<td>Absorbent (sufficient absorbent for 20.8 gallons of liquid that could be present in the burn pan)</td>
<td>Building 6715</td>
</tr>
<tr>
<td></td>
<td>Recovery drums and containers</td>
<td>In equipment storage at Building 6715</td>
</tr>
<tr>
<td></td>
<td>Spill cleanup items (mops, brooms, and/or shovels)</td>
<td>Building 6715 equipment storage</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous PPE (protective suits, goggles, gloves)</td>
<td>Building 6715</td>
</tr>
<tr>
<td>Internal Communication and Alarm System</td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department)</td>
<td>One on east wall inside Building 6715 near personnel door</td>
</tr>
<tr>
<td></td>
<td>Public address system</td>
<td>Microphone in Building 6715</td>
</tr>
<tr>
<td>External Communication System</td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department)</td>
<td>Near personnel doors in Building 6715.</td>
</tr>
<tr>
<td></td>
<td>Telephones</td>
<td>Building 6715</td>
</tr>
<tr>
<td>Fire Extinguishers</td>
<td>Portable (A-B-C)</td>
<td>One at or near each personnel door in Buildings 6715, one located at the TTU fence.</td>
</tr>
<tr>
<td>Fire Suppression</td>
<td>Water supplied by fire hydrant</td>
<td>One hydrant, location is shown in Figure 45, Attachment L (Figures)</td>
</tr>
</tbody>
</table>
### TABLE D-7

**Emergency Coordinator List for the TTU**

<table>
<thead>
<tr>
<th>TTU Emergency Coordinator</th>
<th>Office Phone</th>
<th>Home Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tim Covert</td>
<td>(505) 284-4664 (office)</td>
<td>(505) 506-5907 (cell)</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td>(505) 284-4664 (office)</td>
<td>(505) 506-5907 (cell)</td>
</tr>
<tr>
<td>Albuquerque, NM 87185</td>
<td>(505) 284-4664 (office)</td>
<td>(505) 506-5907 (cell)</td>
</tr>
<tr>
<td><strong>First Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daniel Dow</td>
<td>(505) 284-1622 (office)</td>
<td>(505) 514-9306 (cell)</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td>(505) 284-1622 (office)</td>
<td>(505) 514-9306 (cell)</td>
</tr>
<tr>
<td>Albuquerque, NM 87185</td>
<td>(505) 284-1622 (office)</td>
<td>(505) 514-9306 (cell)</td>
</tr>
<tr>
<td><strong>Second Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marcus Chavez</td>
<td>(505) 284-1278 (office)</td>
<td>(505) 974-8918 (cell)</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td>(505) 284-1278 (office)</td>
<td>(505) 974-8918 (cell)</td>
</tr>
<tr>
<td>Albuquerque, NM</td>
<td>(505) 284-1278 (office)</td>
<td>(505) 974-8918 (cell)</td>
</tr>
<tr>
<td><strong>Third Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ronald Briggs</td>
<td>(505) 845-0435 (office)</td>
<td>(505) 350-3380 (cell)</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td>(505) 845-0435 (office)</td>
<td>(505) 350-3380 (cell)</td>
</tr>
<tr>
<td>Albuquerque, NM 87185</td>
<td>(505) 845-0435 (office)</td>
<td>(505) 350-3380 (cell)</td>
</tr>
</tbody>
</table>

### TABLE D-8

**Emergency Response Equipment to be Maintained at the RMWMU**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building 6920</strong></td>
<td><strong>Spill Control and Decontamination Equipment</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eyewash Stations/ Showers</td>
<td>On north wall in south bay</td>
</tr>
<tr>
<td></td>
<td>Absorbent (sufficient absorbent for 55 gallons of liquid when liquid</td>
<td>In hallway between north and south bays</td>
</tr>
<tr>
<td></td>
<td>wastes are present)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spill cleanup items (mops, brooms, and/or shovels)</td>
<td>In equipment storage at the RMWMU</td>
</tr>
<tr>
<td></td>
<td>Recovery drums and containers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Miscellaneous PPE (protective suits, goggles, and/or safety glasses,</td>
<td>In hallway between north and south bays</td>
</tr>
<tr>
<td></td>
<td>chemical-resistant gloves)</td>
<td></td>
</tr>
<tr>
<td><strong>Internal Communication and Alarm System</strong></td>
<td>Voice command Portable 2-way radio or equivalent,</td>
<td>Operating personnel</td>
</tr>
<tr>
<td></td>
<td>as needed</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Location</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 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    | Telephone                                                                                                                                                                                                 | Control room, south and north bays                                                                                                                   |
| Fire Extinguishers               | 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 Suppression                 | 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                 | Water supplied by fire hydrants                                                                                                                                                                             | Three hydrants, Figure 47 of Permit Attachment L (Figures)                                                                                             |
| Spill Control and Decontamination Equipment | Eyewash Station/Shower  
Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)  
Spill cleanup items (mops, brooms, and/or shovels)  
Recovery drums and containers  
Miscellaneous PPE (protective suits, goggles, and/or safety glasses, chemical-resistant gloves) | On north wall of assay area  
By north wall of assay area  
In equipment storage at the RMWMU  
In equipment storage at the RMWMU  
By north wall of assay area                                                                 |
| Internal Communication and Alarm System | Voice command  
Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate)                                                                                                                                 | Operating personnel  
By personnel door in electrical/mechanical room  
In central hallway outside restrooms                                                                 |

**Building 6921**
**TABLE D-8**

Emergency Response Equipment to be Maintained at the RMWMU

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Communication System</td>
<td><strong>Audible fire alarms</strong>&lt;br&gt;Located throughout the building</td>
<td></td>
</tr>
<tr>
<td><strong>Fire Extinguishers</strong></td>
<td><strong>Telephones</strong>&lt;br&gt;Office and lab areas</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</strong>&lt;br&gt;By personnel door in electrical/mechanical room&lt;br&gt;In central hallway outside restrooms&lt;br&gt;In northwest corner of assay area&lt;br&gt;By east personnel door in southeast counting room&lt;br&gt;By east personnel door in middle east office area</td>
<td></td>
</tr>
<tr>
<td><strong>Fire Suppression</strong></td>
<td><strong>Portable (A-B-C)</strong>&lt;br&gt;By north personnel door in electrical/mechanical room&lt;br&gt;In hallway near restrooms&lt;br&gt;By northwest personnel door of assay area&lt;br&gt;By east personnel door in southeast counting room</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Automatic wet-pipe sprinkler system with heat-actuated sprinklers</strong>&lt;br&gt;Coverage throughout the building</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Water supplied by fire hydrants</strong>&lt;br&gt;Three hydrants, locations shown in Figure 47 (Figures) of Permit Attachment L</td>
<td></td>
</tr>
<tr>
<td><strong>Spill Control and Decontamination Equipment</strong></td>
<td><strong>Portable Eyewash</strong>&lt;br&gt;By personnel door near center of south wall</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)</strong>&lt;br&gt;By personnel door near center of south wall</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Spill cleanup items (mops, brooms, and/or shovels)</strong>&lt;br&gt;In equipment storage at the RMWMU</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Recovery drums and containers</strong>&lt;br&gt;In equipment storage at the RMWMU</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Miscellaneous PPE (protective suits, goggles, and/or safety glasses, chemical-resistant gloves)</strong>&lt;br&gt;By personnel door near center of south wall</td>
<td></td>
</tr>
<tr>
<td><strong>Internal Communication and Alarm System</strong></td>
<td><strong>Voice command</strong>&lt;br&gt;Portable 2-way radio or equivalent, as needed&lt;br&gt;Operating personnel</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</strong>&lt;br&gt;By personnel door in northeast corner of building&lt;br&gt;By personnel door in southwest corner of building&lt;br&gt;By personnel door near center of south wall</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Audible fire alarms</strong>&lt;br&gt;Located on east and west wall</td>
<td></td>
</tr>
</tbody>
</table>

Building 6925
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Communication System</strong></td>
<td>Telephone</td>
<td>By personnel door in southwest corner of building</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>By personnel door in northeast corner of building</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>By personnel door in southwest corner of building</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>By personnel door near center of south wall</td>
</tr>
<tr>
<td>Fire Extinguishers</td>
<td>Portable (A-B-C)</td>
<td>By personnel door in northeast corner of building</td>
</tr>
<tr>
<td></td>
<td>Portable (A-B-C)(D)</td>
<td>By personnel door in southwest corner of building</td>
</tr>
<tr>
<td></td>
<td>Portable (A-B-C)(D)</td>
<td>By personnel door near center of south wall</td>
</tr>
<tr>
<td>Fire Suppression</td>
<td>Automatic dry-pipe sprinkler system with heat-actuated sprinklers</td>
<td>Sprinklers located throughout building</td>
</tr>
<tr>
<td></td>
<td>Water supplied by fire hydrants</td>
<td>Three hydrants, locations shown in Figure 47 of Permit Attachment L (Figures)</td>
</tr>
<tr>
<td><strong>Building 6926</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spill Control and Decontamination Equipment</strong></td>
<td>Eyewash Station/Shower</td>
<td>In southeast area of building</td>
</tr>
<tr>
<td></td>
<td>Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)</td>
<td>In southeast area of building</td>
</tr>
<tr>
<td></td>
<td>Spill cleanup items (mops, brooms, and/or shovels)</td>
<td>In equipment storage at the RMWMU</td>
</tr>
<tr>
<td></td>
<td>Recovery drums and containers</td>
<td>In equipment storage at the RMWMU</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous PPE (protective suits, goggles, and/or safety glasses, chemical-resistant gloves)</td>
<td>In southeast area of building</td>
</tr>
<tr>
<td><strong>Internal Communication and Alarm System</strong></td>
<td>Voice command</td>
<td>Operating personnel</td>
</tr>
<tr>
<td></td>
<td>Portable 2-way radio or equivalent, as needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>By personnel door in northeast corner of building</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>By personnel door in northeast corner of building</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>By personnel door on west wall of the building</td>
</tr>
<tr>
<td></td>
<td>Audible fire alarms</td>
<td>Located on east wall and west wall</td>
</tr>
<tr>
<td>Fire Extinguishers</td>
<td>Portable (A-B-C)</td>
<td>By personnel door in northeast corner of building</td>
</tr>
<tr>
<td></td>
<td>Portable (A-B-C)(D)</td>
<td>By personnel door on west wall of the building</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>By personnel door on south wall of the building</td>
</tr>
<tr>
<td>Fire Suppression</td>
<td>Automatic dry-pipe sprinkler system with heat-actuated sprinklers</td>
<td>Sprinklers located throughout building</td>
</tr>
<tr>
<td></td>
<td>Water supplied by fire hydrants</td>
<td>Three hydrants, locations shown in Figure 47 of Permit Attachment L (Figures)</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Location</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Modular Storage Buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spill Control and Decontamination Equipment</td>
<td>Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)</td>
<td>Buildings 6920 and 6926</td>
</tr>
<tr>
<td></td>
<td>Spill cleanup items (mops, brooms, and/or shovels)</td>
<td>In equipment storage at the RMWMU</td>
</tr>
<tr>
<td></td>
<td>Recovery drums and containers</td>
<td>In equipment storage at the RMWMU</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous PPE (protective suits, goggles, and/or safety glasses, chemical-resistant gloves)</td>
<td>Buildings 6920 and 6926</td>
</tr>
<tr>
<td>Internal Communication and Alarm System</td>
<td>Voice command Portable 2-way radio or equivalent, as needed</td>
<td>Operating personnel</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)</td>
<td>Buildings 6920, 6921, 6925, and 6926</td>
</tr>
<tr>
<td></td>
<td>Audible fire alarms</td>
<td>Buildings 6920, 6921, 6925, and 6926</td>
</tr>
<tr>
<td>External Communication System</td>
<td>Telephones</td>
<td>Buildings 6920 and 6926</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)</td>
<td>Buildings 6920, 6921, 6925, and 6926</td>
</tr>
<tr>
<td>Fire Suppression</td>
<td>Automatic dry chemical system</td>
<td>Coverage throughout the building</td>
</tr>
</tbody>
</table>
TABLE D-9
Radioactive and Mixed Waste Management Unit,
Emergency Coordinator List

<table>
<thead>
<tr>
<th>Facility Emergency Coordinator</th>
<th>Office Phone</th>
<th>Home Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>Leroy Duran</td>
<td>(505) 284-1488 (office)</td>
</tr>
<tr>
<td></td>
<td>Sandia National Laboratories</td>
<td>(505) 980-4401 (cell)</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 5800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Albuquerque, NM 87185</td>
<td></td>
</tr>
<tr>
<td>First Alternate</td>
<td>Howard Seeley</td>
<td>(505) 284-6297 (office)</td>
</tr>
<tr>
<td></td>
<td>Sandia National Laboratories</td>
<td>(505) 259-7422 (cell)</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 5800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Albuquerque, NM 87185</td>
<td></td>
</tr>
<tr>
<td>Second Alternate</td>
<td>Chris Eckstein</td>
<td>(505) 284-4641 (office)</td>
</tr>
<tr>
<td></td>
<td>Sandia National Laboratories</td>
<td>(505) 681-8391 (cell)</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 5800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Albuquerque, NM 87185</td>
<td></td>
</tr>
<tr>
<td>Third Alternate</td>
<td>Craig Givens</td>
<td>(505) 845-9480 (office)</td>
</tr>
<tr>
<td></td>
<td>Sandia National Laboratories</td>
<td>(505) 363-4558 (cell)</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 5800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Albuquerque, NM 87185</td>
<td></td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spill Control and Decontamination Equipment</td>
<td>Spill Control and Decontamination Equipment</td>
<td>Building 6597</td>
</tr>
<tr>
<td></td>
<td>Fixed shower/eyewash</td>
<td>Near north entrance to Building 6597 high bay.</td>
</tr>
<tr>
<td></td>
<td>Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)</td>
<td>In equipment storage in Building 6597</td>
</tr>
<tr>
<td></td>
<td>Spill cleanup items (mops, brooms, and/or shovels)</td>
<td>In equipment storage in Building 6597</td>
</tr>
<tr>
<td></td>
<td>Recovery drums and containers</td>
<td>In equipment storage in Building 6597</td>
</tr>
<tr>
<td></td>
<td>Personal protective equipment (goggles and/or safety glasses, gloves)</td>
<td>In equipment storage in Building 6597</td>
</tr>
<tr>
<td>Internal Communication and Alarm System</td>
<td>Voice communication</td>
<td>One near each exit door Building 6597 high bay</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>Located throughout the building</td>
</tr>
<tr>
<td>External Communication System</td>
<td>Telephones</td>
<td>Near north entrance to Building 6597 high bay.</td>
</tr>
<tr>
<td></td>
<td>Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)</td>
<td>One near each exit door to Building 6597 high bay</td>
</tr>
<tr>
<td>Fire Extinguishers</td>
<td>Portable (A-B-C)</td>
<td>By personnel doors on the north, east, south, and west walls</td>
</tr>
<tr>
<td>Fire Suppression</td>
<td>Automatic wet-pipe sprinkler system with heat-actuated sprinklers</td>
<td>Coverage throughout the high-bay in Building 6597</td>
</tr>
<tr>
<td></td>
<td>Sprinkler head</td>
<td>Hot Cell</td>
</tr>
<tr>
<td></td>
<td>Sprinkler head</td>
<td>In fume hood</td>
</tr>
<tr>
<td></td>
<td>Water supplied by fire hydrant</td>
<td>One hydrant, location shown on Figure 49 of Permit Attachment L (Figures)</td>
</tr>
</tbody>
</table>
### TABLE D-11
Emergency Coordinator List for the AHCU

<table>
<thead>
<tr>
<th>Category</th>
<th>AHCU Emergency Coordinator</th>
<th>Office Phone</th>
<th>Home Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Office Address:</td>
<td>David Siddoway Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico</td>
<td>(505) 844-2713- (office) (505) 377-4002 (cell)</td>
<td>(505) 867-0828</td>
</tr>
<tr>
<td>First Alternate Office Address:</td>
<td>Michael Torneby Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico</td>
<td>(505) 845-3254 (office) (888) 200-3427 (pager) (505) 238-9948 (cell)</td>
<td>(505) 270-5152</td>
</tr>
<tr>
<td>Second Alternate</td>
<td>Bryan Green Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico</td>
<td>(505) 284-3161 (office) (505) 280-5118 (cell)</td>
<td>(505) 897-6366</td>
</tr>
</tbody>
</table>

### TABLE D-12
Emergency Equipment to be Maintained at the MSBs

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spill Control and Decontamination Equipment</td>
<td>Portable Eyewash</td>
<td>By inner door inside each bunker</td>
</tr>
<tr>
<td></td>
<td>Personal protective equipment (chemical-resistant gloves and safety glasses)</td>
<td>By inner door inside each bunker</td>
</tr>
<tr>
<td></td>
<td>Absorbents (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)</td>
<td>By inner door inside each bunker</td>
</tr>
<tr>
<td></td>
<td>Spill cleanup items (mops, brooms, and/or shovels)</td>
<td>In equipment storage at the RMWMU</td>
</tr>
<tr>
<td></td>
<td>Recovery drums and containers</td>
<td>In equipment storage at the RMWMU</td>
</tr>
<tr>
<td>Internal Communication and Alarm System</td>
<td>Voice command Portable 2-way radio or equivalent, as needed</td>
<td>Operating personnel.</td>
</tr>
<tr>
<td></td>
<td>Smoke Detectors Smoke detectors inside each bunker Strobe light on front outside each bunker</td>
<td></td>
</tr>
<tr>
<td>External Communication System</td>
<td>Mobile telephone or portable radio</td>
<td>Available to all operating personnel at the bunkers</td>
</tr>
<tr>
<td>Fire Extinguishers</td>
<td>Portable (A-B-C)</td>
<td>By entrance door outside each bunker</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Suppression</td>
<td>Water to extinguish fires</td>
<td>KAFB tanker truck at the KAFB fire station in the Manzano administrative area</td>
</tr>
</tbody>
</table>

**TABLE D-13**

Emergency Coordinator List for the MSBs

<table>
<thead>
<tr>
<th>MSB Emergency Coordinator</th>
<th>Office Phone</th>
<th>Home Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>(505) 284-1488 (office)</td>
<td>(505) 980-4401 (cell)</td>
</tr>
<tr>
<td>Office Address:</td>
<td>(505) 284-6297 (office)</td>
<td>(505) 259-7422 (cell)</td>
</tr>
<tr>
<td>Leroy Duran</td>
<td>(505) 284-6297 (office)</td>
<td>(505) 259-7422 (cell)</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, NM 87185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Alternate Office Address:</td>
<td>(505) 845-9480 (office)</td>
<td>(505) 363-4558 (cell)</td>
</tr>
<tr>
<td>Howard Seeley</td>
<td>(505) 845-9480 (office)</td>
<td>(505) 363-4558 (cell)</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
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<tr>
<td>Albuquerque, NM 87185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Alternate Office Address:</td>
<td>(505) 845-9480 (office)</td>
<td>(505) 363-4558 (cell)</td>
</tr>
<tr>
<td>Chris Eckstein</td>
<td>(505) 845-9480 (office)</td>
<td>(505) 363-4558 (cell)</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, NM 87185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Alternate Office Address:</td>
<td>(505) 845-9480 (office)</td>
<td>(505) 363-4558 (cell)</td>
</tr>
<tr>
<td>Craig Givens</td>
<td>(505) 845-9480 (office)</td>
<td>(505) 363-4558 (cell)</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, NM 87185</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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 \(\text{(Figures)}\) 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>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spill Control Equipment</td>
<td>Spill control materials, including sorbent material, brooms and shovels</td>
<td>Leachate Storage Area Shed</td>
</tr>
<tr>
<td>Fire Extinguisher</td>
<td>Portable, Multi-Class</td>
<td>One near the Leachate Storage Area Cell, and one in CAMU office</td>
</tr>
<tr>
<td>Communications: (Internal/External)</td>
<td>Mobile telephone or portable radio or equivalent</td>
<td>Carried by personnel as needed</td>
</tr>
<tr>
<td></td>
<td>Telephone</td>
<td>CAMU office</td>
</tr>
<tr>
<td>Water Supply</td>
<td>Fire Hydrant</td>
<td>One outside the southeast entrance to the CAMU</td>
</tr>
<tr>
<td>Environmental and Health</td>
<td>Portable eyewash station</td>
<td>Leachate Storage Area Shed (during waste handling activities)</td>
</tr>
<tr>
<td>Evacuation</td>
<td>Voice command by on-site personnel or signaled by three blasts of a vehicle warning horn.</td>
<td>Designated Assembly Area (See Figure 51 in Permit Attachment L (\text{(Figures)}))</td>
</tr>
<tr>
<td>CAMU Emergency Coordinator</td>
<td>Office Phone</td>
<td>Home Phone</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Primary</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don Schofield</td>
<td>(505) 844-4088 (office)</td>
<td>(505) 268-6888</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>(505) 259-7098 (cell)</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuquerque, NM 87185</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>First Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robert Ziock</td>
<td>(505) 845-0485 (office)</td>
<td>(505) 255-4714</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>(505) 238-3668 (cell)</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
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<td></td>
</tr>
<tr>
<td>Albuquerque, NM 87185</td>
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<tr>
<td><strong>Second Alternate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Danielle Michel</td>
<td>(505) 845-7706 (office)</td>
<td>(505) 239-3989</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>(505) 219-7143(cell)</td>
<td></td>
</tr>
<tr>
<td>P.O. Box 5800</td>
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<td></td>
</tr>
<tr>
<td>Albuquerque, NM 87185</td>
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TABLE OF CONTENTS

PERMIT PART 1: GENERAL PERMIT CONDITIONS .............................................................. 1

1.0 GENERAL .................................................................................................................... 1

1.1. Legal Authority ......................................................................................................... 1

1.2. Permit Construction ................................................................................................. 2

1.3. Severability ................................................................................................................ 2

1.4. Definitions ................................................................................................................... 2

1.5. Effect of Permit ......................................................................................................... 3

1.5.1. Compliance with Permit (Permit Shield) ............................................................... 4

1.6. Permit Actions ........................................................................................................... 4

1.6.1. Term of Permit ....................................................................................................... 4

1.6.2. Permit Modification, Suspension, Revocation, and Termination ...................... 4

1.6.2.1. Permit Modification .......................................................................................... 4

1.6.2.2. Permit Modification at the Request of the Permittees .................................... 5

1.6.2.3. Permit Suspension, Revocation, and Termination .......................................... 5

1.6.3. Permit Renewal/Duty to Reapply .......................................................................... 5

1.6.4. Continuation of Expiring Permit .......................................................................... 5

1.6.5. Transfer of Permit ................................................................................................. 5

1.6.6. Permit Review ....................................................................................................... 5

1.7. Points of Contact During Post-Closure Care ......................................................... 6

1.8. Duties and Requirements ......................................................................................... 6

1.8.1. Duty to Comply ..................................................................................................... 6

1.8.2. Need to Halt or Reduce Activity Not a Defense .................................................... 7

1.8.3. Duty to Mitigate .................................................................................................... 7

1.8.4. Proper Operation and Maintenance ...................................................................... 7

1.8.5. Duty to Provide Information ................................................................................ 7

1.8.6. Inspection and Entry .............................................................................................. 7

1.8.7. Monitoring and Records ....................................................................................... 8

1.8.8. Reporting Planned Changes ................................................................................ 8

1.8.9. Reporting Anticipated Noncompliance ............................................................... 8

1.8.10. Certification of Construction or Modification .................................................. 9

1.8.11. Twenty-Four Hour and Subsequent Reporting .................................................. 9

1.8.11.1. Oral Report ................................................................................................... 9

1.8.11.2. Written Report .............................................................................................. 9

1.8.11.3. Reports Required by Contingency Plan ....................................................... 10

1.8.12. Admissibility of Data ......................................................................................... 10

1.8.13. Other Noncompliance ....................................................................................... 10

1.8.14. Other Information ............................................................................................. 10

1.9. Reports, Notifications, and Information Submittals ........................................... 11

1.9.1. Information Submittal .......................................................................................... 11

1.9.2. Incorporation of Plans and Schedules into the Permit ....................................... 11

1.10. Confidential Information ....................................................................................... 11
TABLE OF CONTENTS, CONTINUED

PERMIT PART 2: GENERAL FACILITY CONDITIONS .................................................. 12

2.0  INTRODUCTION ................................................................................................. 12

2.1. Hazardous Waste Prohibition .......................................................................... 12

2.2. Security .............................................................................................................. 12

2.3. General Inspection Requirements ...................................................................... 12

2.4. Preparedness and Prevention ............................................................................ 12

2.4.1. Required Equipment ...................................................................................... 12

2.4.2. Testing and Maintenance of Equipment ......................................................... 12

2.4.3. Access to Communications or Alarm System ................................................. 12

2.4.4. Arrangements with Local Authorities ............................................................ 12

2.5. Contingency Plan ................................................................................................ 13

2.5.1. Implementation of Contingency Plan ............................................................... 13

2.5.2. Copies of the Contingency Plan...................................................................... 13

2.5.3. Amendments to Contingency Plan ................................................................. 13

2.5.4. Emergency Coordinator ................................................................................ 13

2.6. Record Keeping and Reporting ......................................................................... 14

2.6.1. Data Retention ............................................................................................... 14

2.6.2. Operating Record .......................................................................................... 14

2.6.3. Annual Report ................................................................................................ 14

2.6.4. Personnel and Telephone Number Changes .................................................... 14

2.6.5. Post-Closure Notices ..................................................................................... 14

2.6.6. Certification of Completion of Post-Closure Care ........................................... 15

2.7. Cost Estimate and Financial Assurance for Facility Post-Closure Care ............ 15

2.8. Financial Responsibility ..................................................................................... 15

2.9. Documents to be Maintained at the Facility ..................................................... 15

PERMIT PART 3: POST-CLOSURE CARE REQUIREMENTS FOR THE CWL............... 17

3.0  GENERAL ............................................................................................................ 17

3.1. Residual Soil Contamination at Risk-Based Levels ........................................ 18

3.2. Post-Closure Care Procedures and Use of Property ......................................... 24

3.2.1. Duration of Post-Closure Care ...................................................................... 24

3.2.2. Groundwater Monitoring System ................................................................... 24

3.2.3. Special Post-Closure Requirements for Landfills .......................................... 24

3.2.4. Security Requirements .................................................................................. 24

3.2.5. Future Land Use Requirements ..................................................................... 25

3.3. Inspection .......................................................................................................... 25

3.4. Groundwater Sampling and Analysis Plan ....................................................... 25

3.5. Soil Gas Sampling and Analysis ........................................................................ 25

3.6. Personnel Training for Post-Closure Care Period ............................................ 25

3.7. Post-Closure Permit Modifications .................................................................... 25

3.8. References ........................................................................................................ 25
TABLE OF CONTENTS, CONTINUED

PERMIT ATTACHMENT 1: POST-CLOSURE CARE PLAN FOR THE CWL .......... 26

1.0 INTRODUCTION ............................................................................................. 26

1.1. General Description of the Facility ............................................................... 26

1.2. Location, Conditions, and Description of the CWL .................................. 26
   1.2.1. Location and General Description ............................................................ 26
   1.2.2. Current Landfill Conditions ..................................................................... 27
   1.2.3. Description of Cover Installation ............................................................... 27
   1.2.4. Seismic Considerations ............................................................................ 27
   1.2.5. Floodplain ............................................................................................... 27

1.3. Description of the Final Cover .................................................................... 28
   1.3.1. Surface Topsoil Layer .............................................................................. 28
   1.3.2. Native Soil Layer .................................................................................... 29
   1.3.3. Surface Drainage Controls ....................................................................... 29

1.4. Description of the Compliance Monitoring System ..................................... 29
   1.4.1. Groundwater Monitoring System ............................................................. 29
   1.4.2. Soil-Gas Monitoring System .................................................................... 33

1.5. Description of Storm-Water Diversion Structures ....................................... 33

1.6. Description of Security Fences .................................................................... 34

1.7. Post-Closure Care ....................................................................................... 34

1.8. Monitoring Process ..................................................................................... 34
       1.8.1.1. Frequency .......................................................................................... 35
       1.8.1.2. Assessment ...................................................................................... 36
   1.8.2. Soil-Gas Monitoring Process .................................................................... 37
       1.8.2.1. Frequency .......................................................................................... 37
       1.8.2.2. Assessment ...................................................................................... 38
   1.8.3. Corrective Action .................................................................................... 40

1.9. Inspection/Maintenance/Repair Activities and Frequencies ....................... 41
   1.9.1. Final Cover System Inspection/Maintenance/Repair ............................... 42
       1.9.1.1. Vegetation Inspection and Monitoring ................................................. 42
       1.9.1.2. Cover Inspection ............................................................................... 42
       1.9.1.3. Maintenance/Repair ........................................................................ 42
   1.9.2. Storm-Water Diversion Structure Inspection/Maintenance/Repair ........... 43
       1.9.2.1. Inspection ......................................................................................... 43
       1.9.2.2. Maintenance/Repair ........................................................................ 43
   1.9.3. Monitoring Well Network Inspection/Maintenance/Repair ..................... 43
       1.9.3.1. Inspection ......................................................................................... 43
       1.9.3.2. Maintenance/Repair ........................................................................ 44
   1.9.4. Security Fence Inspection/Maintenance/Repair ....................................... 44
       1.9.4.1. Inspection ......................................................................................... 44
       1.9.4.2. Maintenance/Repair ........................................................................ 44
# TABLE OF CONTENTS, CONTINUED

1.10. Inspection Schedule, Corrective Actions, and Recorded Results ................................ 44
1.11. Personnel Training ..................................................................................................... 45
1.12. Record Keeping and Reporting .................................................................................. 47
1.13. Potential for Exposure ............................................................................................. 49
1.14. Potential for Emergency .......................................................................................... 49
1.15. References ................................................................................................................ 49

PERMIT ATTACHMENT 2: GROUNDWATER SAMPLING AND ANALYSIS PLAN .... 66

## 2.0 INTRODUCTION

2.1. Data Quality Objectives and Quality Control ......................................................... 66
2.2. Accuracy .................................................................................................................... 67
2.3. Precision ................................................................................................................... 68
2.4. Completeness .......................................................................................................... 68
2.5. Data Representativeness ......................................................................................... 68
2.6. Comparability .......................................................................................................... 68
2.7. Sampling Locations and Frequency ......................................................................... 68
2.8. Field Operations ...................................................................................................... 69
2.9. Safety ....................................................................................................................... 69
2.10. Water Level Measurements ................................................................................... 69
2.11. Field Water Quality Parameters ........................................................................... 70
2.12. Sample Collection .................................................................................................. 70
2.13. Monitoring Equipment Field Checks ..................................................................... 71
2.14. Equipment Decontamination ............................................................................... 71
2.15. Waste Management ............................................................................................... 71
2.16. Sample Documentation and Custody .................................................................... 71
2.17. Sample Shipment ................................................................................................... 72
2.18. Laboratory Analytical Procedures .......................................................................... 72
2.19. Analytical Laboratory ............................................................................................ 72
2.20. Quality Control ...................................................................................................... 73
    2.20.1. Field Quality Control ..................................................................................... 73
    2.20.2. Laboratory Quality Control .......................................................................... 74
2.21. Data Validation, Review, and Reporting ................................................................. 74
    2.21.1. Field Water Quality Data and Documentation Review .................................. 75
    2.21.2. Laboratory Data Verification and Validation ................................................. 75
    2.21.3. Data Reporting ............................................................................................. 75
    2.21.4. Records Management ................................................................................... 75
2.22. Non-Conformances and Variances ....................................................................... 76
2.23. References .............................................................................................................. 76
TABLE OF CONTENTS, CONTINUED

PERMIT ATTACHMENT 3: SOIL-GAS SAMPLING AND ANALYSIS PLAN ................. 83

3.0 INTRODUCTION ............................................................................................... 83
3.1. Purpose ............................................................................................................. 83
3.2. Historical Soil-Gas Monitoring ........................................................................ 83
3.3. Post-Closure Care Soil-Gas Monitoring Objectives ........................................ 83
3.4. Data Quality Objectives .................................................................................. 84
3.5. Sampling Locations and Frequency ................................................................. 84
  3.5.1. Sample Locations ....................................................................................... 84
  3.5.2. Frequency .................................................................................................. 84
3.6. Data Accuracy .................................................................................................. 84
3.7. Data Consistency and Comparability ............................................................... 86
3.8. Monitoring Activities ....................................................................................... 86
3.9. Field Sampling .................................................................................................. 86
  3.9.1. Pre-Field Sampling Preparations ................................................................. 87
  3.9.2. Purging and Field Estimation of Total Concentration of VOCs ............... 87
  3.9.3. Sample Collection ..................................................................................... 88
3.10. Laboratory Analysis and Data Review .......................................................... 88
  3.10.1. Data Verification ...................................................................................... 88
  3.10.2. Data Validation ....................................................................................... 88
3.11. Data Management and Reporting ................................................................. 90
3.12. Records Management .................................................................................... 90
3.13. References ..................................................................................................... 90

PERMIT ATTACHMENT 4: INSPECTION FORMS ...................................................... 98

PERMIT ATTACHMENT 5: PERSONNEL TRAINING PROGRAM ....................... 107

5.0 INTRODUCTION ............................................................................................... 107
5.1. Relevance of Training to Job Position ........................................................... 107
5.2. Implementation of Training Program ............................................................. 107
5.3. Outline of the Training Program ................................................................... 107
5.4. Job Title/Job Description .............................................................................. 107
5.5. Training Content, Frequency, and Techniques ............................................. 110
5.6. Emergency Training ...................................................................................... 110
5.7. Training Records ........................................................................................... 112

PERMIT ATTACHMENT 6: CONTINGENCY PLAN .................................................... 113

6.0 INTRODUCTION ............................................................................................... 113
6.1. Distribution of Contingency Plan and Amendments ...................................... 114
6.2. Emergency Response Resources .................................................................. 114
  6.2.1. Emergency Coordinator (EC) and Responsibilities .................................... 114
TABLE OF CONTENTS, CONCLUDED

6.2.2. Emergency Response Groups ................................................................. 115
6.2.3. Emergency Chain of Command ............................................................. 115
6.2.4. Support Agreements and Coordination with Outside Agencies ............ 116
6.3. Emergency Equipment ............................................................................. 116
6.4. Contingency Plan Implementation ............................................................. 117
  6.4.1. Emergencies ....................................................................................... 117
  6.4.1.1. Fire ............................................................................................... 119
  6.4.1.2. Explosion ...................................................................................... 120
  6.4.1.3. Uncontrolled Release ............................................................... 120
  6.4.2. Evacuation ......................................................................................... 121
  6.4.3. Coordination with Off-Site Parties and Emergency Notification ............. 122
6.5. Post-Emergency Actions ........................................................................... 122
6.6. Emergency Response Records And Reports ............................................. 123
LIST OF FIGURES

Figure 1   Location of the Chemical Waste Landfill with respect to Kirtland Air Force Base and the City of Albuquerque………………………………………………………………………………55
Figure 2   Location of the Chemical Waste Landfill within Technical Area III…………………56
Figure 3   Topographic map of Kirtland Air Force Base Showing Location of CWL……………57
Figure 4   Post-VE VCM Volatile Organic Compound Soil-Gas Plume - September 2004.......58
Figure 5   Extent of LE VCM Excavation and Final Verification Soil Sampling Grid Locations…………………………………………………………………………….59
Figure 6   Site Layout for the Post-Closure Care Period Chemical Waste Landfill…………60
Figure 7   Panoramic Photographs of the CWL prior to and After Cover Installation………61
Figure 8   Schematic of the CWL Excavation Backfill and Cover Layers………………………..62
Figure 9   Potentiometric Surface of the Upper Aquifer and Post-Closure Groundwater Monitoring Wells………………………………………………………………63
Figure 10  Soil-Gas Monitoring Wells and Depth Specific Sampling Ports………………….64
Figure 11  Schematic of Passive Soil-Gas Venting Well Equipped with a Baroball™ Device...65
Figure 12  CWL Cover Grading Plan Showing Surface Drainage Features and Flow Lines……66
# LIST OF TABLES

## Permit Part 3

Table 3-1  Residual Soil Concentrations in the CWL – Replaceable and Unexcavated Soil

## Permit Attachments 1-6

Table 1-1  Native Plant Species and Seeding Rate Calculations for the CWL Cover
Table 1-2  Concentration Limits for Three Hazardous Constituents
Table 1-3  Final Use/Disposition Summary CWL Groundwater Monitoring and Vapor Extraction Well Inventory
Table 1-4  CWL Groundwater and Soil-Gas Monitoring Frequency, Parameters, and Methods
Table 1-5  CWL Post-Closure Care Soil-Gas Monitoring EPA Compendium Method TO-14 Analyte List
Table 1-6  CWL Post-Closure Inspection and Maintenance/Repair Schedules and Prescribed Maintenance/Repairs of the CWL and Associated Systems

Table 2-1  Reference Documentation CWL Groundwater Monitoring
Table 2-2  CWL Groundwater Monitoring Wells and Sampling Frequency
Table 2-3  Laboratory Analytical Methods, Container Types, and Preservatives
Table 3-1  Soil-Gas Monitoring Ports to be Sampled during CWL Post-Closure Care
Table 3-2  Reference Documentation CWL Post-Closure Care Soil-Gas Monitoring
Table 3-3  EPA Compendium Method TO-14 Analyte List

Table 5-1  Job Title, Description, and Qualifications CWL Project Leader/Operations Coordinator
Table 5-2  Job Title, Description, and Qualifications CWL Field Technician
Table 5-3  Job Title, Description, and Qualifications CWL Staff Biologist
Table 5-4  Training Content

Table 6-1  Agreements and Memoranda of Understanding for Emergency Response
Table 6-2  CWL Emergency Response Equipment Inventory
Table 6-3  Facility Emergency Response System Notification
Table 6-4  Emergency Equipment for the CWL, Located at the CAMU
Table 6-5  Emergency Coordinator List for the Chemical Waste Landfill
LIST OF ABBREVIATIONS/ACRONYMS

AOP Administrative Operating Procedure
bgs below ground surface
CAMU Corrective Action Management Unit
C.F.R. Code of Federal Regulations
Cr Chromium
CWL Chemical Waste Landfill
°C degrees Celsius
DO dissolved oxygen
DOE U.S. Department of Energy
DOE/SNL U.S. Department of Energy/Sandia National Laboratories
DQO Data Quality Objective
EC Emergency Coordinator
EPA U.S. Environmental Protection Agency
ES&H Environmental Safety and Health
FOP Field Operating Procedure
HWA New Mexico Hazardous Waste Act
HWB New Mexico Hazardous Waste Bureau
KAFB Kirtland Air Force Base
L liter(s)
LCS laboratory control samples
LE Landfill Excavation
LOP Laboratory Operating Procedure
MAA Mutual Aid Agreement
MCL maximum contaminant level
µg microgram(s)
mg milligram(s)
MOU Memorandum of Understanding
MS matrix spike
Ni Nickel
NMAC New Mexico Administrative Code
NMED New Mexico Environment Department
NMSA New Mexico Statutory Authority
NTU Nephelometric Turbidity Unit
OSHA Occupational Safety and Health Administration

LIST OF ABBREVIATIONS/ACRONYMS, CONCLUDED
%R percent recovery
PCIF Post-Closure Inspection Form
pH potential of Hydrogen
PLA Plan
ppmv part(s) per million volume basis
QA Quality assurance
QC Quality control
RAP Remedial Action Proposal
RCRA Resource Conservation and Recovery Act
RPD Relative percent difference
SAP Sampling and Analysis Plan
SC Specific conductance
SMO Sample Management Office
SNL/NM Sandia National Laboratories/New Mexico
SOB Site operational boundary
SOW Statement of Work
SVOC Semi-volatile organic compound
TA Technical Area
TB Trip Blank
TCE Trichloroethene
VCM Voluntary Corrective Measure
VE Vapor Extraction
VOC Volatile organic compound
PERMIT PART 1: GENERAL PERMIT CONDITIONS

1.0 GENERAL

This Permit Part contains general permit conditions pertaining to post-closure care of the Chemical Waste Landfill (CWL) at the Sandia National Laboratories (SNL) Facility, as permitted under the New Mexico Hazardous Waste Act (HWA), NMSA 1978, §§ 74-4-1 to 74-4-14, and in accordance with the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 to 6992k.

In accordance with 40 C.F.R. § 270.1(c), owners and operators of landfills that received waste after July 26, 1982, or that certified closure after July 26, 1983, must have a Post-Closure Care permit. This permit addresses applicable 40 C.F.R. Part 264 groundwater monitoring, corrective action, and post-closure requirements. The CWL was an interim status landfill that was closed in accordance with 40 C.F.R. Part 265 Subpart G and the 1992 CWL Final Closure Plan, as amended. This Post-Closure Care Permit (the Permit) identifies the post-closure activities that shall be performed at the CWL. This Permit is designed to meet RCRA post-closure care requirements in 40 C.F.R. §§ 264.117 through 264.120 and shall become effective and immediately supersede the CWL Closure Plan (SNL/NM December 1992) upon the date of the Department's written approval of the Permittees’ certification of the closure of the CWL.

1.1. LEGAL AUTHORITY

The Department issues this Post-Closure Care Permit to the United States Department of Energy and National Technology and Engineering Solutions of Sandia, LLC (NTESS) (the Permittees) pursuant to Section 74-4-10 of the HWA. Additionally, Section 6001 of RCRA provides, in part, that "[e]ach department, agency, and instrumentality of the executive branch of the Federal Government (1) having jurisdiction over any solid waste management facility or disposal site, or (2) engaged in any activity resulting, or which may result, in the disposal or management of solid waste or hazardous waste shall be subject to, and comply with, all Federal, State, interstate, and local requirements, both substantive and procedural…, respecting control and abatement of solid waste or hazardous waste disposal and management in the same manner, and to the same extent, as any person is subject to such requirements….” [42 U.S.C. § 6961(a)].

Any violation of any condition of this Permit may subject the Permittees, and its officers, employees, successors, and assigns, to a compliance order under Section 74-4-10 of the HWA or Section 3008(a) of RCRA, 42 U.S.C. § 6928(a); to an injunction under Section 74-4-10 of the HWA, Section 3008(a) of RCRA, 42 U.S.C. § 6928(a), or Section 7002(a) of RCRA, 42 U.S.C. § 6972(a); to civil penalties under Section 74-4-10 of the HWA, Section 3008(a) and (g) of RCRA, 42 U.S.C. § 6928(a) and (g), or Section 7002(a) of RCRA, 42 U.S.C. § 6972(a); to criminal penalties under Section 74-4-11 of the HWA or Section 3008(d), (e), and (f) of RCRA, 42 U.S.C. § 6928(d), (e), and (f), or to 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. PERMIT CONSTRUCTION

Whenever provisions of this Permit or of the New Mexico Hazardous Waste Management Regulations (HWMR), 20.4.1 NMAC, incorporating 40 C.F.R. Parts 260 through 270 are cited, the citation shall include all subordinate provisions of the cited provision paragraphs of this Permit or of the HWMR. When subordinate sections are cited, such citations shall include all subsections of the cited paragraphs.

Hazardous waste management regulations are frequently cited throughout this Permit. The federal Hazardous Waste Management Regulations, 40 C.F.R. 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.

If there is a conflict between the provisions of the Permit Parts and the provisions of the Permit Attachments, then the provisions of the Permit Parts shall override the provisions of the Permit Attachments.

1.3. 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.

1.4. DEFINITIONS

For purposes of this Permit, terms used herein shall have the same meanings as those in HWA, RCRA, and their implementing regulations, unless this Permit specifically provides otherwise. Where a term is not defined in HWA, RCRA, their implementing regulations or this Permit, the meaning associated with such a term shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

“Chemical Waste Landfill” (CWL) is a 1.9-acre RCRA hazardous waste landfill undergoing post-closure care. It is located in the southeastern corner of Technical Area III at the Facility. From 1962 through 1985 the CWL was used for the disposal of chemical, radioactive, and solid wastes into unlined pits and trenches. These wastes were generated by SNL research activities. It is the regulated unit subject to this Permit.

“Corrective Action Management Unit” (CAMU) is a site adjacent to the CWL that is used for the containment of hazardous waste that was generated during environmental restoration project remediation activities at the Facility.

“Days” refers to calendar days unless specified otherwise in this Permit.

“Department” or “NMED” means the New Mexico Environment Department and any successor agencies.
“DOE” means the United States Department of Energy, which is a Department of the United States government, and any successor departments or agencies.

“EPA” means the United States Environmental Protection Agency and any successor agencies.

“Facility” means Sandia National Laboratories including all contiguous land, and structures, other appurtenances, and improvements on the land. For the purposes of implementing corrective action under 40 C.F.R. § 264.101, or 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 Subtitle C of RCRA, that is, 40 C.F.R. Parts 260 through 273.

“Hazardous Constituent” or “Hazardous Waste Constituent” means any constituent identified in 40 C.F.R. Part 261 Appendix VIII, or 40 C.F.R. Part 264 Appendix IX.

“Hazardous waste” shall have the meaning set forth in the HWA, Section 74-4-3(K) and the HWMR, 20.4.1 NMAC.

“Hazardous Waste Regulations” or “HWMR” means the New Mexico Hazardous Waste Management Regulations, 20.4.1 NMAC and all provisions of 40 C.F.R. Parts 260 through 273 incorporated therein.

“Permit” means this Permit issued to the Permittees for the Facility, pursuant to the HWA and the HWMR for the Facility to conduct post-closure care of the CWL following the procedures in this Permit, EPA ID No. NM5890110518-2, as it may be modified or amended.

“Permittees” mean National Technology and Engineering Solutions of Sandia, LLC and the United States Department of Energy.


"Release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of any hazardous 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).

“Solid Waste” means a solid waste as defined in 40 C.F.R. § 261.2.

“Technical Area” (TA) means a specific parcel of land controlled by Sandia National Laboratories and owned by the DOE.

If, subsequent to the issuance of this Permit, regulations are promulgated which redefine any of the above terms, the Department may, at its discretion, apply the new definition to this Permit.

1.5. EFFECT OF PERMIT

The New Mexico Environment Department issues this Permit to the Permittees, the owner and operators of the CWL, located at the Facility (EPA I.D. Number NM5890110518). This Permit requires the Permittees to conduct post-closure care of the CWL, and establishes the general and specific standards for these activities, pursuant to the HWA and the HWMR.

1.5.1. Compliance with Permit (Permit Shield)

Compliance with this Permit during its term constitutes compliance, for purposes of enforcement, with 40 C.F.R. Parts 264 and 268, only for those management practices specifically authorized by
this permit. The Permittees must also comply with 40 C.F.R. Parts 260, 261, 262, and 263; to the extent the requirements of those Parts are applicable. The Permittees must also comply with all applicable self-implementing provisions imposed by statute or rule. Compliance with this Permit shall not constitute a defense to any order issued or any action brought under HWA, NMSA 1978, § 74-4-10(E) or § 74-4-13; RCRA § 3008(a), § 3008(h), § 3013, § 7002, or § 7003; the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. § 9601 et seq., or any other law providing for protection of public health or the environment. Pursuant to 40 C.F.R. § 270.4 and § 270.30(g), 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 in accordance with 40 C.F.R. § 270.4 and § 270.30(g).

The complete Permit consists of Permit Parts 1 through 3 and Permit Attachments 1 through 6 as follows.

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1</td>
<td>General Permit Conditions</td>
</tr>
<tr>
<td>Part 2</td>
<td>General Facility Conditions</td>
</tr>
<tr>
<td>Part 3</td>
<td>Post-Closure Care Requirements for the Chemical Waste Landfill</td>
</tr>
<tr>
<td>Attachment 1</td>
<td>Post-Closure Care Plan for the Chemical Waste Landfill</td>
</tr>
<tr>
<td>Attachment 2</td>
<td>Groundwater Sampling and Analysis Plan</td>
</tr>
<tr>
<td>Attachment 3</td>
<td>Soil-Gas Sampling and Analysis Plan</td>
</tr>
<tr>
<td>Attachment 4</td>
<td>Inspection Forms</td>
</tr>
<tr>
<td>Attachment 5</td>
<td>Personnel Training Program</td>
</tr>
<tr>
<td>Attachment 6</td>
<td>Contingency Plan</td>
</tr>
</tbody>
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1.6. **PERMIT ACTIONS**

1.6.1. **Term of Permit**

This Permit shall be effective for a fixed period of 10 years from the effective date as specified in Section 1.0 of this Permit, in accordance with 40 C.F.R. § 270.50(a), subject to Section 1.6.2 of this Permit Part.

1.6.2. **Permit Modification, Suspension, Revocation, and Termination**

1.6.2.1. *Permit Modification*

If at any time for any of the reasons specified in 40 C.F.R. § 270.41, the Department determines that modification of this Permit is necessary, in accordance with 20.4.1.901 NMAC, the Department may modify or revoke and reissue the Permit accordingly.

1.6.2.2. *Permit Modification at the Request of the Permittees*

The Permittees may initiate permit modifications in accordance with 40 C.F.R. § 270.42 and 20.4.1.901 NMAC. All applicable requirements specified in 40 C.F.R. § 270.42 shall be followed.
1.6.2.3. **Permit Suspension, Revocation, and Termination**

This Permit may be modified, suspended, revoked or terminated for cause in accordance with the provisions of HWA, NMSA 1978, § 74-4-4.2, 40 C.F.R. §§ 270.41 through 270.43 and 20.4.1.901 NMAC. The filing of a request by the Permittees for a Permit modification, suspension, or revocation, or the notification of planned changes or anticipated noncompliance, shall not stay any Permit condition, in accordance with 40 C.F.R. § 270.30(f).

Modifications to this Permit do not constitute a reissuance of this Permit.

**1.6.3. Permit Renewal/Duty to Reapply**

The Permittees shall renew this Permit by submitting an application for a new permit at least one hundred eighty (180) days before the expiration date of this Permit, as required by 40 C.F.R. § 270.10(h) and 40 C.F.R. § 270.30(b).

**1.6.4. Continuation of Expiring Permit**

In accordance with 40 C.F.R. § 270.51, if the Permittees have submitted a timely and complete application for renewal of this Permit as specified in 40 C.F.R. §§ 270.10, 270.11, 270.12 (as applicable), and 270.13 through 270.29, 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.

**1.6.5. Transfer of Permit**

The Permittees may only transfer this Permit after providing notice to and receiving approval from the Department. The prospective new owner or operator must file a disclosure statement with the Department as specified at HWA, NMSA 1978, § 74-4-4.7. The Department may require modification or revocation and reissuance of this Permit in accordance with 40 C.F.R. §§ 270.40(b) and 270.41(b)(2).

Before transferring ownership or post-closure care of the CWL, the Permittees shall notify the new owner or operator in writing of the requirements of 40 C.F.R. Parts 264 and 270, and 40 C.F.R. §§ 264.12(c) and 270.30(l)(3) and shall provide the Department with a copy of this notice.

**1.6.6. Permit Review**

In accordance with 40 C.F.R. § 270.50(d), the Department will review this Permit, five years after the effective date of Permit issuance, and may modify this Permit as necessary pursuant to Section 74-4-4.2 of the HWA and 40 C.F.R. § 270.41. Nothing in this section shall preclude the Department from reviewing and, in accordance with applicable requirements, modifying the Permit at any time during its term.

In accordance with 40 C.F.R. § 270.50(b), such modification(s) shall not extend the effective term of this Permit as specified in Permit Condition 1.6.2. Nothing in this Section shall preclude the Department from reviewing and modifying the Permit at any time during its term.

**1.7. POINTS OF CONTACT DURING POST-CLOSURE CARE**

Points of contact during the compliance monitoring and post-closure care periods are identified below.
The DOE contact person is:

Site Office Manager  
U.S. Department of Energy  
P.O. Box 5400,  
Albuquerque, NM 87185-0184

The Operator contact person is:

Vice President  
Waste Management Operations  
Sandia National Laboratories  
P.O. Box 5800,  
Albuquerque, NM 87185-5800

All reports required by the permit shall be signed by a responsible corporate officer or principal executive officer or their duly authorized representatives in accordance with 40 C.F.R. § 270.11(b). 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.

**1.8. DUTIES AND REQUIREMENTS**

**1.8.1. Duty to Comply**

In accordance with 40 C.F.R. § 270.30(a), the Permittees shall comply with all conditions in this Permit, except to the extent and for the duration such noncompliance is authorized in an emergency permit specified in 40 C.F.R § 270.61. Any Permit noncompliance, except under the terms of an emergency permit, constitutes a violation of HWA and RCRA and may subject the Permittees, its successors and assigns, officers, directors, employees, parents, or subsidiaries, to:

1. An administrative or civil enforcement action, including civil penalties and injunctive relief, as specified under Section 74-4-10 of the HWA or Sections 3008(a) and (g), 7002, or 7003 of RCRA;

2. Permit modification, suspension, or revocation, or to denial of a permit application or modification request, under Section 74-4-4.2 of the HWA; or

3. Criminal fines or imprisonment under the HWA, NMSA § 74-4-11, or Section 3008(d), (e), or (f) of RCRA; or to a combination of the foregoing.

**1.8.2. Need to Halt or Reduce Activity Not a Defense**

In accordance with 40 C.F.R. § 270.30(c), it shall not be a defense for the Permittees in an enforcement action that it would have been necessary for the Permittees to halt or reduce the permitted activities in order to maintain compliance with the terms of this Permit.

**1.8.3. Duty to Mitigate**

In accordance with 40 C.F.R. § 270.30(d), in the event of noncompliance with this Permit, the Permittees shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.
1.8.4. **Proper Operation and Maintenance**

In accordance with 40 C.F.R. § 270.30(e), 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/quality control procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

1.8.5. **Duty to Provide Information**

In accordance with 40 C.F.R. §§ 264.74(a) and 270.30(h), 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, or revoking this Permit, or to determine compliance with this Permit. The Permittees shall also furnish to the Department, upon request, copies of records required to be kept by this Permit. This Permit Condition shall not be construed to limit, in any manner, the Department's authority under HWA, NMSA 1978, § 74-4-4.3 or RCRA § 3007(a).

1.8.6. **Inspection and Entry**

In accordance with 40 C.F.R. § 270.30(i), the Permittees shall allow the Department, or authorized representatives, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter at reasonable times into the Permittees' premises where the regulated Facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;
3. Inspect at reasonable times the Facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
4. Sample or monitor at reasonable times, for the purposes of assuring Permit compliance or as otherwise authorized by RCRA and/or the HWA, any substances or parameters, including soil, air, sediment, surface water, and groundwater at the Facility.

This Permit Condition shall not be construed to limit, in any manner, the Department's authority under HWA, NMSA 1978, § 74-4-4.3 or RCRA § 3007(a).

1.8.7. **Monitoring and Records**

1. Representative sampling - For purposes of monitoring, in accordance with 40 C.F.R. § 270.30(j)(1), the Permittees shall take samples and measurements that are representative of the monitored activity.

2. Record Retention - In accordance with 40 C.F.R. § 270.30(j)(2), the Permittees shall retain records of all monitoring information, including all calibration and maintenance records,
and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, the certification required by 40 C.F.R. § 264.73(b)(9) and records of all data used to complete the Permit application for a period of at least three (3) years from the date of the sample, measurement, report, record, certification, or application. The Permittees shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations for the post-closure period.

In addition, all records must be furnished upon request, and made available at all reasonable times for inspection by any representative of the Department. The record retention period may be extended by request of the Department at any time and is automatically extended during the course of any unresolved enforcement action regarding this Facility.

3. Monitoring Records Contents - In accordance with 40 C.F.R. § 270.30(j)(3), records of monitoring information shall include:

   a. The dates, exact place, and times of sampling or measurements;
   b. The names of the individuals who performed the sampling or measurements;
   c. The name and address of the laboratory that performed the analysis;
   d. The dates analyses were performed;
   e. The names of the individuals who performed the analyses;
   f. The analytical techniques or methods used; and
   g. The results of such analyses.

1.8.8. Reporting Planned Changes

In accordance with 40 C.F.R. § 270.30(l)(1), the Permittees shall give notice to the Department, as soon as possible, of any planned physical alterations or additions to the CWL.

1.8.9. Reporting Anticipated Noncompliance

In accordance with 40 C.F.R. § 270.30(l)(2), the Permittees shall give advance notice to the Department of any planned changes to the CWL or in any activities which may result in noncompliance with Permit requirements.

1.8.10. Certification of Construction or Modification

In accordance with 40 C.F.R. § 270.30(l)(2), if the CWL is modified, the Permittees shall not treat, store or dispose of hazardous waste in the modified portion of the CWL, except as provided in Sections 1.6.2 and 1.6.3 of this Permit Part 1 and 40 C.F.R. § 270.42, unless the following conditions have been satisfied:

   4. The Permittees have submitted to the Department, by certified mail or hand delivery, a letter signed by the Permittees and an independent professional engineer registered in New Mexico stating that the CWL’s modification meets the requirements of this Permit; and

1. The Department has:
   a. inspected the modified or newly constructed portion of the CWL and it meets the requirements and conditions of this Permit; or
   b. waived the inspection or, within fifteen (15) calendar days from the date of submission of the letter required by Permit Condition 1.8.11.a., has not notified the Permittees of its intent to inspect.
1.8.11. Twenty-Four Hour and Subsequent Reporting

1.8.11.1. Oral Report

In accordance with 40 C.F.R. § 270.30(l)(6)(i) and (ii), the Permittees shall report to the Department any noncompliance which may endanger human health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittees become aware of the circumstances. The report shall include the following:

1. Information concerning release of any hazardous waste, or hazardous constituents, that may cause an endangerment to public drinking water supplies; and

2. Any information about a release or discharge of hazardous waste, or hazardous constituents, or of a fire or explosion at the permitted unit which could threaten the environment or human health outside the permitted unit.

3. The description of the occurrence and its cause shall include:
   a. Name, address, and telephone number of the owner or operator and the name and phone number of the contact person;
   b. Name, address, and telephone number of the Facility;
   c. Date, time, and type of incident;
   d. Name and quantity of material(s) involved;
   e. The extent of injuries, if any;
   f. An assessment of actual or potential hazards to the environment and human health at or outside of the permitted unit, where this is applicable; and
   g. Estimated quantity and disposition of recovered material that resulted from the incident.

1.8.11.2. Written Report

In accordance with 40 C.F.R. § 270.30(l)(6)(iii), the Permittees shall also submit a written report within five (5) calendar days from the time the Permittees become aware of the noncompliance. The
written report shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The report shall also include the following:

1. Information concerning release of any hazardous waste, or hazardous constituents, that may cause an endangerment to public drinking water supplies; and

2. Any information about a release or discharge of hazardous waste, or hazardous constituents, or of a fire or explosion at the permitted unit which could threaten the environment or human health outside the permitted unit.

3. The description of the occurrence and its cause shall include:
   a. Name, address, and telephone number of the owner or operator and the name and phone number of the contact person;
   b. Name, address, and telephone number of the Facility;
   c. Date, time, and type of incident;
   d. Name and quantity of material(s) involved;
   e. The extent of injuries, if any;
   f. An assessment of actual or potential hazards to the environment and human health at or outside of the permitted unit, where this is applicable; and
   g. Estimated quantity and disposition of recovered material that resulted from the incident.

The Department, at its discretion, may extend the time for submitting the written report to up to fifteen (15) calendar days.

1.8.11.3. Reports Required by Contingency Plan

Any time the Contingency Plan in Permit Attachment 6 is implemented, the Permittees shall comply with the reporting requirements required by 40 C.F.R. § 264.56(j).

1.8.12. 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.

1.8.13. Other Noncompliance

In accordance with 40 C.F.R. § 270.30(l)(10), the Permittees shall report all other instances of noncompliance not otherwise required to be reported under this Permit at the time monitoring reports are submitted. The reports shall contain the information listed in Permit Condition 1.8.11.

1.8.14. Other Information

In accordance with 40 C.F.R. § 270.30(l)(11), 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 information in writing to the Department.
1.9. REPORTS, NOTIFICATIONS, AND INFORMATION SUBMITTALS

1.9.1. Information Submittal

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

In accordance with 40 C.F.R. § 270.43, failure to comply with any condition of the Permit, including relevant information submittal, constitutes a violation of the Permit and is grounds for enforcement action, Permit amendment, termination, revocation, suspension, or denial of Permit renewal application. Misrepresentation of any relevant facts at any time is grounds for termination of this Permit.

The Permittees shall ensure that all plans, reports, notifications, and other submittals to the Department required in this Permit are signed and certified in accordance with 40 C.F.R. § 270.11. 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
121 Tijeras Ave. NE
Albuquerque, NM 87102
Telephone Number: (505) 222-9500
Facsimile Number: (505) 222-9510

1.9.2. Incorporation of Plans and Schedules into the Permit

All plans and schedules required by this Permit are, upon approval by the Department, incorporated into this Permit by reference and become an enforceable part of this Permit. Because required items are essential elements of this Permit, failure to submit any of the required items or submission of inadequate or insufficient relevant information may subject the Permittees to enforcement action under Section 74-4-10 of the HWA, which may include penalties and suspension or revocation of this Permit.

Any noncompliance with approved plans and schedules shall be deemed noncompliance with this Permit. Written requests for extensions of due dates for submittals may be granted by the Department.

1.10. 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 submittals, by stamping the words “confidential business information” 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 40 C.F.R. § 270.12, the Inspection of Public Records Act, NMSA 1978, 14-2-1 to -12, and the HWA, NMSA 1978, 74-4-1 to -14.
PERMIT PART 2: GENERAL FACILITY CONDITIONS

2.0 INTRODUCTION

This Permit requires the Permittees to conduct post-closure care of the Chemical Waste Landfill (CWL), which is located at Technical Area III (TA-III), in compliance with the post-closure care requirements at 40 C.F.R. §§ 264.117 through 264.120 and this Permit.

The Permittees must comply with the groundwater protection standard at 40 C.F.R. § 264.92. Trichloroethene (TCE), chromium, and nickel have been detected in groundwater in the uppermost aquifer underlying the CWL. Therefore, in accordance with 40 C.F.R. § 264.91(a)(1), the Permittees must institute a compliance monitoring program meeting the requirements of 40 C.F.R. § 264.99.

2.1 HAZARDOUS WASTE PROHIBITION

The Permittees shall not accept hazardous waste for treatment, storage or disposal at the CWL.

2.2 SECURITY

In order to prevent the unknowing entry and to minimize the possibility of unauthorized entry of persons or livestock into the CWL, the Permittees shall comply with the security provisions and procedures described in Section 1.6 of Permit Attachment 1, in accordance with 40 C.F.R. § 264.14.

2.3 GENERAL INSPECTION REQUIREMENTS

In accordance with 40 C.F.R. § 264.15, the Permittees shall implement the inspection schedule required by Section 1.10 of Permit Attachment 1 and shall remedy any container and equipment malfunctions and deteriorations, operator errors, and discharges in accordance with 40 C.F.R. § 264.15(c). Records of inspection shall be kept in accordance with 40 C.F.R. § 264.15(d).

2.4 PREPAREDNESS AND PREVENTION

2.4.1 Required Equipment

The Permittees shall maintain at the Facility the equipment required by 40 C.F.R. § 264.32 as well as the additional equipment set forth in Permit Attachment 6, Tables 6-2, 6-3 and 6-4.

2.4.2 Testing and Maintenance of Equipment

The Permittees shall test and maintain the equipment specified in Permit Attachment 6, as necessary, to assure its proper operation in time of emergency in accordance with 40 C.F.R. § 264.33.

2.4.3 Access to Communications or Alarm System

The Permittees shall maintain at the CWL access to a communications or alarm system in accordance with 40 C.F.R. § 264.34.

2.4.4 Arrangements with Local Authorities

The Permittees shall maintain coordination agreements with the New Mexico Department of Homeland Security and Emergency Management, the KAFB 377th Air Base Wing, and the City of Albuquerque as well as with Lovelace Medical Center and Presbyterian Health Care Services, as
described in Permit Attachment 6, Table 6-1. These arrangements shall be either Memoranda of Understanding (MOU) or Mutual Aid Agreements (MAA) between the Permittees and the off-site cooperating agencies, and shall include the elements required by 40 C.F.R. § 264.37(a). Copies and descriptions of these MOUs and MAAs shall be maintained at the Facility office in the operating record. If such coordination agreements cannot be reached through Permittees’ best efforts, the Permittees shall document their attempts to reach such agreements which failed.

2.5. CONTINGENCY PLAN

2.5.1. Implementation of Contingency Plan

The Permittees shall immediately implement the Contingency Plan contained in Permit Attachment 6 whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment in accordance with 40 C.F.R. § 264.51(b).

2.5.2. Copies of the Contingency Plan

The Permittees shall maintain copies of the Contingency Plan and all revisions and amendments to the Plan at the CAMU Administration Office, the Facility EOC and the Facility Records Center, in accordance with 40 C.F.R. § 264.53 and Section 6-1 of Attachment 6 of this Permit. Any person working at the CWL shall have a copy of the current Contingency Plan in their possession while at the CWL, or shall have ready access and be aware that a copy of the CWL Contingency Plan is available at the CAMU Administration Office. The Permittees shall provide copies of the current Contingency Plan and all revisions of the Plan to the Department and all entities with which the Permittees have emergency MOUs or MAAs in accordance with 40 C.F.R. § 264.53.

2.5.3. Amendments to Contingency Plan

In accordance with 40 C.F.R. § 264.54, the Permittees shall review and immediately amend, if necessary, the Contingency Plan whenever:

1. The Facility permit is revised;
2. The plan fails in an emergency;
3. The Facility or CWL changes— in design, construction, operation, maintenance, or other circumstances—in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;
4. The list of emergency coordinators changes; or
5. The list of emergency equipment changes.

2.5.4. Emergency Coordinator

An Emergency Coordinator (EC) and an alternate EC, as specified in Permit Attachment 6, shall be available at all times in case of an emergency. The EC and alternate EC shall be thoroughly familiar with the Contingency Plan and shall have the authority to commit the resources needed to implement the Contingency Plan in accordance with 40 C.F.R. § 264.55. In the event of an imminent or actual emergency, the EC shall activate the internal emergency alarms, notify the
appropriate State or local agencies with designated response roles, and implement other procedures in accordance with 40 C.F.R. § 264.56, and as described in Permit Attachment 6.

2.6. RECORD KEEPING AND REPORTING

In addition to the record keeping and reporting requirements specified elsewhere in this Permit and 40 C.F.R. § 264.73(a), the Permittees shall comply with the following conditions:

2.6.1. Data Retention

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 shall be maintained at the Facility during the term of this Permit, including any reissued Permits. In accordance with 40 C.F.R. § 270.32(b)(2), raw data shall be made available to the Department upon request.

2.6.2. Operating Record

The Permittees shall maintain a written Operating Record at the Corrective Action Management Unit administration trailer, and at the Environmental Safety and Health Records Center.

2.6.3. Annual Report

The Permittees shall submit a post-closure care report to the Department on an annual basis, as specified in Section 1.12 of Attachment 1 of this Permit.

2.6.4. Personnel and Telephone Number Changes

The Permittees shall inform the Department in writing of changes in their responsible corporate and principal executive officers (or their duly authorized representatives) within 30 days of the changes, and Emergency Coordinators and their telephone numbers and addresses within fifteen (15) calendar days of the changes. Changes to responsible corporate officers and the principal executive officers (or their duly authorized representatives) are not permit modifications. Changes in name, address, or phone number for Emergency Coordinators are Class 1 permit modifications under 40 C.F.R § 270.42.

2.6.5. Post-Closure Notices

A copy of the post-closure notice required by 40 C.F.R. § 264.119 shall be submitted to the local zoning authority (Bernalillo County Zoning, Building, and Planning Commission and County Clerk) and the Department within 60 days of certification of closure. The post-closure notice shall include a legal description of the CWL and associated land-use restrictions. The following general restrictions apply to the CWL:

1. Industrial land-use designation shall be maintained;
2. The elevation of the surface of the landfill (the engineered cover) shall not be lowered;
3. The cover and surrounding area shall not be altered in any manner such that drainage onto and infiltration of moisture into the landfill is increased; and
4. Excavation, drilling, or construction involving intrusive activities are prohibited during the post-closure care period, unless authorized by the Department.
2.6.6. Certification of Completion of Post-Closure Care

In accordance with 40 C.F.R. § 264.120, within 60 days of the end of the post-closure care period for the CWL, the Permittees shall submit to the Department, by registered mail, a written certification that post-closure care for the CWL was performed in accordance with the specifications of this Permit. Responsible officials of the Permittees, as well as an independent professional engineer, registered in the State of New Mexico, shall sign the certification. The Permittees shall furnish documentation supporting the independent registered professional engineer’s certification of completion of post-closure care to the Department upon request and at cost to the Permittees. In addition, the Permittees shall prepare a final post-closure care report containing, in an appendix, all Post-Closure Care Inspection Forms (PCIFs) generated during the post-closure care period. The final post-closure care report shall summarize pertinent PCIF information regarding post-closure care and compliance monitoring, inspections, maintenance, and repair activities and any variances from this Permit and the reasons for the variances, summarize results of groundwater and soil gas monitoring conducted during the compliance and post-closure care periods, and summarize the results of any corrective actions taken. The final post-closure care report shall be provided with the certification to the Department for approval 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 the post-closure care period for the CWL. 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 in accordance with 40 C.F.R. 264.117(a)(2)(ii).

2.7. COST ESTIMATE AND FINANCIAL ASSURANCE FOR FACILITY POST-CLOSURE CARE

Pursuant to 40 C.F.R. § 264.140(c), DOE as an agency of the Federal government is exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145. Pursuant to Pub. L. 108-199 (Jan. 23, 2004), NTESS is not required to fulfill any financial responsibility requirement relating to closure or post-closure care and monitoring of Sandia National Laboratories and is therefore exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145.

2.8. FINANCIAL RESPONSIBILITY

Reserved.

2.9. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The Permittees shall maintain at the Facility, until post-closure care is approved as completed by the Department, the following documents and all amendments, revisions, and modifications to these documents:

1. This Permit and its Attachments;
2. The Inspection Plan described in Permit Attachment 1 and the inspection schedules and results in accordance with 40 C.F.R. § 264.15(b);
3. The Operating Record described in Permit Attachment 1, in accordance with 40 C.F.R. § 264.73;

4. The Personnel Training documents and records described in Permit Attachment 5, in accordance with 40 C.F.R. § 264.16(d) and (e);

5. The Contingency Plan described in Permit Attachment 6, in accordance with 40 C.F.R. § 264.53(a), and including summary reports and details of all incidents or emergencies that require implementation of the Contingency Plan, in accordance with 40 C.F.R. § 264.56(j);

6. The names, addresses, and phone numbers of the Emergency Coordinator (EC) and all persons designated as alternate EC, in accordance with Permit Condition 2.6.4, and as contained in Permit Attachment 6;

7. A list of all emergency equipment, as contained in Permit Attachment 6;

8. Groundwater monitoring and soil gas sampling analytical results and data included in the semi-annual and annual reports required under Part 3, Permit Conditions 3.4 and 3.5, and as described in detail in Attachments 2 and 3 of this Permit; and

9. Copies of manifests for any shipments off-site of any hazardous waste generated at the CWL.
PERMIT PART 3: POST-CLOSURE CARE REQUIREMENTS FOR THE CHEMICAL WASTE LANDFILL

3.0 GENERAL

The CWL Closure Plan, which contained mandatory closure requirements for the CWL, was approved by the NMED in February 1993. A few years earlier, in 1990, trichloroethene (TCE) was detected in groundwater at a concentration exceeding the U.S. Environmental Protection Agency (EPA) Maximum Contaminant Level (MCL) of 0.005 mg/L. This finding led to the development and incorporation of a corrective action program into the approved Closure Plan (as Appendix S). Groundwater and subsurface soil and soil-gas investigations, as well as two Voluntary Corrective Measures (VCMs) were subsequently conducted according to Closure Plan requirements and related documents.

The CWL was excavated from September 1998 through February 2002 to remove the contents of the landfill and contaminated soil (the Landfill Excavation VCM). Soil-vapor extraction was conducted prior to the Landfill Excavation VCM and removed a portion of the VOC soil-gas plume in the vadose zone (the Vapor Extraction VCM). Numerous intact containers of waste were removed as a result of excavation of the landfill; the wastes within these containers were treated and disposed of off-site. Soil having the highest levels of contaminants was treated as necessary and placed permanently into the containment cell at the nearby Corrective Action Management Unit. After excavation was completed, the CWL was backfilled with soil to a uniform depth of four feet below ground surface. Some of the soil used as backfill was originally excavated from the landfill (this soil is referred to as replaceable soil). Concentrations of contaminants in the replaceable soil meet industrial risk levels, consistent with the projected future land use for the CWL site. Since completing the Landfill Excavation and Vapor Extraction VCMs, levels of contaminants in the groundwater have dropped to concentrations below applicable EPA MCLs and New Mexico Water Quality Control Commission water quality standards. Construction of the at-grade cover for the CWL was completed in September 2005, originally as an interim measure.

This Permit Part includes information on the requirements for the length of post-closure care, planned monitoring and maintenance activities, and other requirements for post-closure care. More detailed post-closure care requirements for the CWL are presented in the Attachments to this Permit.

In addition to the post-closure care requirements of 40 C.F.R. §§ 264.117 through 264.120, the Permittees must comply with the groundwater protection standard at 40 C.F.R. § 264.92. Trichloroethene (TCE), chromium, and nickel have been detected in groundwater in the uppermost aquifer underlying the CWL. Therefore, in accordance with 40 C.F.R. § 264.91(a)(1), the Permittees must institute a compliance groundwater monitoring program meeting the requirements of 40 C.F.R. § 264.99. In accordance with 40 C.F.R. § 264.96(a), the compliance period shall last for 47 years, and shall begin when the Permittees initiate the required compliance monitoring program in accordance with 40 C.F.R. § 264.99. In accordance with 40 C.F.R. § 264.96(c), if the Permittees are engaged in a corrective action program at the end of the compliance period, the compliance period shall be extended until the Permittees can demonstrate that the groundwater protection standard of 40 C.F.R. § 264.92 has not been exceeded for a period of three consecutive years.
3.1. RESIDUAL SOIL CONTAMINATION AT RISK-BASED LEVELS

Residual soil contamination that remains at the landfill currently meets risk-based levels for industrial land use. Table 3-1 summarizes the maximum concentrations of contaminants detected in replaceable soil and unexcavated soil. As noted above, replaceable soils are soils placed back into the landfill following completion of the Landfill Excavation VCM. Unexcavated soils are soils that were not removed during the LE VCM, but may contain low levels of hazardous constituents meeting risk-based criteria.
<table>
<thead>
<tr>
<th>Inorganic</th>
<th>SNL/NM Background Concentration (mg/kg)</th>
<th>Maximum Concentration (mg/kg)</th>
<th>Concentration Range in Replaceable Soils above Background (mg/kg)</th>
<th>Number of Detections in Replaceable Soils above Background</th>
<th>Concentration Range in Unexcavated Soils (mg/kg)</th>
<th>Number of Detections in Unexcavated Soils</th>
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<tr>
<td>Arsenic</td>
<td>4.4</td>
<td>86.3</td>
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<td>214</td>
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<td>215-519</td>
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<td>Beryllium</td>
<td>0.65</td>
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<td>Cadmium</td>
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<td>1</td>
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<td>Chromium</td>
<td>15.9</td>
<td>1800</td>
<td>16-181</td>
<td>31</td>
<td>17.7-1800</td>
<td>23</td>
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<td>Chromium VI</td>
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<td>24.6</td>
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<td>Copper</td>
<td>18.2</td>
<td>545 J</td>
<td>18.4-545</td>
<td>25</td>
<td>18.6-261</td>
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<tr>
<td>Lead</td>
<td>11.8</td>
<td>338</td>
<td>11.9-338</td>
<td>48</td>
<td>11.9-162</td>
<td>42</td>
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<tr>
<td>Mercury</td>
<td>&lt;0.1</td>
<td>236</td>
<td>0.122-236</td>
<td>49</td>
<td>0.104-2.35</td>
<td>42</td>
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<tr>
<td>Nickel</td>
<td>11.5</td>
<td>26.1</td>
<td>11.6-26.1</td>
<td>7</td>
<td>12.4-23.4</td>
<td>4</td>
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<tr>
<td>Selenium</td>
<td>&lt;1</td>
<td>9.61</td>
<td>1.01-1.58</td>
<td>2</td>
<td>1.07-9.61</td>
<td>3</td>
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<tr>
<td>Silver</td>
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<td>1.5</td>
<td>1.02-1.5</td>
<td>2</td>
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<td>Organic</td>
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<td></td>
<td></td>
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<td>Acenaphthene</td>
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<td>Benzo(ghi)perylene</td>
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<td>0.0275</td>
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<td>0.0293-0.408</td>
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<td>COC</td>
<td>SNL/NM Background Concentration (mg/kg)</td>
<td>Maximum Concentration (mg/kg)</td>
<td>Concentration Range in Replaceable Soils above Background (mg/kg)</td>
<td>Number of Detections in Replaceable Soils above Background</td>
<td>Concentration Range in Unexcavated Soils (mg/kg)</td>
<td>Number of Detections in Unexcavated Soils</td>
</tr>
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<td>---------------------------------</td>
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<td>---------------------------------</td>
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</tr>
<tr>
<td>Benzo(k)fluoranthene</td>
<td>NA</td>
<td>0.218</td>
<td>0.0399-0.218</td>
<td>3</td>
<td>0.00515-0.121</td>
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<td>Bromodichloromethane</td>
<td>NA</td>
<td>0.0175&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.00076</td>
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<tr>
<td>Bromoform</td>
<td>NA</td>
<td>0.018&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.000554-0.006</td>
<td>21</td>
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<tr>
<td>4-Bromophenyl phenyl ether</td>
<td>NA</td>
<td>0.02335&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>0.187 J</td>
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<tr>
<td>Butylbenzene, tert-</td>
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<td>SNL/NM Background Concentration (mg/kg)</td>
<td>Maximum Concentration (mg/kg)</td>
<td>Concentration Range in Replaceable Soils above Background (mg/kg)</td>
<td>Number of Detections in Replaceable Soils above Background</td>
<td>Concentration Range in Unexcavated Soils (mg/kg)</td>
<td>Number of Detections in Unexcavated Soils</td>
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<tr>
<td>COC</td>
<td>SNL/NM Background Concentration (mg/kg)</td>
<td>Maximum Concentration (mg/kg)</td>
<td>Concentration Range in Replaceable Soils above Background (mg/kg)</td>
<td>Number of Detections in Replaceable Soils above Background</td>
<td>Concentration Range in Unexcavated Soils (mg/kg)</td>
<td>Number of Detections in Unexcavated Soils</td>
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## Radiological Constituents

<table>
<thead>
<tr>
<th>COC</th>
<th>SNL/NM Background Concentration (pCi/g)</th>
<th>Maximum Concentration (pCi/g)</th>
<th>Activity Range in Replaceable Soils Above Background (pCi/g)</th>
<th>Number of Detections in Replaceable Soils Above Background</th>
<th>Activity Range in Unexcavated Soils Above Background (pCi/g)</th>
<th>Number of Detections in Unexcavated Soils Above Background</th>
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<td>H-3</td>
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</table>

Note: Data qualifiers (i.e., “J”) are not included in this table except in the Maximum Concentration column.

<sup>a</sup> Dinwiddie, September 1997.

<sup>b</sup> Maximum value reported is ½ the maximum detection limit, which was greater than the maximum detected value.

<sup>c</sup> Maximum value from a clean fill soil sample – only one detection of this constituent.

<sup>d</sup> All total PCB concentrations greater than 1 part per million represent soil at depths greater than 5 feet below ground surface.

<sup>e</sup> Tharp, February 1999.

COC = Constituent of concern.

J = Estimated concentration.

mg/kg = Milligram(s) per kilogram.

NA = Not applicable.

PCB = Polychlorinated biphenyl.

pCi/g = Picocurie(s) per gram.
3.2. POST-CLOSURE CARE PROCEDURES AND USE OF PROPERTY

3.2.1. Duration of Post-Closure Care
The Permittees shall conduct post-closure care for the CWL to begin upon the Department’s written approval of the Permittees’ certification of closure of the unit and continue for 30 years after that date, except that the 30-year post-closure care period may be shortened or extended, as follows:

1. In accordance with 40 C.F.R. § 264.117(a)(2)(i), the Department may, in accordance with the permit modification procedures in 40 C.F.R. Part 270 and 20.4.1.901 NMAC, shorten the post-closure care period if it finds that human health and the environment will be protected sufficiently (e.g., groundwater and soil-gas monitoring results indicate that the CWL is secure).

2. In accordance with 40 C.F.R. § 264.117(a)(2)(ii), the Department may, in accordance with the permit modification procedures in 40 C.F.R. Part 270 and 20.4.1.901 NMAC, extend the post-closure care period if it finds that this is necessary to protect human health or the environment (e.g., groundwater or soil-gas monitoring results indicate a potential for migration of hazardous wastes at levels which may be harmful to human health and the environment).

3.2.2. Groundwater Monitoring System
The Permittees shall operate and maintain the groundwater monitoring system and shall comply with all applicable requirements of 40 C.F.R. Part 264, Subpart F during the post-closure care and compliance periods, in accordance with 40 C.F.R. § 264.117(a)(1), and as specified in this Permit.

3.2.3. Special Post-Closure Requirements for Landfills
The Permittees shall comply with the requirements for landfills at 40 C.F.R. § 264.310(b), except for the requirements for a leachate collection and removal system, and as described in Attachment 1 of this Permit, as follows.

1. Maintain the integrity and effectiveness of the final cover, including making repairs to the cover, as necessary, to correct the effects of settling, subsidence, erosion, or other events;

2. Operate and maintain the groundwater monitoring system described in Section 1.4 of Attachment 1 of this Permit, and comply with all other applicable requirements of 40 C.F.R. Part 264 Subpart F;

3. Prevent run-on and run-off from eroding or otherwise damaging the final cover; and,

4. Protect and maintain surveyed benchmarks used in complying with the surveying and recordkeeping requirements of 40 C.F.R. § 264.309.

3.2.4. Security Requirements
In accordance with 40 C.F.R. § 264.117(b), the Permittees shall comply with all security requirements, as specified in Attachment 1 of this Permit, and as required by 40 C.F.R. § 264.14.
3.2.5. Future Land Use Requirements
The Permittees shall not allow any use of the CWL that will disturb the integrity of the final cover or the function of the unit’s monitoring systems during the post-closure care period, as required by 40 C.F.R. § 264.117(c).

3.3. INSPECTION
The Permittees shall inspect the components, structures, and equipment at the CWL in accordance with the Inspection and Maintenance/Repair Schedule described in Section 1.9 of Attachment 1 of this Permit and shall record the results of each inspection as described in Section 1.10 of Permit Attachment 1, and in accordance with the inspection requirements of 40 C.F.R. § 264.15.

3.4. GROUNDWATER SAMPLING AND ANALYSIS PLAN
The Permittees shall conduct groundwater sampling and analysis following the procedures and requirements described in Attachments 1 and 2 of this Permit.

3.5. SOIL GAS SAMPLING AND ANALYSIS
The Permittees shall conduct soil-gas sampling and analysis following the procedures and requirements described in Attachments 1 and 3 of this Permit.

3.6. PERSONNEL TRAINING FOR POST-CLOSURE CARE PERIOD
The Permittees shall implement the CWL-specific personnel training program for the post-closure care period specified in Attachment 5 of this Permit, and as required by 40 C.F.R. § 264.16.

3.7. POST-CLOSURE PERMIT MODIFICATIONS
In accordance with 40 C.F.R. § 264.118(d), the Permittees must request a permit modification to authorize a change in this Permit. This request must be in accordance with applicable requirements of 40 C.F.R. Part 270 and 20.4.1.901 NMAC, and must include a copy of the proposed amended portions of this Permit for approval by the Department. The Permittees shall request a permit modification whenever changes in operating plans or facility design affect any part of this Permit, there is a change in the expected year of final closure, or other events occur during the post-closure care period of the CWL that affect this Permit. The Permittees must submit a written request for a permit modification to the Department at least sixty (60) days prior to the proposed change in CWL design or operation, or no later than 60 days after an unexpected event has occurred which has affected the post-closure care requirements contained in this Permit.

3.8. REFERENCES

PERMIT ATTACHMENT 1: POST-CLOSURE CARE PLAN FOR THE CHEMICAL WASTE LANDFILL

1.0 INTRODUCTION

This Permit Attachment presents general information and provides the context by which post-closure care activities at the Chemical Waste Landfill (CWL) shall be conducted.

1.1. GENERAL DESCRIPTION OF THE FACILITY

Sandia National Laboratories (the Facility), EPA Identification Number NM5890110518, is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. National Technology and Engineering Solutions of Sandia, LLC (NTESS), a wholly owned subsidiary of Honeywell International, manages the Facility for the Department of Energy (DOE). Work at the laboratory is also performed for the U.S. Department of Defense and the Nuclear Regulatory Commission as well as other entities. Generation and management of solid, hazardous, and mixed waste occur at the Facility as a result of these activities. The Facility is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base (KAFB) in Bernalillo County (Figure 1).

1.2. LOCATION, CONDITIONS, AND DESCRIPTION OF THE CWL

1.2.1. Location and General Description

The CWL is a 1.9-acre site located in the southeast corner of Technical Area (TA) III (TA-III). A Facility map, which shows the topography of the area, the location of the TAs, and the location of the CWL is presented in Figure 1. A more detailed map of TA-III is presented in Figure 2.

The regional aquifer is located within the Santa Fe Group, with the water table at a depth of approximately 485 feet below ground surface (bgs). Groundwater appears to flow toward the northwest at a rate of approximately 2 feet per year (SNL/NM December 1992; SNL/NM May 1993).

Several major well fields have been developed in the regional aquifer to supply drinking water to Albuquerque, KAFB, and surrounding areas. The closest well field is located approximately 4 miles north-northwest and down gradient of the CWL. Within that well field, the closest down gradient water supply well is KAFB-4, located approximately 4.3 miles north-northwest of the CWL. Water levels at the CWL have been declining at an approximate rate of 0.6 feet/year. Over the past 15 years, the water level has decreased by approximately 9 feet at the CWL (SNL/NM July 2004).

The surface winds at the Facility are light. Winds from the east and southwest are particularly common and generally less than 8 miles per hour (Figure 3).

From 1962 until 1981, the CWL was used for the disposal of chemical, radioactive, and solid waste generated by research activities at the Facility. The CWL was used as a hazardous waste storage unit from 1981 to 1989. Disposal of liquid waste in unlined pits and trenches ended in 1981, and after 1982 all liquid waste disposal was terminated. From 1982 through 1985, only solid waste was disposed of at the CWL. Waste disposal at the landfill after 1982 included the disposal of hazardous waste. After 1985 all waste disposal ended. After 1989, the CWL was no longer used as a hazardous waste storage unit.
1.2.2. Current Landfill Conditions

The CWL was excavated from September 1998 through February 2002 as part of the Landfill Excavation (LE) Voluntary Corrective Measure (VCM). Soil-vapor extraction was also conducted as a VCM from 1997 through 1998 prior to landfill excavation to reduce the concentrations of volatile organic compound (VOC) soil vapor in the vadose zone and to reduce groundwater TCE concentrations below the MCL of 5 micrograms per liter (µg/L). All former disposal areas were excavated. Approximately 52,000 cubic yards of contaminated soil and debris were removed during the landfill VCM. Figure 4 shows the post-LE VCM subsurface configuration of the volatile organic compound (VOC) soil-gas contaminant plume. The extent of the excavation and the associated confirmatory soil sampling grid locations on the excavation floor and sidewalls are shown in Figure 5.

The CWL excavation was backfilled with soil, some of it having low concentrations of contaminants, to a uniform depth of 4 feet bgs from June 2002 through February 2003, following the construction specifications in the CWL Backfill and Compaction Plan (DOE/SNL July 2002). An at-grade vegetative soil cover was installed over the CWL. The cover is described in Section 1.3 of this Permit Attachment. Figure 6 presents the current configuration and features of the CWL and delineates the area subject to post-closure care.

Due to the remote location of the CWL in TA-III, general Facility traffic patterns will neither affect nor be affected by CWL post-closure activities. Traffic within the CWL will be light and normally will only occur during periodic inspection and sampling periods.

During the LE VCM, the CWL site operational boundary (SOB) was expanded to the east and north to include an additional 11.4 acres for waste management activities. The current conditions of the SOB meet the New Mexico Environment Department (Department)-approved cleanup standards/criteria (Lewis October 2000).

1.2.3. Description of Cover Installation

The vegetative at-grade soil cover was installed from March through August 2005, originally as an interim measure, which was conditionally approved by the Department in September 2004 (Kieling September 2004a). Conditions were addressed in the revised remedial action proposal (RAP) that was included as Annex I of the revised Corrective Measures Study Report. The cover comprises two layers, a native soil layer (approximately 3 feet thick) and a topsoil layer (approximately 1.5 feet thick), and is described in more detail in Section 1.3 of this Permit Attachment.

1.2.4. Seismic Considerations

With respect to 40 C.F.R. § 264.18(a), there are no known faults with Holocene displacements located within 200 feet of the CWL.

1.2.5. Floodplain

The locations of the 100-year floodplains in the vicinity of the CWL are shown in Figure 3. With respect to 40 C.F.R. § 264.18(b)(2)(i), the CWL is not located within a 100-year floodplain.
1.3. DESCRIPTION OF THE FINAL COVER

The vegetative soil cover consists of two discrete layers: 1) a 3-foot-thick native soil layer (subgrade for topsoil layer) installed from 4 feet bgs to 1 foot bgs, and 2) a 1.5-foot-thick (minimum 1-foot-thickness) topsoil layer comprised of minimally compacted topsoil admixed with 3/8-inch, crushed gravel installed from 1 foot bgs to the local grade. Both the native soil and topsoil layers consist of soil excavated from the TA-III borrow pit located west of the CWL. The soil utilized for the cover was sampled to confirm that it meets both the risk-based criteria for surface soil and the construction specifications for the two layers documented in the revised RAP (SNL/NM December 2004). The topsoil layer was revegetated with native plants according to the specifications contained in the RAP (SNL/NM December 2004). Table 1-1 shows the seed mix and seeding rate from the general seeding specifications presented in the RAP. Figure 7 shows the CWL excavation backfilled to 4 feet below ground surface (bgs) (March 2004) and the newly installed cover prior to drainage swale installation, reseeding, and completing the perimeter security fence (August 2005).

<table>
<thead>
<tr>
<th>Species</th>
<th>Percent of Total Seed Mix</th>
<th>Calculated Seeding Rate (lbs/acre)$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Rice grass</td>
<td>39.0%</td>
<td>7.8 lbs/acre</td>
</tr>
<tr>
<td>Galleta</td>
<td>19.5%</td>
<td>3.9 lbs/acre</td>
</tr>
<tr>
<td>Blue Grama Grass</td>
<td>29.5%</td>
<td>5.9 lbs/acre</td>
</tr>
<tr>
<td>Sand Dropseed</td>
<td>6.0%</td>
<td>1.2 lbs/acre</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>6.0%</td>
<td>1.2 lbs/acre</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>20 lbs/acre</strong></td>
</tr>
</tbody>
</table>

$^a$Calculated seeding rate when mixed with the other listed seed species and normalized to a combined seeding rate of 20 lbs/acre. lbs/acre = Pound(s) per acre.

TABLE 1-1
Native Plant Species and Seeding Rate Calculations for the Chemical Waste Landfill Cover

The primary objectives for the CWL vegetative cover system are to minimize infiltration of moisture into the former landfill and to minimize long-term maintenance consistent with 40 C.F.R. § 264.111(a). A secondary objective is to provide a physical barrier between the surface and excavation floor, where the highest concentrations of residual soil contamination occur. Figure 8 shows a conceptual schematic diagram of the CWL excavation, backfill layers, and cover layers. The cover system utilizes soil-water balance properties to minimize infiltration/percolation by using vegetation growing on the cover to transpire water from the soil and as well as natural evaporation processes. Once established, native vegetation on the cover will require little or no maintenance, is best adapted to removing moisture from the local soil, and is best suited for local climatic conditions.

1.3.1. Surface Topsoil Layer

The minimally compacted topsoil layer is designed to support and facilitate the development of maximum root density and will act as the primary moisture storage layer. The topsoil layer is a blend of 75 percent local topsoil and 25 percent 3/8-inch, crushed gravel. The installed thickness of this layer is 18 to 24 inches to ensure that the minimum thickness requirement of 12 inches is
maintained. The topsoil-gravel blend and minimum thickness specifications are intended to reduce
the effects of erosion, facilitate the development of maximum near-surface root density, and
optimize near-surface moisture for seedlings. Once vegetation is established, it will minimize
potential surface erosion, maintain the topsoil thickness over time, and transpire moisture to the
atmosphere. Infiltration/percolation of surface moisture will be minimized through a combination
of evaporation and transpiration to the atmosphere. For the dominant native grass species of the
local east mesa ecosystem, maximum root density occurs in the upper 1 foot of soil (Peace et al.
November 2004).

1.3.2. Native Soil Layer
A 3-foot-thick native soil layer comprises the subgrade for the topsoil layer and provides a
secondary moisture storage layer designed to limit deeper moisture penetration.

1.3.3. Surface Drainage Controls
In addition to the topsoil layer and vegetation, engineering controls shall be applied to minimize
erosion losses and control run-on/run-off. These include slope control, surface run-off control,
and perimeter surface water flow control. The CWL cover is an “at grade” landfill cover and is
crowned to prevent ponding. The crown of the cover slopes to the north and south at a 1-percent
grade, and east to west at a 3-percent grade. This design facilitates low-profile mounding and
gentle slopes that enhance resistance to erosion caused by wind and precipitation.

1.4. DESCRIPTION OF THE COMPLIANCE MONITORING SYSTEM
Groundwater monitoring shall be conducted during the compliance and post-closure care periods.
Soil-gas monitoring shall be conducted during the post-closure period. Groundwater monitoring
shall include monitoring of the uppermost aquifer, utilizing Department-approved monitoring
wells. VOC soil-gas plume monitoring shall include monitoring of the approximately 500-foot-
thick vadose zone in accordance with Permit Attachment 3.

1.4.1. Groundwater Monitoring System
Groundwater monitoring shall be performed to ensure the protection of groundwater during the
compliance and post-closure care periods. The monitoring network shall include the following
monitoring wells that are shown in Figures 6 and 9.

- One hydraulically upgradient well—CWL-BW5
- Three hydraulically down gradient wells—CWL-MW9, CWL-MW10, and
  CWL-MW11

Sampling frequency and additional analytical requirements are addressed in Section 1.8.1 of this
Permit Attachment. If any of the compliance wells listed above cannot be sampled during the
compliance or post-closure care periods due to the declining water table or other reasons, the
Permittees shall apply for a permit modification to change this Permit (see Permit Part 1, Section
1.6.2). Any well that is part of the monitoring network that cannot be sampled shall be replaced,
if at the time, the Department determines that a replacement well is necessary. If a replacement
well is deemed necessary by the Department, the Permittees shall submit to the Department for
approval a plan to replace the well, and to plug and abandon the well that is to be replaced in
accordance with the Office of the State Engineer requirements. The plan shall include a schedule
to implement the
work and shall be submitted to the Department within 90 days of written notification by the Department that the well must be replaced.

Well completion diagrams for all compliance and post-closure care groundwater monitoring wells are provided in Attachment 2 of this Permit. All of these wells are constructed with polyvinyl chloride screens installed across the water table.

The Chemical Waste Landfill is subject to 40 C.F.R. § 264.90(a)(1) and is a “regulated unit” as defined in 40 C.F.R. § 264.90(a)(2). Thus, the Permittees must comply with the requirements of 40 C.F.R. §§ 264.91 through 264.100 in lieu of § 264.101 for purposes of detecting, characterizing and responding to releases to the uppermost aquifer. Among these applicable provisions is the groundwater protection standard at 40 C.F.R. § 264.92.

In accordance with 40 C.F.R. § 264.95, the point of compliance at which the groundwater protection standard at 40 C.F.R. § 264.92 applies and at which monitoring must be conducted is hereby established as the western and northern boundaries of the landfill. (The point of compliance is a vertical surface located at the hydraulically down gradient limit of the waste management area that extends down into the uppermost aquifer.) For the purpose of complying with the requirements of this Permit and 40 C.F.R. Part 264 Subpart F; the background well for the CWL shall be CWL-BW5, and the compliance wells (located at the point of compliance) shall be CWL-MW9, CWL-MW10, and CWL-MW11 (see Figure 6).

In accordance with 40 C.F.R. § 264.93, the hazardous constituents\(^1\) to which the groundwater protection standard at 40 C.F.R. § 264.92 applies are hereby specified to be trichloroethene (TCE), chromium (Cr), and nickel (Ni). In accordance with 40 C.F.R. § 264.94, the concentration limits in the groundwater for these hazardous constituents are as specified in Table 1-2:

<table>
<thead>
<tr>
<th>Hazardous Constituent</th>
<th>Concentration Limit</th>
<th>Basis of Concentration Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trichloroethene</td>
<td>0.005 mg/L</td>
<td>EPA MCL, 40 C.F.R. § 264.94(b)</td>
</tr>
<tr>
<td>Chromium</td>
<td>0.050 mg/L</td>
<td>Table 1, 40 C.F.R. § 264.94(a)(2)</td>
</tr>
<tr>
<td>Nickel</td>
<td>0.028 mg/L</td>
<td>Background level, 40 C.F.R. § 264.94(a)(1)</td>
</tr>
</tbody>
</table>

\(^{1}\) Hazardous constituents are constituents identified in Appendix VIII of Part 261 that have been detected in the groundwater in the uppermost aquifer underlying a regulated unit and that are reasonably expected to be in or derived from waste contained in the unit.

40 C.F.R. § 264.91(a)(1) requires that whenever hazardous constituents (under 40 C.F.R. § 264.93) from a regulated unit are detected at a compliance point (under 40 C.F.R. § 265.95), the owner or operator must institute a compliance monitoring program under 40 C.F.R. § 264.99. Hazardous constituents, especially TCE, have long been known to be present in the groundwater at the CWL. Therefore, the Permittees shall institute a compliance monitoring program at the CWL that meets the requirements of 40 C.F.R. § 264.99. In response to the detection of TCE in groundwater in 1990 exceeding the MCL of 5 µg/L, the Permittees conducted a corrective action program through two interrelated VCMs from 1997 through 2002 as briefly described in Part 3, Section 3.0 of this Permit and Section 1.2.2 of this Permit Attachment.

In accordance with 40 C.F.R. § 264.96, the compliance period during which the groundwater protection standard of 40 C.F.R. § 264.92 applies is hereby established as 47 years. (The
compliance period is the number of years equal to the active life of the waste management area, including the closure period. The CWL was established in 1962; thus, the compliance period for the CWL is 47 years.) In accordance with 40 C.F.R. § 264.96(b), the compliance period begins when the Permittees initiate a compliance monitoring program meeting the requirements of 40 C.F.R. § 264.99.

The Permittees shall comply with the general groundwater monitoring requirements at 40 C.F.R. § 264.97. The Permittees shall also discharge the responsibilities under 40 C.F.R. § 264.99 for a compliance monitoring program.

The current status and final use/disposition of all former groundwater monitoring wells and former VE system wells at the CWL are summarized in Table 1-3. All wells that do not have a defined future purpose for compliance monitoring/post-closure care shall be properly plugged and abandoned.

In accordance with 40 C.F.R. § 264.99(j), the Permittees shall submit an application for a permit modification if they determine that the compliance monitoring program no longer satisfies the requirements of 40 C.F.R. § 264.99 within 90 days of that determination.

**TABLE 1-3**

**Final Use/Disposition Summary**

**Chemical Waste Landfill Groundwater Monitoring and Vapor Extraction Well Inventory**

<table>
<thead>
<tr>
<th>Well Name</th>
<th>Current Status</th>
<th>Future Status/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compliance and Post-Closure Care Groundwater Monitoring Wells</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BW5</td>
<td>Compliance and Post-closure care background groundwater monitoring well</td>
<td>Plug and abandon following completion of compliance and post-closure care groundwater monitoring.</td>
</tr>
<tr>
<td>MW9</td>
<td>Compliance and Post-closure care down gradient groundwater monitoring well</td>
<td>Plug and abandon following completion of compliance and post-closure care groundwater monitoring.</td>
</tr>
<tr>
<td>MW10</td>
<td>Compliance and Post-closure care down gradient groundwater monitoring well</td>
<td>Plug and abandon following completion of compliance and post-closure care groundwater monitoring.</td>
</tr>
<tr>
<td>MW11</td>
<td>Compliance and Post-closure care down gradient groundwater monitoring well</td>
<td>Plug and abandon following completion of compliance and post-closure care groundwater monitoring.</td>
</tr>
<tr>
<td><strong>Post-Closure Care Soil-Gas Monitoring Wells</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UI-1 and UI-2</td>
<td>Former VE system wells with dedicated sampling ports for soil-gas monitoring (shallow ports only)</td>
<td>Plug and abandon following completion of post-closure care VOC soil-gas monitoring (potential future VE well)</td>
</tr>
<tr>
<td>D-1, D-2, and D-3</td>
<td>Former VE system wells with dedicated sampling ports for soil-gas monitoring (shallow and deep ports)</td>
<td>Plug and abandon following completion of post-closure care VOC soil-gas monitoring (potential future VE well)</td>
</tr>
<tr>
<td><strong>Wells for Potential Future Use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VMW1</td>
<td>Former VE system well with multiple screen sections</td>
<td>Retain for potential future use (VE)–plug and abandon based upon post-closure care monitoring results</td>
</tr>
<tr>
<td>Well Name</td>
<td>Current Status</td>
<td>Future Status/Comments</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Wells for Plug and Abandonment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW2BU/2BL</td>
<td>Nested well pair located ~70 ft south of former MW2A location</td>
<td>Plug and abandon. MW2BU suitable for low-flow sampling only. MW2BL screen section is below water table surface. Both wells represent potential VOC soil-gas conduits.</td>
</tr>
<tr>
<td>MW1A and MW3A</td>
<td>Wells not suited for monitoring due to sediment in well screen and lack of water</td>
<td>Plug and abandon–potential VOC soil-gas conduits</td>
</tr>
<tr>
<td>UI3</td>
<td>Shallow former VE well located east of CWL and away from VOC soil-gas plume core</td>
<td>Well not needed for future use–plug and abandon</td>
</tr>
<tr>
<td>BW3</td>
<td>Well is located 20 ft away from BW-4A–background well with stainless steel screen</td>
<td>Well not needed for future use–plug and abandon</td>
</tr>
<tr>
<td><strong>Deep Regional Aquifer Monitoring Wells for Chromium Evaluation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW7 and MW8</td>
<td>Deep regional wells installed in March 2003</td>
<td>Wells not needed for future use–screen intervals too deep for monitoring of upper aquifer–plug and abandon</td>
</tr>
<tr>
<td><strong>Previously Plugged and Abandoned Wells</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BW1</td>
<td>Plugged and abandoned in 2004</td>
<td>NA</td>
</tr>
<tr>
<td>BW-2</td>
<td>Plugged and abandoned in 2003</td>
<td>NA</td>
</tr>
<tr>
<td>BW-4</td>
<td>Plugged and abandoned in 1994</td>
<td>NA</td>
</tr>
<tr>
<td>MW-1</td>
<td>Plugged and abandoned in 1997</td>
<td>NA</td>
</tr>
<tr>
<td>BW4A</td>
<td>Plugged and abandoned in 2010</td>
<td>NA</td>
</tr>
<tr>
<td>MW4</td>
<td>Plugged and abandoned in 2010</td>
<td>NA</td>
</tr>
<tr>
<td>MW5U/L</td>
<td>Plugged and abandoned in 2010</td>
<td>NA</td>
</tr>
<tr>
<td>MW6U/L</td>
<td>Plugged and abandoned in 2010</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Footnotes:**
- BW = Background Well.
- D = VE System Well.
- ft = Foot (feet).
- MW = Monitoring Well.
- NA = Not applicable.
- UI = VE System Well.
- VMW = VE System Well.
### 1.4.2. Soil-Gas Monitoring System

The post-closure care soil-gas monitoring program is designed to ensure the protection of groundwater quality by providing data to be used to analyze whether the VOC soil-gas plume has the potential to contaminate groundwater. The VOC soil-gas monitoring system shall include a network of five former VE/injection wells designed to monitor the vadose zone at various depths beneath the CWL in the area most contaminated by past disposal of organic liquid waste. The monitoring network shall include the following wells that are shown in Figures 6 and 10. Depth-specific sampling ports are shown in Figure 10 and are also indicated as follows for each soil-gas monitoring well:

- **D1**—Sampling Ports at 100, 160, 240, 350, and 470 feet bgs (5 ports)
- **D2**—Sampling Ports at 120, 240, 350, 440, and 470 feet bgs (5 ports)
- **D3**—Sampling Ports at 120, 170, 350, 440, and 480 feet bgs (5 ports)
- **UI1**—Sampling Ports at 40, 80, and 120 feet bgs (3 ports)
- **UI2**—Sampling Ports at 36, 76, and 136 feet bgs (3 ports)

Well completion diagrams for all of the soil-gas monitoring wells are provided in Attachment 3 of this Permit. BaroBalls™ or equivalent passive venting equipment may be maintained on all soil-gas and groundwater monitoring wells. The BaroBall™ or equivalent passive venting equipment allows controlled, passive soil-gas venting to the atmosphere and helps prevent the downward migration of VOC soil gas in the well casing. These devices seal on the top of the well casing to allow soil gas to vent to the atmosphere during periods of low barometric pressure and prevent soil gas from being driven downward during periods of high atmospheric pressure. The BaroBall™ or equivalent passive venting device replaces the cap where it is installed on a well. Figure 11 shows how the BaroBall™ device works.

### 1.5. DESCRIPTION OF STORM-WATER DIVERSION STRUCTURES

The function of the storm-water diversion features associated with the CWL shall be to prevent storm-water run-on and run-off from eroding the cover and to reduce the amount of water that could potentially infiltrate into the cover. Drainage features designed to control surface-water run-on and run-off are shown in Figure 12. A culvert at the southeastern corner of the CWL diverts the existing road ditch drainage from the east (north side of the road) under the asphalt road and to the south. This diversion prevents surface water coming from the east from flowing over the southern footprint of the CWL (Figures 6 and 12). Existing and new road ditches and swales channel surface water along the southern, western, and northern sides of the cover to the north and west, respectively, away from the cover (Figures 6 and 12). The revegetated, gently sloping topography (approximately 3-percent grade from east to west) and slight northeast and southeast inflection to the east of the landfill will prevent significant run-on by directing the upgradient surface water toward the northern and southern boundary swales (Figure 12). Surface water that falls directly on the cover shall be diverted toward the boundary swales that intersect at the northwestern and southwestern corners of the site.
1.6. DESCRIPTION OF SECURITY FENCES

The CWL is located about 100 yards southeast of the Corrective Action Management Unit (CAMU) and approximately 150 yards due east of the Radioactive and Mixed Waste Management Unit inside Technical Area III (TA-III), which is controlled by fences, security patrols, and limited access through security gates. TA-III access control procedures are designed to assure that only properly identified personnel with appropriate Facility issued access badges and identification, and authorized persons, vehicles, or escorted visitors, are allowed access to the CWL.

The perimeter boundary of the Chemical Waste Landfill is illustrated on Figures 6 and 12 of this Permit Attachment. A four-strand, barbed-wire fence with two main gates delineates this boundary. The gates shall remain locked except when inspections, maintenance, and monitoring activities are occurring, and only authorized personnel shall control the keys to the locks. Warning signs stating “Danger—Unauthorized Personnel Keep Out” in both Spanish and English shall be posted on all sides of the CWL fence at 100-foot intervals, at the main gate, and at the emergency exit. The warning signs shall be legible from a distance of at least 25 feet and visible from any approach to the CWL.

1.7. POST-CLOSURE CARE

The Permittees shall comply with all applicable post-closure requirements contained in 40 C.F.R. §§ 264.117 through 264.120. This section outlines procedures necessary to protect human health and the environment, including monitoring and maintenance activities, and the frequency with which such activities shall be performed to ensure the integrity and proper functioning of the final cover and the groundwater and soil-gas monitoring networks. Among the other requirements in this Permit, the Permittees shall conduct the following activities to protect human health and the environment.

1. Maintain the integrity and effectiveness of the cover by making repairs necessary to correct the effects of settling, subsidence, erosion, animal intrusion, or other events that compromise the cover;
2. Maintain surface water controls to prevent run-on and run-off from eroding or otherwise damaging the cover;
3. Perform groundwater and VOC soil-gas monitoring as specified herein;
4. Conduct corrective action as necessary to protect human health and the environment;
5. Maintain fencing, security signs, and locks (i.e., site-specific access controls);
6. Maintain training, operating, inspection, and monitoring, and other required records; and
7. Submit an annual report to the Department providing the results of the required inspections, sampling results, and a summary of any needed repairs and whether the repairs were effective.

1.8. MONITORING PROCESS

Monitoring of environmental media shall consist of groundwater and soil-gas monitoring. The compliance groundwater monitoring program is designed to monitor water quality to ensure the protection of groundwater by addressing the requirements of 40 C.F.R. Part 264 Subpart F.

Soil-gas data, including that for TCE, shall be acquired in a manner that is consistent with historic soil-gas monitoring data and so that results obtained during post-closure can be evaluated to
determine if any significant changes in soil-gas concentrations have occurred. Soil-gas constituents of concern (COCs) include numerous VOCs, which are to be analyzed for by Compendium Method TO-14 (EPA January 1999) 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. If TO-15 or another equivalent method meeting these requirements is used in place of TO-14, the Permittees shall provide justification for the change in the subsequent post-closure care report.

A summary of groundwater and soil-gas monitoring frequency, parameters, and analytical methods is presented in Table 1-4 of this Permit Attachment. If changes to the monitoring program are warranted, the Permittees shall initiate a permit modification request to modify this Permit.

### TABLE 1-4

Groundwater and Soil-Gas Monitoring Frequency, Parameters, and Methods

<table>
<thead>
<tr>
<th>Monitoring System</th>
<th>Monitoring Frequency</th>
<th>Monitoring Parameters/Constituents of Concern</th>
<th>Monitoring Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater</td>
<td>Semi-Annually&lt;sup&gt;c&lt;/sup&gt;</td>
<td>TCE by EPA Method 8260&lt;sup&gt;a&lt;/sup&gt; and Cr and Ni by EPA Methods 6020&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Sampling and Analysis as per Attachment 2</td>
</tr>
<tr>
<td>Soil Gas</td>
<td>Annually</td>
<td>Compendium Method TO-14 VOCs&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Sampling and Analysis as per Attachment 3</td>
</tr>
</tbody>
</table>

<sup>a</sup>EPA November 1986.<br>
<sup>b</sup>EPA January 1999.<br>
<sup>c</sup>Semi-Annually: An enhanced list of constituents must be analyzed on an annual basis (see Section 1.8.1.1 of Permit Attachment 1).<br>

TO-14 = EPA Method TO-14.

Additionally, in accordance with 40 C.F.R. § 264.99(g), the Permittees shall collect water samples at least annually from wells located at the point of compliance and analyze them for an enhanced list of constituents (see Section 1.8.1.1 of Permit Attachment 1 for the enhanced list of constituents).

### 1.8.1. Groundwater Monitoring Process

#### 1.8.1.1. Frequency

The groundwater monitoring network defined in Section 1.4.1 of this Permit Attachment shall be sampled according to the Groundwater Sampling and Analysis Plan (SAP) provided in Attachment 2 of this Permit. The Groundwater SAP describes the procedures, methods, and analytical protocols for collecting and analyzing groundwater samples that shall be followed.

In accordance with 40 C.F.R. § 264.97(f), the Permittees shall determine the groundwater surface elevation each time groundwater is sampled. Additionally, in accordance with 40 C.F.R. § 264.99(e), the Permittees shall determine the groundwater flow rate, hydraulic gradient, and flow direction at least annually.

In accordance with 40 C.F.R. § 264.99(f), the Permittees shall collect and analyze at least one sample from each well (background and compliance wells) at least semi-annually during the compliance period. The Permittees shall also collect groundwater samples at least annually from wells located at the point of compliance and analyze them for an enhanced list of constituents.
pursuant to 40 C.F.R. § 264.99(g). The enhanced list of constituents is comprised of TCE; chromium; nickel; 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113); tetrachloroethene (PCE); 1,1-dichloroethene (1,1-DCE); chloroform; and trichlorofluoromethane (Freon 11).

1.8.1.2. Assessment

The Permittees shall monitor the groundwater for the hazardous constituents listed in Table 1-2 of this Permit Attachment semi-annually (twice each year), with one of these events each year to include an enhanced list of constituents, (see Section 1.8.1.1 of Permit Attachment 1) to determine whether the groundwater beneath the CWL is in compliance with the groundwater protection standard under 40 C.F.R. § 264.92. The Permittees shall also record the groundwater data for the determination of statistical significance under 40 C.F.R. § 264.97(h) for the compliance period, pursuant to 40 C.F.R. § 269.99(c).

In order to comply with 40 C.F.R. § 264.97(h) for the hazardous constituents specified above, on a well by well basis the Permittees shall statistically evaluate ground-water monitoring data using prediction and confidence intervals, and in accordance with the procedures discussed below. The analysis shall comply with the performance standards outlined in 40 C.F.R. § 264.97(i)(1-6), as appropriate. Data values below the level of detection shall be set equal to their corresponding detection limits for the purpose of calculating the statistics required by this Permit. Historical groundwater sampling results shall be used as described in this Section to augment the data sets for wells in order to increase the amount of data for statistical analysis. Such historical groundwater data shall be limited to data obtained after completion of the Landfill Vapor Extraction VCM.

The Permittees shall calculate via the use of prediction intervals the probability that each semi-annual sample result for a given hazardous constituent will fall within the range of previous sample results for the hazardous constituent. The Permittees shall also note whether each semi-annual sample result actually falls within, below, or above the range of previous sample results. Additionally, for each hazardous constituent, the Permittees shall calculate the confidence interval for the mean at a 95% confidence level, and compare the lower confidence limit to the concentration limit for the hazardous constituent. If the lower confidence limit exceeds the concentration limit, this finding shall be considered statistically significant evidence that the concentration limit for the particular hazardous constituent has been exceeded. If there is statistically significant evidence that a concentration limit has been exceeded, corrective action must be initiated in accordance with Section 1.8.3 of this Permit Attachment.

Furthermore, in order to comply with 40 C.F.R. § 264.99(d), on a well by well basis and for each hazardous constituent, the Permittees shall calculate and summarize the cumulative percentage of sample results that are greater than the median. Such a cumulative percentage at a value of 80% or greater shall be considered statistically significant evidence of increased contamination. No action by the Permittees is required due to statistically significant evidence of increasing contamination unless a concentration limit is exceeded as described in the previous paragraph of this Section of this Permit Attachment.

In the event that a well must be replaced during the term of this Permit, the Permittees shall statistically evaluate groundwater monitoring data using sampling results obtained from the replacement well and historical sampling results from the well that was replaced (Replacement wells are wells located adjacent to the wells that they replace. Replacement wells are not new wells).
New wells are wells placed at locations that are significantly different from those of other wells at the CWL, and are not intended to replace existing wells. Wells CWL-MW9, CWL-MW10, and CWL-MW11 are new wells. For new wells, data sets representing fewer than six semi-annual sampling events will be typical for the first three years that the wells exist. Because too few data would be initially available for analysis, the Permittees are not required to statistically evaluate ground-water monitoring data for a new well until after the first 3 years of groundwater sampling has been conducted for the well. After the first 3 years of sampling has been conducted for a new well, the Permittees must statistically evaluate the ground-water monitoring data for the well in accordance with the requirements of this Permit. Regardless of whether a statistical evaluation is required, the Permittees must report timely all groundwater sampling results for all wells, including all new wells, in the annual reports required under Section 1.12 of this Permit Attachment.

In accordance with 40 C.F.R. § 264.99(g), if the Permittees find any constituents on the enhanced list (see Section 1.8.1.1 of Permit Attachment 1) in the groundwater that are not already identified in the Permit, the Permittees may resample within one month and repeat the analysis for the constituents. If the second analysis confirms the presence of new constituents, the Permittees must report the concentrations of the new constituents to the Department within seven days of receipt of the results of the second analysis and add them to the monitoring list (See Table 1-4). If the Permittees choose not to resample, then the Permittees must report the concentrations of the new constituents to the Department within seven days of receipt of the results of the analysis and add them to the monitoring list (Table 1-4).

In accordance with 40 C.F.R. § 264.99(d), the Permittees must determine after each semi-annual sampling event whether there is statistically significant evidence of increased contamination for each of the hazardous constituents specified in Table 1-2. The Permittees shall compare the data collected at the compliance points to the concentration limits specified in Table 1-2 using the method specified in this Section of this Permit Attachment.

In accordance with 40 C.F.R. § 264.99(h), the Permittees shall notify the Department in writing within seven days if any concentration limits (Table 1-2) are being exceeded at any monitoring well at the point of compliance. The notification must indicate what concentration limits have been exceeded. Within 180 days of the determination that a concentration limit has been exceeded, the Permittees must submit to the Department an application for a permit modification to establish a corrective action program for the CWL meeting the requirements of 40 C.F.R. § 264.100. The application at a minimum shall meet the requirements of 40 C.F.R. § 264.99(h)(2)(i-ii).

Regulations at 40 C.F.R. § 264.99(i) allow the Permittees the opportunity to demonstrate that sampling or analysis error or a source other than the CWL caused a concentration limit (Table 1-2) to be exceeded. In making such a demonstration, the Permittees must notify the Department in writing within seven days that the Permittees wish to make a demonstration under 40 C.F.R. § 264.99(i). The Permittees shall also meet the requirements of 40 C.F.R. § 264.99(i)(1-4), including the requirement to submit a report to the Department within 90 days, which demonstrates that error or another source caused the concentration limit to be exceeded.

### 1.8.2. Soil-Gas Monitoring Process

#### 1.8.2.1. Frequency

The soil-gas monitoring network defined in Section 1.4.2 of this Permit Attachment shall be sampled annually in accordance with the Soil-Gas SAP provided in Attachment 3 of this Permit.
The SAP describes the procedures, methods, and analytical protocols for collecting and analyzing soil-gas samples that shall be followed during the post-closure care period.

1.8.2.2. Assessment

The soil-gas monitoring network shall be used to document VOC soil-gas plume conditions over time and to determine whether the plume may potentially contaminate groundwater such that a maximum contaminant level (MCL) or State of New Mexico water quality standard is exceeded. The five soil-gas monitoring well depth-specific sampling ports shall be sampled annually for VOCs listed in Compendium Method TO-14 (EPA January 1999) using TO-14 or an equivalent method as described in Section 1.8. Table 1-5 of this Permit Attachment presents the analyte list for Compendium Method TO-14. If a sample result for one or more of the deepest sampling ports (Port 1) from CWL-D1 through D3 exceeds the trigger level of 20 parts per million volume basis (ppmv) TCE or for any other compound listed in Table 1-5, the Permittees shall immediately confirm the results by collecting and analyzing additional samples. If the 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.

Annually, the Permittees shall calculate the upper and lower confidence limits about the mean at a 95% confidence level using current data and all previous data obtained during the post-closure care period for the three deepest sampling ports (Port 1) of wells CWL-D1 through D3 and for each compound detected at a concentration greater than 0.5 ppmv listed in Table 1-5 of Permit Attachment 1. For the first 5 years after the effective date of this Permit, historical data shall be used whenever it is available and appropriate to augment data obtained during the post-closure care period for the purpose of calculating the upper and lower confidence limits. After the first five years after the effective date of this Permit, only data obtained during the post-closure care period shall be used for the purpose of calculating the upper and lower confidence limits.

For soil-gas samples collected from the deepest sampling ports (Port 1 from CWL-D1 through D3), the Permittees shall compare the lower confidence limit for each compound listed on Table 1-5 of this Permit Attachment detected at a concentration greater than 0.5 ppmv to the trigger level of 20 ppmv. If the lower confidence limit for any compound listed in Table 1-5 exceeds the trigger level of 20 ppmv at any of the deepest sampling ports, corrective action shall be initiated by the Permittees in accordance with Section 1.8.3 of this Permit Attachment.

All soil-gas monitoring data for all wells and the 95% upper and lower confidence limits about the mean for each compound listed in Table 1-5 detected at a concentration greater than 0.5 ppmv for the three deepest sampling ports (Port 1) of wells CWL-D1 through D3 shall be reported annually in the reports required under Section 1.12 of this Permit Attachment.
<table>
<thead>
<tr>
<th>Compound</th>
<th>Compound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone</td>
<td>1,2-Dichloropropane</td>
</tr>
<tr>
<td>Benzene</td>
<td>cis-1,3-Dichloropropene</td>
</tr>
<tr>
<td>Benzyl chloride</td>
<td>trans-1,3-Dichloropropene</td>
</tr>
<tr>
<td>Bromodichloromethane</td>
<td>Ethyl benzene</td>
</tr>
<tr>
<td>Bromoform</td>
<td>4-Ethyltoluene</td>
</tr>
<tr>
<td>Bromomethane</td>
<td>Hexachlorobutadiene</td>
</tr>
<tr>
<td>2-Butanone</td>
<td>2-Hexanone</td>
</tr>
<tr>
<td>Carbon disulfide</td>
<td>Methylene chloride</td>
</tr>
<tr>
<td>Carbon tetrachloride</td>
<td>4-Methyl-2-pentanone</td>
</tr>
<tr>
<td>Chlorobenzene</td>
<td>Styrene</td>
</tr>
<tr>
<td>Chloroethane</td>
<td>1,1,2,2-Tetrachloroethane</td>
</tr>
<tr>
<td>Chloroform</td>
<td>Tetrachloroethene</td>
</tr>
<tr>
<td>Chloromethane</td>
<td>Toluene</td>
</tr>
<tr>
<td>Dibromochloromethane</td>
<td>1,1,2-Trichloro-1,2,2-trifluoroethane</td>
</tr>
<tr>
<td>1,2-Dibromoethane</td>
<td>1,2,4-Trichlorobenzene</td>
</tr>
<tr>
<td>1,2-Dichloro-1,1,2,2-tetrafluoroethane</td>
<td>1,1,1-Trichloroethane</td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>1,1,2-Trichloroethane</td>
</tr>
<tr>
<td>1,3-Dichlorobenzene</td>
<td>Trichloroethene</td>
</tr>
<tr>
<td>1,4-Dichlorobenzene</td>
<td>Trichlorofluoromethane</td>
</tr>
<tr>
<td>Dichlorodifluoromethane</td>
<td>1,2,4-Trimethylbenzene</td>
</tr>
<tr>
<td>1,1-Dichloroethane</td>
<td>1,3,5-Trimethylbenzene</td>
</tr>
<tr>
<td>1,2-Dichloroethene</td>
<td>Vinyl acetate</td>
</tr>
<tr>
<td>1,1-Dichloroethene</td>
<td>Vinyl chloride</td>
</tr>
<tr>
<td>cis-1,2-Dichloroethene</td>
<td>m-, p-Xylene</td>
</tr>
<tr>
<td>trans-1,2-Dichloroethene</td>
<td>o-Xylene</td>
</tr>
</tbody>
</table>

*EPA January 1999*
1.8.3. Corrective Action

Pursuant to Section 3004(u) and (v) of RCRA, 42 U.S.C. § 6924(u) and (v); NMSA 1978, § 74-4-4.2(B) and 40 C.F.R. Part 264, Subparts F and G, the Permittees shall implement corrective action as necessary to protect human health and the environment from any releases of hazardous waste or hazardous constituents at the CWL.

If corrective action is underway at the end of the post-closure care period, the post-closure care period may be extended by the Department in accordance with 40 C.F.R. § 264.117(a)(2)(ii). If the Permittees are engaged in a corrective action program at the end of the compliance period, the compliance period shall be extended until the Permittees can demonstrate that the groundwater protection standard of 40 C.F.R. § 264.92 has not been exceeded for a period of three consecutive years in accordance with 40 C.F.R. § 264.96(c).

Pursuant to 40 C.F.R. § 264.99(h), and Section 1.8.1.2 of this Permit Attachment, if there is statistically significant evidence that any concentration limits under 40 C.F.R. § 264.94 are being exceeded at any groundwater monitoring well at or beyond the point of compliance the Permittees must notify the Department of this finding within seven days of receipt of the final results of the analysis, as a second analysis may be performed for confirmation prior to any notification to the Department. The notification must indicate what concentration limits have been exceeded. The Permittees must also submit to the Department an application for a permit modification to establish a corrective action program meeting the requirements of 40 C.F.R. § 264.100 within 180 days. The application must at a minimum include the following information: a detailed description of corrective actions that will achieve compliance with the groundwater protection standard specified under 40 C.F.R. § 264.99(a), and a plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on compliance monitoring program developed to meet the requirements of 40 C.F.R. § 264.99. The plan shall also include a schedule for implementation of the corrective action.

In accordance with 40 C.F.R. § 264.99(i), if the Permittees determine that a groundwater concentration limit is being exceeded at any monitoring well at the point of compliance, the Permittees may attempt to demonstrate to the Department that a source other than the CWL caused the contamination or that the detection is an artifact caused by error in sampling, analysis, statistical evaluation, or natural variation in groundwater.

Pursuant to Section 1.8.2.2 of this Permit Attachment, if the lower confidence limit for any soil-gas compound listed in Table 1-5 exceeds the trigger level of 20 ppmv at any of the deepest sampling ports (Port 1 of CWL-D1 through D3), the Permittees shall submit, within 180 days of discovery of this fact, an application for a permit modification to establish a corrective action program. The application must at a minimum include the following information: a detailed description of corrective actions that will be taken by the Permittees to reduce the concentrations of soil gas to levels that do not exceed the trigger level of 20 ppmv at the deepest sampling ports, and a plan for a soil-gas monitoring program that will demonstrate the effectiveness of the corrective action. Such a soil-gas monitoring program may include existing soil-gas monitoring wells at and near the CWL, as appropriate. The plan shall also include a schedule for implementation of the corrective action.
1.9. INSPECTION/MAINTENANCE/REPAIR ACTIVITIES AND FREQUENCIES

Systems associated with the CWL shall be routinely inspected during the compliance monitoring and post-closure care periods. The CWL systems that shall require inspection and maintenance/repair include: 1) the cover; 2) surface-water diversion structures; 3) groundwater and soil-gas monitoring networks; and 4) the perimeter security fence, security signs, gate locks and survey benchmarks and monuments. Inspection, maintenance and repair of these systems shall be performed throughout the compliance monitoring and post-closure care periods on a regularly scheduled basis to ensure the integrity and proper functioning of the cover, the monitoring networks, the surface-water diversion structures, the perimeter fence, security signs, gates, locks (i.e., access controls), and monuments. These routines are described in more detail in the following sections.

Criteria for Successful Re-Vegetation

In addition to routine inspection and maintenance/repair, the cover shall be monitored to ensure the re-vegetation effort is successful, a critical element in the long-term performance of the cover. The following information summarizes a climax plant community typical of the undisturbed east mesa ecosystem of TA-III (Peace et al. November 2004, Table 1-5).

- Total percent foliar coverage equals 22.5 percent (i.e., 22.5 percent of the land surface is covered with living plants versus 77.5 percent bare surface area);
- Of the 22.5 percent of total foliar coverage, 19.2 percent is comprised of native perennial species and 3.3 percent is comprised of annual species, which includes native annual species and non-native, transitory (or invasive) plant species; and
- Considering only the total percentage of foliar coverage, 85.3 percent consists of native perennial species, and 14.67 percent comprises annual species (the majority of the annual species are non-native, transitory species).

Based upon this information, the operational criteria for achieving successful re-vegetation for the CWL cover are presented as follows.

- 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);
- Of the 20 percent total foliar coverage, 50 percent or greater comprises native perennial species, and 50 percent or less comprises annual species; and
- 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 re-established.

Successful re-vegetation is projected to take three to five years. The cover monitoring, inspection, and maintenance/repair activities described in Section 1.9.1 of this Permit Attachment shall document the cover re-vegetation effort and whether or not the criteria are met. Local climate trends will have an impact on plant growth and health and shall be documented, evaluated, and summarized along with vegetation survey results in the annual CWL post-closure care reports.
1.9.1.  Final Cover System Inspection/Maintenance/Repair

1.9.1.1.  Vegetation Inspection and Monitoring

Cover vegetation monitoring shall be accomplished in a two-phase approach. The first phase shall concentrate on establishing the vegetation on the cover from seed to a mature plant community. This phase is anticipated to take from three to five years. If the criteria for successful revegetation (per Section 1.9 of this Permit Attachment) are not met within five years of the effective date of this Permit, the Permittees shall submit a plan to the Department for approval that describes the work that will be done to rectify the problem. Normal succession processes should occur and continue once native flora has been established, which is when native perennials comprise 50% of the 20% foliar coverage. During this period, a staff biologist shall inspect and document the inventory of the main flora populating the cover on a quarterly basis, inspect the cover for contiguous areas lacking vegetation in excess of 200 square feet, and recommend soil augmentations, surface scarification, reseeding, or other corrective actions as deemed appropriate to establish a long-term sustainable native plant community. During this monitoring period, the staff biologist shall also be responsible for noting and interpreting signs of animal intrusion. These inspections shall be documented as specified in Section 1.10 of this Permit Attachment. At the end of the fourth quarter of each year, the staff biologist shall compile the results of the quarterly inspections in a summary report that shall be included in the annual CWL post-closure care report submitted to the Department.

Once native flora has been established in a self-sustaining manner on the cover, the second phase of monitoring shall begin. Cover vegetation monitoring by the staff biologist shall transition to an annual frequency to assess the overall health of the cover vegetation. Based upon those observations, the staff biologist shall recommend in writing any soil augmentation, surface scarification, and reseeding as necessary to meet the criteria for successful re-vegetation as defined in Section 1.9 of this Permit Attachment. The Permittees shall implement corrective actions in consideration of the staff biologist’s recommendations within 60 days of receipt of the recommendations, except as noted in Section 1.9.1.3 and Table 1-6 of this Permit Attachment. The results of the staff biologist’s inspections shall be reported in each of the annual post-closure care reports to be submitted to the Department.

1.9.1.2.  Cover Inspection

A qualified technician shall perform cover inspections on a quarterly basis. Settlement of the cover surface in excess of 6 inches, erosion of the cover soil in excess of 6 inches deep, areas of ponding water on the CWL cover surface in excess of 100 square feet, animal intrusion burrows in excess of 4 inches in diameter, contiguous areas lacking vegetation in excess of 200 square feet, and any other conditions that may impact the cover’s integrity shall be noted as specified in Section 1.10 of this Permit Attachment. Documentation of animal intrusion burrows in excess of 4 inches in diameter and contiguous areas lacking vegetation in excess of 200 square feet may be noted quarterly as part of the vegetation inspection and monitoring instead of the Cover Inspection.
1.9.1.3. **Maintenance/Repair**

The Permittees shall perform soil augmentations, surface scarification, reseeding, or other vegetation maintenance/repair as necessary. Cover damage shall be repaired within 60 days to a condition that meets or exceeds the original design. Corrective action to repair inadequate cover vegetation as defined by the above mentioned criteria (Section 1.9 of Permit Attachment 1) shall be implemented within 60 days. However, repairs to fix inadequate cover vegetation may be delayed until the appropriate growing season if approved by the Department in advance, and if any necessary measures are taken by the Permittees to prevent excessive erosion of the cover during the delay period. In the case of delaying repair of inadequate cover vegetation, advanced Department approval can be gained in writing via electronic mail or formal letter request. Repairs to the cover shall be done using materials consistent with the cover installation specifications, according to soil classification and gradation specifications in the RAP (SNL/NM December 2004). Repair specifications include, but are not limited to, the following.

- Soil augmentations, surface scarification, reseeding, supplemental watering, or other corrective actions for areas lacking vegetation in excess of 200 square feet and re-establishing the topsoil layer to provide a suitable seedbed; and
- Backfilling and compacting settlement areas in excess of 6 inches, areas of ponding water on the CWL cover surface in excess of 100 square feet, and areas of erosion in excess of 6 inches deep using either stockpiled clean soil from the cover installation or locally derived clean fill with properties meeting the same design criteria as the soil used to construct the CWL cover.

1.9.2. **Storm-Water Diversion Structure Inspection/Maintenance/Repair**

1.9.2.1. **Inspection**

The function of storm-water diversion structures associated with the cover shall be to prevent storm-water run-on and run-off from eroding the cover and to reduce the amount of water that could potentially infiltrate the cover. The storm-water diversion structures shall be inspected on a quarterly basis to verify structural integrity and to ensure adequate performance. Inspections shall document erosion of the channels or sidewalls in excess of 6 inches deep and accumulations of silt greater than 6 inches deep or debris that block more than one-third of the channel width.

1.9.2.2. **Maintenance/Repair**

Based upon the results from the storm-water diversion structure inspections, erosion or other damage that exceeds the above mentioned criteria shall be repaired within 60 days to a condition that meets or exceeds the original design. Silt and debris accumulations that exceed these limits shall be removed within 60 days. Reseeding of the surface drainage features shall also be performed to facilitate re-vegetation and erosion resistance, if needed.

1.9.3. **Monitoring Well Network Inspection/Maintenance/Repair**

1.9.3.1. **Inspection**

Monitoring wells shall be inspected during all groundwater and soil-gas monitoring events. The inspection shall note the condition of the components including protective casings and bollards, wellhead covers/caps/locks, soil-gas sampling ports, well identification markings, and passive
venting BaroBalls™ or equivalent. Groundwater pumps and sample tubing shall be inspected during each sampling event (pumps are not dedicated to the wells). Pump replacement and maintenance/repair and tubing replacement shall be performed on an as-needed basis based upon pump and tubing performance, inspections, and review of analytical sampling results.

1.9.3.2. **Maintenance/Repair**

The monitoring well components shall be maintained/repaired/replaced as needed within 60 days of discovery of any needed repairs. Maintenance/repair activities shall also include ensuring that all monitoring well components are protected from the weather.

1.9.4. **Security Fence Inspection/Maintenance/Repair**

1.9.4.1. **Inspection**

The fence, gates, locks, and warning signs at the CWL 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 excessive accumulations of wind-blown plants and debris that would obscure warning signs, block access to the CWL, or interfere with any of the groundwater or soil-gas monitoring network components, or any sampling using said components. Local survey benchmarks and/or monuments shall also be inspected.

1.9.4.2. **Maintenance/Repair**

The fence, gates, locks, warning signs, and survey benchmarks and monuments shall be maintained/repaired within 60 days of discovery by routine inspections. Activities may include, but are not limited to, removing excessive accumulations of wind-blown plants and debris, repairing broken wire sections and posts, repairing and oiling gates, cleaning or replacing locks, repairing or replacing warning signs, and removing excess soil and/or vegetation covering survey monuments. Maintenance records shall be maintained with the PCIFs.

1.10. **INSPECTION SCHEDULE, CORRECTIVE ACTIONS, AND RECORDED RESULTS**

A schedule for implementing inspections and prescribed maintenance of the CWL cover, surface-water drainage features, monitoring network, and access controls is provided in Table 1-6. Inspection results for the CWL monitoring systems shall be recorded on the Post-Closure Inspection Forms (PCIFs). Example PCIFs are included in Attachment 4 of this Permit. The Permittees shall record the results of each inspection conducted in accordance with Section 1.9 of this Permit Attachment. At a minimum, the Permittees shall produce a record of the date and time of the inspection; the name and signature of the inspector; all required inspection parameters, results, and observations; 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 Section 1.12 of this Permit Attachment. Copies of completed forms shall be provided and summarized in the annual CWL post-closure care report. Incomplete inspection forms shall be considered representative of incomplete inspections, and shall constitute a violation of this
Repairs and maintenance shall be undertaken to ensure protection of human health and the environment and mitigate any potential hazards. If an inspection of the CWL reveals that a non-emergency problem has developed, the needed repairs, maintenance, or replacement shall be initiated within three days, unless circumstances beyond the control of the Permittees cause further delay. The Permittees shall limit any such delays to as short a time period as reasonably possible. Repairs shall not take longer than 60 days to complete. If a hazard appears imminent or a hazardous situation already exists, remedial action shall be initiated immediately. Any action taken pursuant to an inspection shall be noted on the CWL PCIF. If any identified hazard meets the definition of an emergency, as specified in Section 1.14 of this Permit Attachment, the Facility’s Contingency Plan for the CWL shall be implemented by the Permittees, and required notification procedures shall be followed. The Permittees shall report to the Department any remedial activities related to an emergency within one (1) business day.

1.11. PERSONNEL TRAINING

The personnel training program for inspection, monitoring, maintenance and repair of the CWL during the compliance monitoring and post-closure care periods is included in this Permit as Attachment 5. All personnel working at the CWL shall be trained, at a minimum, in accordance with the requirements of this Permit.

PERMIT ATTACHMENT 1
Page 45 of 125
<table>
<thead>
<tr>
<th>System to be Inspected</th>
<th>Inspection Parameters</th>
<th>Inspection Frequency</th>
<th>Maintenance Implementation</th>
<th>Maintenance/Repair Frequency&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final Cover Surface</strong></td>
<td>Vegetation Inventory</td>
<td>Quarterly for 3 to 5 years, annually thereafter by a qualified staff biologist&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Soil augmentations and/or reseeding</td>
<td>Within 60 days of discovery of needed repairs. May be delayed to await appropriate growing season if approved by the Department in advance.</td>
</tr>
<tr>
<td></td>
<td>Contiguous areas of no vegetation &gt;200 ft&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td>Revegetate barren areas that exceed prescribed limits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Animal intrusion burrows in excess of 4 inches in diameter</td>
<td></td>
<td>Repair cover system damage that exceeds prescribed limits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Settlement of cover surface in excess of 6 inches</td>
<td>Quarterly by a qualified field technician</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erosion of cover soil in excess of 6 inches deep</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Animal intrusion burrows in excess of 4 inches in diameter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contiguous areas of no vegetation &gt;200 ft&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Storm-Water Diversion Structures</strong></td>
<td>Channel or sidewall erosion in excess of 6 inches deep</td>
<td>Quarterly by a qualified field technician</td>
<td>Repair erosion that exceeds prescribed limits</td>
<td>Within 60 days of discovery of needed repairs</td>
</tr>
<tr>
<td></td>
<td>Accumulations of silt in excess of 6 inches deep or debris that blocks more than 1/3 of the channel width</td>
<td></td>
<td>Remove silt and debris accumulations that exceed prescribed limits</td>
<td></td>
</tr>
<tr>
<td><strong>Soil-Gas and Groundwater Monitoring Wells</strong></td>
<td>Concrete pads, bollards, and protective casings</td>
<td>Groundwater Network Components: semi-annually by a qualified field technician during sampling events</td>
<td>Maintain, clean, repair, replace, relabel, as appropriate</td>
<td>Within 60 days of discovery of needed repairs</td>
</tr>
<tr>
<td></td>
<td>Well cover caps and Swagelok® (or equivalent) dust caps</td>
<td>Soil-Gas Network Components: annually by a qualified field technician during sampling events</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Passive venting BaroBalls™ or equivalent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Monitoring wells and soil-gas sample port labels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Locks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sampling pumps and tubing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System to be Inspected</td>
<td>Inspection Parameters</td>
<td>Inspection Frequency</td>
<td>Maintenance Implementation</td>
<td>Maintenance/Repair Frequencya</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------</td>
<td>----------------------</td>
<td>--------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Security Fence</td>
<td>Presence of wind-blown plants and debris</td>
<td>Quarterly by a qualified field technician</td>
<td>Remove wind-blown plants and debris</td>
<td>Within 60 days of discovery of needed repairs</td>
</tr>
<tr>
<td></td>
<td>Condition of fence wires, posts, gates, gate locks, warning signs, and survey monuments in the local area</td>
<td></td>
<td>Repair broken wire sections and posts, repair/oil gates, clean/replace locks, repair/replace warning signs, clear dirt/debris from monuments</td>
<td></td>
</tr>
<tr>
<td>Emergency Equipment</td>
<td>See Attachment 6, CWL Site-Specific Contingency Plan</td>
<td>Quarterly by a qualified field technician</td>
<td>Repair/replace as needed</td>
<td>Within 60 days of discovery of needed repairs/replacement</td>
</tr>
</tbody>
</table>

aMaintenance/repairs shall be performed as necessary, based upon the results of inspections.
bAs explained in Section 1.9.1 of this Permit Attachment, the transition from quarterly to annual inspections by a staff biologist is based upon the establishment of native flora in a self-sustaining manner as determined by the staff biologist.

ft² = Square feet.

1.12. RECORD KEEPING AND REPORTING

The following records shall be maintained at the Corrective Action Management Unit (CAMU) administration trailer and at the Facility’s Environmental Safety and Health (ES&H) and Security Records Center:

1. Current and complete copy of this Permit, including all Attachments;
2. Written current versions of operating procedures (administrative, standard, and laboratory) and related guidance referenced in this Permit;
3. Personnel training records required by this Permit for current personnel covering the past 12 months;
4. A written Operating Record that includes:
   a. All completed inspection forms,
   b. Post-closure care annual reports for the last three years, and
   c. All waste management documentation for the last three years;
   d. Emergency or incident response records and reports
5. Site-specific health and safety plan (current version).

The following records shall be maintained at the ES&H and Security Records Center:

1. All correspondence and other documents from the Department and any other governmental agencies related to compliance monitoring and post-closure care;
2. All training records for current employees and training records for any former employee for a minimum of three years from the last date the employee worked at the CWL;
3. All completed post-closure care annual reports;
4. All groundwater monitoring results and records, including full laboratory data packages/reports;
5. All soil-gas monitoring results and records, including full laboratory data packages/reports; and

6. All records of actions taken to prevent or mitigate releases of hazardous waste or hazardous constituents to the environment.

The Permittees shall comply with the record-keeping provisions of 40 C.F.R. § 264.74, concerning the availability, retention, and disposition of records.

During the compliance monitoring and post-closure care periods, the Permittees shall submit a CWL post-closure care report to the Department on an annual basis. The report shall:

1. Summarize inspection, maintenance, and repair activities, and indicate whether any implemented repairs were effective and met the original specifications;

2. Provide groundwater monitoring results, including control charts for groundwater monitoring results for each hazardous constituent (see Section 2.21.3 of Permit Attachment 2);

3. Provide soil-gas monitoring results, i.e., summary data tables showing TCE and total VOC results organized by well and port as well as laboratory data sheets providing all TO-14 or equivalent results, provide the upper and lower confidence limits for each compound listed in Table 1-5 detected at a concentration greater than 0.5 ppmv for the three deepest sampling ports (Port 1) of wells CWL-D1 through D3, and indicate if the trigger level was exceeded for soil gas and for which compound;

4. For groundwater monitoring results, indicate whether there has been any statistically significant increase in the concentration of a hazardous constituent in groundwater in any of the wells at the point of compliance, and indicate the cumulative percentage of sampling results exceeding the median;

5. For groundwater monitoring results, indicate whether any hazardous constituents exceeded their corresponding concentration limits, provide the upper and lower confidence limits for each hazardous constituent, provide based on prediction intervals the probability that the semi-annual sample result for each hazardous constituent should fall within the range of previous results, and specify if the semi-annual result fell within, below, or above the range of previous results;

6. For groundwater monitoring results, indicate whether any new hazardous constituents were identified as a result of enhanced sampling (see Section 1.8.1.1 of Permit Attachment 1) and whether they were added to the monitoring list; and

7. Summarize any problems that either endangered or presented significant potential to endanger human health and the environment for the reporting period and what was done to mitigate such problems.

The annual reports are due by March 31 of each calendar year and may be combined with other site annual reports.
1.13.  POTENTIAL FOR EXPOSURE

The cover provides a barrier between the surface environment and contaminated soil beneath the cover. The following measures have been implemented to reduce the risk of exposure from contaminants at the CWL:

1. The engineered cover is designed to minimize the potential for the migration of liquid into the former CWL and the transport of liquid from the CWL into the surrounding environment;

2. Monitoring of the groundwater and VOC soil-gas plume shall be conducted to determine whether contaminants are being released that pose a threat to groundwater;

3. Security measures shall maintain restricted access to the area;

4. Land-use designation shall prevent inappropriate use of the CWL site; and

5. Inspections, maintenance, and repairs shall be performed as needed, on a regular scheduled basis, and in accordance with this Permit.

1.14.  POTENTIAL FOR EMERGENCY

Due to the current conditions of the CWL, the potential for fire, explosion, or unplanned sudden or gradual release of RCRA-regulated hazardous waste or hazardous waste constituents that would significantly threaten human health or the environment is low. However, the Facility’s Contingency Plan shall be maintained in the CAMU administrative trailer in the event of an incident or emergency. The Facility’s Emergency Operations Center also provides coordination/resources and appropriate emergency equipment on a Facility-wide basis.

1.15.  REFERENCES


EPA, see U.S. Environmental Protection Agency.

IT, see IT Corporation.


SNL/NM, see Sandia National Laboratories/New Mexico.


FIGURES of PERMIT ATTACHMENT 1
PERMIT ATTACHMENT 6: CONTINGENCY PLAN

6.0 INTRODUCTION

The Permittees shall comply with the requirements at 40 C.F.R. Part 264 Subpart D, “Contingency Plan and Emergency Procedures,” and 40 C.F.R. § 270.14(b)(7). Information specific to the Chemical Waste Landfill (CWL) is included in this Permit Attachment. Current copies of this Contingency Plan shall be maintained at both the Corrective Action Management Unit (CAMU) administrative trailer and the Facility’s Emergency Operations Center (EOC). The CAMU is a RCRA-regulated remediation-waste management unit that is located about 100 yards northwest of the CWL. Emergency response resources for the CAMU are shared with the CWL.

The inactive CWL is a 1.9-acre hazardous waste landfill located in the southeastern corner of Technical Area (TA)-III (TA-III). A map that shows the locations of the Facility’s TAs and the location of the CWL is presented on Figure 1 in Attachment 1 of this Permit. A more detailed map of the CWL area is presented in Figure 13.

Table 6-4 lists the emergency equipment that shall be maintained at the CAMU for use at the CWL. This equipment shall be tested on a quarterly basis and be shall maintained as necessary to ensure proper operation. Table 6-5 lists the emergency coordinators.

Waste Types

Hazardous waste generated at the CWL includes purge water derived from the sampling of groundwater monitoring wells, and personal protective equipment (PPE) waste generated during the sampling and management of purge water and the sampling of soil gas. Hazardous constituents may include, but are not limited to, volatile organic compounds and toxic and heavy metals. Waste generated at the CWL will be stored and managed at the CAMU less-than-90-day waste accumulation area or another established less-than-90-day waste accumulation area.

Purge Water Management

Purge water shall be collected and managed during groundwater monitoring activities by personnel who have received training in hazardous waste management. Whenever purge water is being pumped, poured, or otherwise handled, all personnel involved in the operation shall have access to a phone or radio to contact Facility and Kirtland Air Force Base (KAFB) emergency personnel, if necessary.

Facility personnel shall clean up spills immediately, and shall notify the Emergency Coordinator (EC) of the incident as required by Section 6.4 of this Contingency Plan; the EC will determine if the incident is an emergency. At least two samples shall be collected and analyzed to ensure complete cleanup has been achieved. Additional samples may be required by the New Mexico Environment Department (the Department) depending on the magnitude and character of the spill. The samples shall be analyzed for the same parameters as those required in this Permit for groundwater sampling. Field quality control samples, consisting of at least one field and one trip blank and one duplicate (for all analytes) shall also be collected and analyzed in a laboratory for each sampling event associated with a spill.
Container Management

Typical containers used to store waste generated during post-closure care monitoring activities at the CWL include 55-gallon drums that shall be managed in accordance with applicable provisions of 40 C.F.R. Part 262 and 40 C.F.R. Part 264 Subpart I.

6.1. DISTRIBUTION OF CONTINGENCY PLAN AND AMENDMENTS

Copies of this Contingency Plan shall be maintained at: 1) The CAMU, 2) The Facility EOC, and 3) The Facility Records Center. The Permittees shall also provide copies of this Plan and any amendments and updates of this Plan to the KAFB Fire Department and the Department.

The Permittees' EC(s) and the Facility emergency response organization (ERO) personnel shall periodically review this Contingency Plan. The Plan shall be amended, if necessary, whenever one or more of the following occurs:

1. Applicable regulations or Permit conditions are revised;
2. There is a significant change in Facility or Unit design, construction, maintenance, operation, or other circumstance that increases the potential for emergencies or changes the response necessary in an emergency;
3. The list of designated emergency coordinators changes;
4. The list of required emergency equipment changes; or
5. The Plan fails during an incident or an emergency.

6.2. EMERGENCY RESPONSE RESOURCES

Resources are available at the Facility, within KAFB, and in Albuquerque as described in this section.

6.2.1. Emergency Coordinator (EC) and Responsibilities

The EC and alternate ECs shall be thoroughly familiar with this Contingency Plan, the layout of the CWL, sampling and monitoring operations, the location of records, and the emergency equipment and supplies. The EC shall have the authority to commit the necessary resources (including personnel, materials, and funds) to respond to any incident or emergency at the CWL.

During an incident or emergency at the CWL, or until the Facility emergency response Incident Commander (IC) arrives, the EC has three primary responsibilities:

1. **Assess the Situation.** By observing the scene, interviewing personnel, and/or reviewing records, the EC must gather information relevant to the response, such as the type of event, quantity and type of released material, and actual or potential hazards to human health or the environment.
2. **Protect Personnel.** The EC shall take any 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, 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 an incident or emergency, the EC shall ensure that the CWL and equipment are cleaned, waste is properly managed and disposed of, the CWL is safe, and all information necessary for notifications and reports is provided to Facility personnel, as outlined in Section 6.6.

In the event that the EC is not on site or immediately available during an incident or emergency, an alternate EC shall be contacted. The names, addresses, and phone numbers of the primary and alternate ECs for the CWL are included in Table 6-5. The EC or alternate EC shall be on site or immediately available during sampling and analysis events.

6.2.2. Emergency Response Groups

The Facility ERO consists of two response groups that respond to an emergency situation: (1) a field response group led by an IC under the Incident Command System (ICS) and (2) an EOC cadre. The ICS also includes Facility Security, the KAFB Fire Department, and the Facility personnel with relevant technical skills. An IC shall be on site at the Facility at all times (24 hours per day, 7 days per week). Facility security personnel shall also be available at all times. The Permittees shall maintain their MOU with the 377th Air Base Wing of KAFB for fire protection and other support as referenced in Section 6.2.4 of this Permit Attachment. Facility technical personnel are available on site from 8:00 am to 4:30 pm Monday through Friday and are on call the rest of the time. Facility EOC staff shall include an Emergency Director and staff of both the Owner and Operator personnel who are responsible for management decisions and notifications to outside parties that are required during an emergency response. EOC staff personnel shall be available on site at the Facility from 8:00 am to 4:30 pm, Monday through Friday, except for holidays and Facility closure, and shall be on call at all times.

In the field, the IC shall maintain overall management and control of response operations during an emergency. The IC shall work in a unified command with the KAFB Fire Department and in concert with safety personnel, CWL personnel, and other emergency responders to develop and execute response plans, including on-site protective actions and recommendations for off-site protective actions. The ICS system shall be implemented at the time an emergency occurs and shall be expanded to control the emergency as needs arise, and shall remain in effect until the need for emergency management no longer exists.

6.2.3. Emergency Chain of Command

When the EC is notified of an incident, he shall first determine if the procedures for emergencies should be implemented. If an incident is an emergency, the EC shall manage the emergency response until the IC arrives at the CWL, then the EC will relinquish control to the IC. If possible, the EC shall maintain communication with the IC by telephone or radio before the IC arrives at the CWL. The EC shall remain at the CWL and assist in the emergency response as directed by the IC. The EC shall advise the IC, as needed, on CWL operations, CWL layout, characteristics of hazardous waste on site, location of records, radio and cellular communication systems, and other information as necessary to respond to the emergency.

The Facility IC is the liaison for communications with other emergency response organizations and functions, including medical and fire protection support. The EC can request both medical and fire protection services, if necessary, at the same time that he/she notifies the IC of an emergency.
6.2.4. Support Agreements and Coordination with Outside Agencies

The Facility shall maintain sufficient response resources to handle most emergencies arising from hazardous waste management activities as described in this Contingency Plan. These response resources include personnel, emergency equipment, medical facilities, and communications systems. The Facility has also established mutual aid agreements and memoranda of understanding with several off-site agencies and facilities for additional response capabilities for the Facility. These agencies and facilities include the establishments listed in Table 6-1.

### TABLE 6-1

Agreements and Memoranda of Understanding for Emergency Response

<table>
<thead>
<tr>
<th>Agency or Facility</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>The New Mexico Department of Homeland Security and Emergency Management</td>
<td>Mutual aid involving an actual or potential emergency, assistance in training and emergency response for local and tribal governments.</td>
</tr>
<tr>
<td>The 377th Air Base Wing, Kirtland Air Force Base</td>
<td>Various types of support, including fire protection, police services, communications, and utilities.</td>
</tr>
<tr>
<td>The City of Albuquerque</td>
<td>Mutual support and responsibilities during a potential or actual emergency requiring the combined resources of DOE and the City of Albuquerque.</td>
</tr>
<tr>
<td>Lovelace Medical Center</td>
<td>Mutual cooperation and assistance in providing timely and effective emergency medical services.</td>
</tr>
<tr>
<td>Presbyterian Health Care Services</td>
<td>Mutual cooperation and assistance in providing timely and effective emergency medical services.</td>
</tr>
</tbody>
</table>

6.3. EMERGENCY EQUIPMENT

A list of equipment available through the Facility emergency response system is provided in Table 6-2. A list of emergency equipment to be maintained at the Corrective Action Management Unit for use at the CWL is presented in Table 6-4.
## TABLE 6-2
**Chemical Waste Landfill Emergency Response Equipment Inventory**

<table>
<thead>
<tr>
<th>Item or Equipment</th>
<th>Description/Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emergency Vehicles</strong></td>
<td></td>
</tr>
<tr>
<td><strong>(owned by the Facility unless noted)</strong></td>
<td></td>
</tr>
<tr>
<td>Emergency Response Vehicle</td>
<td>Mobile Command Post equipped with communications equipment, typically located at SNL EOCa. SNL Emergency Response System: Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td>Ambulance</td>
<td>Typically located at SNL medical facility. SNL Emergency Response System: Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td>Security Vehicles</td>
<td>Vans and trucks equipped with communications equipment and utilized for transportation of personnel and equipment, typically located throughout SNL. SNL Emergency Response System: Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td><strong>Fire Trucks</strong></td>
<td></td>
</tr>
<tr>
<td>(owned by KAFB Fire Department)</td>
<td>Fire-fighting vehicles outfitted with equipment for fighting fires, typically located at KAFB fire stations. SNL Emergency Response System: Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td><strong>Medical Supplies</strong></td>
<td></td>
</tr>
<tr>
<td>Stretchers/Stokes Litter</td>
<td>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</td>
</tr>
<tr>
<td>Blankets</td>
<td>Normal blankets, typically located in ambulance or at SNL medical facility. SNL Emergency Response System: Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td>Medical Kits</td>
<td>Emergency first-aid supplies, typically located in ambulance or at SNL medical facility. SNL Emergency Response System: Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td><strong>Safety Supplies</strong></td>
<td></td>
</tr>
<tr>
<td>Air Packs</td>
<td>Self-contained breathing apparatus for use by personnel entering hazardous atmospheres, typically located in ambulance or response vehicle. SNL Emergency Response System: Call 911 or (505) 844-0911</td>
</tr>
<tr>
<td>Monitoring Instruments</td>
<td>Typically located in ambulance or emergency response vehicle. SNL Emergency Response System: Call 911 or (505) 844-0911</td>
</tr>
</tbody>
</table>

*The Facility EOC is located at Technical Area I (TA-I).  
EOC = Emergency Operations Center  
KAFB = Kirtland Air Force Base  
SNL = Sandia National Laboratories  

### 6.4. **CONTINGENCY PLAN IMPLEMENTATION**

Facility personnel who become aware of an incident or emergency shall contact the EC immediately. If the incident is an emergency, personnel shall implement evacuation procedures identified in Section 6.4.2. Personnel shall also immediately notify the EC or alternate EC of the incident or emergency. The EC shall then assess the situation and determine whether the incident is an emergency.

If the EC determines that an emergency situation exists at the CWL, he shall immediately notify the EOC. The methods for contacting emergency response representatives are listed in Table 6-3.
### 6.4.1. Emergencies

In the event of an emergency, the EC, a designee, or CWL personnel shall immediately telephone the EOC (by calling 911 or 844-0911) or notify them in some other way. The EC shall relinquish authority to the IC upon arrival. The EC and the IC shall:

1. Determine the extent of the emergency;
2. Identify the character, source, amount, and extent of released materials 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 waste at the CWL, including collecting and containing released waste, and removing or isolating containers; and

   Monitor for leaks, pressure buildup, gas generation, and ruptures in equipment.

### Table 6-4

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Specific Location at CAMU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spill Control Equipment</td>
<td>Spill control materials, including sorbent material, brooms and shovels</td>
<td>Leachate Storage Area Shed</td>
</tr>
<tr>
<td>Fire Extinguisher</td>
<td>Portable, Multi-Class</td>
<td>One near the Leachate Storage Area and Containment Cell, and one in CAMU Administration Trailer</td>
</tr>
<tr>
<td>Communications: (Internal/External)</td>
<td>Cellular Phone, 2-way portable radio, or equivalent</td>
<td>In the vicinity of the Leachate Storage Area or with operating personnel</td>
</tr>
<tr>
<td>Water Supply</td>
<td>Fire Hydrant</td>
<td>One outside the southeast entrance to the CAMU Two near the former Treatment Pad and two near the former Bulk Waste Staging Area</td>
</tr>
<tr>
<td>Environmental Safety and Health</td>
<td>Portable eyewash station</td>
<td>Leachate Storage Area Shed (during waste handling activities)</td>
</tr>
<tr>
<td>Evacuation</td>
<td>Voice command by on-site personnel or signaled by three blasts of a vehicle warning horn.</td>
<td>Designated Assembly Area (See Figure 13)</td>
</tr>
</tbody>
</table>

CAMU = Corrective Action Management Unit.
6.4.1.1. Fire

The following steps shall be implemented as needed in the event of an emergency involving an imminent or existing fire.

1. All non-essential personnel shall evacuate following the evacuation route described in this Permit Attachment or to an alternate assembly location as directed by the EC. All personnel shall evacuate as soon as possible if it becomes necessary to ensure their health and safety.

2. The EC (or Unit 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 Facility ERO shall also be notified by activation of an automatic fire alarm.

3. CWL personnel may consider taking action to put out a fire or minimize its spread ONLY if safe to do so. 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 a 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 a fire if safe to do so.

7. If the fire spreads or increases in intensity, all remaining personnel must evacuate.

8. The EC shall remain near the CWL, but at a safe distance, so he can advise personnel responding to a fire of the known hazards.

9. Upon arrival at a fire, the KAFB Fire Department officer-in-charge shall be in command of fire fighting. He shall accept and evaluate the advice of the CWL and emergency response personnel, but he retains the responsibility of selecting the fire-fighting methods and tactics.

10. The IC shall be in overall control of the Facility emergency response efforts until the emergency is terminated.

11. Hazardous wastes involved in a fire can be identified in the following ways: The location of the container may indicate the contents. If the location does not indicate its contents, the label number can be used to identify the waste. Records on the contents of each container can be accessed from outside the CWL. If the label has been burned and the container cannot be identified, the waste shall be treated as an unknown.

12. Residues of hazardous wastes may 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. If needed, affected surfaces shall be cleaned using cleaners appropriate for the chemicals and wastes involved.
14. If possible and safe, responding personnel shall take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers. If possible, personnel shall build dikes around storm drains.

6.4.1.2. *Explosion*

The following steps shall be implemented as needed in the event of an emergency involving an imminent or existing explosion.

1. Personnel shall immediately evacuate the area.

2. The EC (or CWL 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 shall also be notified by activation of an automatic fire alarm.

3. The EC shall remain near the CWL, but at a safe distance, so that he/she can advise the response personnel of the known hazards involved and the degree and location of the explosion and associated fires.

4. Upon arrival at the site, the KAFB Fire Department officer-in-charge shall be in command of fire fighting. He/she will accept and evaluate the advice of the CWL personnel and emergency response organization members, but 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. Residues of hazardous wastes may 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. If needed, affected surfaces shall be cleaned using cleaners appropriate for the chemicals and wastes involved.

7. If possible, responding personnel will take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers, such as building dikes around storm drains.

8. The EC shall secure the CWL once it has been determined to be safe by the IC or a safety officer.

6.4.1.3. *Uncontrolled Release*

The following steps shall be implemented as needed in the event of an incident or emergency involving an imminent or existing release of hazardous waste and/or radioactive mixed waste or constituents:

1. Evacuate the immediate area.

2. If it is an emergency, the EC (or CWL 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 shall also be notified by activation of an automatic fire alarm.

3. Take actions to minimize, contain, and clean up the release only if safe to do so.
4. Review Facility records (e.g., waste inventory database) to determine the identity and chemical nature of the released material.
5. Wear appropriate personal protective equipment to clean up the spill or release.
6. If possible, secure the source of the release.
7. If necessary and possible, build a dike to contain runoff.
8. Take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers 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 the released material shall be managed at the CWL until the cleanup procedures are completed.
11. After collection of a released waste, soil at the affected site shall be sampled and analyzed. If contamination is found to exist, contaminated soil shall be collected, contained (if appropriate), and removed from the site for disposal at a permitted disposal facility. Depending on the specific conditions, however, the Facility may choose to implement an alternative decontamination method such as surface cleaning or in-situ neutralization or stabilization. Any such alternative shall be approved by the Department prior to implementation.

6.4.2. Evacuation
During an emergency that threatens the health or safety of CWL personnel, the following steps shall be taken as needed 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 available evacuation signal consistent with 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 shall also be notified by activation of an automatic fire alarm.
6. Check to see whether there is evidence that the designated evacuation route is not safe.
7. If there is no evidence of danger or obstacles, exit the CWL according to the evacuation route.
8. If there is evidence of danger or obstacles, exit the CWL by any safe route available.

9. If safe, check for other personnel in other areas of the CWL.
10. Proceed to the designated assembly area for roll call to be taken by the EC or designee.

11. If the EC and CWL personnel are assembling at an alternate location, proceed to that location.

12. Inform the EC or designee about any other people still believed to be inside the CWL.

13. Do not re-enter the CWL until the IC or EC determines that is safe.

The evacuation route to be used during an emergency is shown in Figure 2 of Attachment 1 and Figure 13 of Attachment 6 of this Permit.

6.4.3. **Coordination with Off-Site Parties and Emergency Notification**

The Facility EOC shall notify DOE of all emergencies at the Facility. The Permittees shall notify State and Local agencies if State or Local response resources are needed, if human health or the environment is threatened outside the Facility, or if areas outside the SNL Facility may require protective action. The Facility will verbally inform the City of Albuquerque and Isleta Pueblo as soon as possible, in the unlikely event that residents of Albuquerque or Isleta Pueblo could be affected. The notification shall include available information about the nature and location of the emergency, the waste and materials involved, and the recommended protective actions. The most likely protective actions are expected to include evacuation or sheltering indoors with doors and windows closed and ventilation systems shut off.

In the event of emergency involving injuries that require medical services from one of the hospitals listed in Table 6-1, the Permittees shall provide all available information about the incident and the wastes and materials involved to the responders as soon as possible.

The Permittees shall also notify the National Response Center (1-800-424-8802) if human health or the environment is threatened outside the Facility. The notification shall include the following:

1. Name and telephone number of the responsible official
2. Facility name and address
3. Time and nature of emergency
4. Type and quantities of wastes and materials involved to the extent known
5. Personnel injuries, and
6. Potential hazards to human health, or the environment, outside the Facility.

Further, the Permittees shall also provide this information to the Department in accordance with regulatory requirements, including verbal notification via the 24-hour emergency reporting number (1-505-827-9329) or other emergency notification number designated by the Department.

6.5. **POST-EMERGENCY ACTIONS**

Immediately after an emergency, the EC and the IC shall:

1. Continue to monitor for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment;
2. Provide for properly treating, storing, or disposing of recovered waste, contaminated soil or other media, or any other material or waste;
3. Ensure that no waste that may be incompatible with released material or waste is managed at the CWL until cleanup procedures are completed; and

4. Ensure that all equipment used in responding to the emergency is cleaned and fit for its intended use before resuming operations at the CWL.

Before resuming operations after an emergency, the Permittees shall notify the Department that incompatible waste will not be managed until cleanup procedures are complete and equipment listed in this Contingency Plan is cleaned and fit for use.

6.6. EMERGENCY RESPONSE RECORDS AND REPORTS

The time, date, and details of an incident or emergency involving implementation of this Contingency Plan shall be noted in the Operating Record. Within fifteen (15) calendar days following the incident or emergency, a written report shall be submitted to the Department identifying:

1. Name, address, and telephone number of the responsible official;
2. Name, address, and telephone number of the Facility;
3. Date, time, and type of emergency or incident (e.g., fire, explosion, release);
4. Name and quantity of wastes and material(s) 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 and wastes that resulted from the incident or emergency.
### TABLE 6-5
Emergency Coordinator List for the Chemical Waste Landfill

<table>
<thead>
<tr>
<th>Emergency Coordinators</th>
<th>Home Telephone</th>
<th>Office Telephone</th>
<th>Cellular or Pager</th>
</tr>
</thead>
</table>
| Primary: Donald P. Schofield  
  P.O. Box 5800  
  Albuquerque, NM 87185 | 268-6888 | 844-4088 | 259-7098 (Cell) |
| 1st Alternate: Robert Ziock  
  P.O. Box 5800  
  Albuquerque, NM 87185 | 255-4714 | 845-0485 | 238-3668 (Cell) |
| 2nd Alternate: Danielle Michel  
  P.O. Box 5800  
  Albuquerque, NM 87185 | 239-3989 | 845-7706 | 219-7143 (Cell) |

*aAt least one emergency coordinator must be at the CWL or CAMU unit or on call.*
Dear Mr. Kieling:

The Department of Energy/National Nuclear Security Administration (DOE/NNSA) and Sandia Corporation (Sandia) are notifying the New Mexico Environment Department of Class 1 modifications to two permits:

1. Resource Conservation and Recovery Act Facility Operating Permit (Permit) at SNL/NM.
2. Hazardous Waste Post-Closure Care Permit (PCCP) for the Chemical Waste Landfill (CWL) at SNL/NM.

The changes are discussed below and are presented in enclosures to this letter, as required by 20.4.1.900 NMAC incorporating 40 CFR 270.42(a). The specific permit modification provisions are in Permit, Part 1, Section 1.8.2 and PCCP, Part 1, Section 1.6.2.2.

The changes to each permit reflect the upcoming change in the name of the Operator at Sandia National Laboratories. The current operator is Sandia Corporation. On May 1, 2017, the name change from Sandia Corporation to National Technology and Engineering Solutions of Sandia, LLC (NTESS) will take effect. The Operator under each permit will remain the same; there is no transfer of requirements to a new operator.

There are six enclosures to this letter: Enclosures 1-3 address changes to the Permit; and Enclosures 4-6 address changes to the PCCP. They are summarized below:

- Enclosure 1 includes a table summarizing the Permit modifications and the rationale for each.
- Enclosure 2 includes the revised pages of Permit Parts 1, 3, and 8, and Permit Attachments A and D with the revisions shown in redline/strikeout format.
cc w/enclosures:
David Cobrain  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Dr. E., Building 1, Santa Fe, NM 87505

Cornelius Amindyas  
Hazardous Waste Bureau  
New Mexico Environment Department  
121 Tijeras Ave. NE, Albuquerque, NM 87102

Susan Lucas-Kamat  
DOE Oversight Bureau  
New Mexico Environment Department  
121 Tijeras Ave. NE, Albuquerque, NM 87102

Laurie King  
U.S. Environmental Protection Agency, Region 6  
Federal Facilities Section (6PD-F)  
Fountain Place, Suite 1200, 1445 Ross Ave, Dallas, TX 75202

Zimmerman Library  
MSC05 3020  
1 University of New Mexico, Albuquerque, NM 871001

c w/o enclosure:  
Amy Blumberg, SNL/NM  
Johnathon Huff, SNL/NM  
Terry Cooper, SNL/NM  
Bradley Elkin, SNL/NM  
Michael Hazen, SNL/NM  
Jeffrey Jarry, SNL/NM  
Jaime Moya, SNL/NM  
Pamela Puissant, SNL/NM  
Anita Reiser, SNL/NM  
Michael Spoerner, SNL/NM  
Cynthia Wimberly, SFO/Legal  
James Todd, SFO/ENG  
David Rast, SFO/ENG  
728903
Notification of Class 1 Modifications to Resource Conservation and Recovery Act Facility Operating Permit and Post-Closure Care Permit for the Chemical Waste Landfill

Sandia National Laboratories / New Mexico
EPA ID No. NM5890110518

CERTIFICATION STATEMENT

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

Michael W. Hazen, Vice President
Sandia Corporation
Albuquerque, New Mexico
Operator

Jeffrey P. Harrell, Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Field Office
Owner

11/20/2017
Date Signed

4/28/2017
Date Signed
Enclosure 1

Summary of Revisions
Resource Conservation and Recovery Act
Facility Operating Permit

Sandia National Laboratories
NM5890110518
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td>Cover. Permit Parts 1-8</td>
<td>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</td>
<td>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 LLC 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</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change. Revise date to show effective date of change.</td>
<td>Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
</tr>
</tbody>
</table>

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<tr>
<td>2</td>
<td>Permit Part 1, Section 1.2</td>
<td>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.</td>
<td>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 National Technology and Engineering Solutions of Sandia, LLC (NTESS), operator of SNL (EPA ID Number NM5890110518). This Permit authorizes DOE and NTESS (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.</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change.</td>
<td>Class 1 modification. Administrative and informational changes.</td>
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<tr>
<td>3</td>
<td>Permit Part 1, Section 1.6</td>
<td>&quot;Federal Facility Compliance Order&quot; (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).</td>
<td>&quot;Federal Facility Compliance Order&quot; (FFCO) means the Order issued by the Department to the United States Department of Energy, and Sandia Corporation (which is now doing business as NTESS, LLC) 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), and any subsequent modifications thereof.</td>
<td>Note name change for Sandia Corporation. Change is limited to name only; operational control does not change.</td>
<td>Class 1 modification. Administrative and informational changes.</td>
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<td>4</td>
<td>Permit Part 1, Section 1.6</td>
<td>“Off-Site Source” 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 Permittees’ Facility boundary.</td>
<td>“National Technology and Engineering Solutions of Sandia, LLC (NTESS),” formerly known as Sandia Corporation, means a limited liability company organized under the laws of the State of Delaware, doing business in the State of New Mexico as a wholly owned subsidiary of Honeywell International, and the management and operating contractor at Sandia National Laboratories (SNL); Sandia Corporation is identified on the Part A application submitted pursuant to 40 CFR § 270.13.</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change.</td>
<td>Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
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<td>5</td>
<td>Permit Part 1, Section 1.6</td>
<td>“Permittees” mean Sandia Corporation and the United States Department of Energy (DOE). Permittees are jointly and severally subject to the conditions of this Permit.</td>
<td>“Permittees” mean NTESS Sandia Corporation and the United States Department of Energy (DOE). Permittees are jointly and severally subject to the conditions of this Permit.</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change.</td>
<td>Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
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<td>6</td>
<td>Permit Part 1, Section 1.6</td>
<td>“Sandia Corporation” 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.</td>
<td>“Sandia Corporation” 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.</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change.</td>
<td>Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
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<tr>
<td>7</td>
<td>Permit Part 3, Section 3.1.1</td>
<td>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.</td>
<td>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.</td>
<td>Revise the reference to the FFCO to be consistent with definition in Permit Part 1, Section 1.6.</td>
<td>Class 1 modification. Administrative and informational changes.</td>
</tr>
<tr>
<td>8</td>
<td>Permit Part 8, Section 8.8.9.1</td>
<td>6. A certification, signed by a responsible official of DOE/Sandia (owner/operator), stating: &quot;I certify under penalty of law that this document and all attachments were prepared ...</td>
<td>6. A certification, signed by a responsible official of the Permittees DOE/Sandia (owner/operator), stating: &quot;I certify under penalty of law that this document and all attachments were prepared ...</td>
<td>Revise name of Facility Operator. Change is limited to name only, operational control does not change. Revise the requirement to identify the Permittees for consistency with other requirements throughout the Permit.</td>
<td>Class 1 modification. Administrative and informational changes.</td>
</tr>
<tr>
<td>9</td>
<td>Permit Part 8, Section 8.12.2.1</td>
<td>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).</td>
<td>A signature block providing spaces for the names and titles of the responsible DOE and Sandia representatives of the Permittees shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).</td>
<td>Please see Item 8 above.</td>
<td>Class 1 modification. Administrative and informational changes.</td>
</tr>
<tr>
<td>10</td>
<td>Permit Part 8, Section 8.12.3.1</td>
<td>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).</td>
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<td>Class 1 modification. Administrative and informational changes.</td>
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<td>11</td>
<td>Permit Part 8, Section 8.12.4.1</td>
<td>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).</td>
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<td>12</td>
<td>Permit Part 8, Section 8.12.5.1</td>
<td>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).</td>
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<td>13</td>
<td>Permit Part 8, Section 8.12.6.1</td>
<td>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).</td>
<td>A signature block providing spaces for the names and titles of the responsible DOE and Sandia representatives of the Permittees shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).</td>
<td>Please see Item 8 above.</td>
<td>Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
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Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy’s National Nuclear Security Administration under contract DE-AC04-94AL85000.
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<tr>
<td>14</td>
<td>Cover: Permit Attachments A-M</td>
<td>RESOURCE CONSERVATION AND RECOVERY ACT FACILITY OPERATING PERMIT ATTACHMENTS A THROUGH M</td>
<td>RESOURCE CONSERVATION AND RECOVERY ACT FACILITY OPERATING PERMIT ATTACHMENTS A THROUGH M</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change.</td>
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<td>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</td>
<td>EPA ID No. NM5890110518 issued to the U.S. DEPARTMENT OF ENERGY/NATIONAL TECHNOLOGY AND ENGINEERING SOLUTIONS OF SANDIA, LLC 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 December 2016</td>
<td></td>
<td>20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
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<td>15</td>
<td>Permit Attachment A,</td>
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<td>Revise name and description of Facility Operator. Change is limited to name only; operational control does not change.</td>
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<td>Section A.1</td>
<td>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.</td>
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<td></td>
<td>Class 1 modification</td>
</tr>
<tr>
<td>16</td>
<td>Permit Attachment D,</td>
<td>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.</td>
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<td>Revise name to more accurately describe these as personnel associated with the Permittees.</td>
<td>Class 1 modification</td>
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<td>Section D.6.1</td>
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<td>17</td>
<td>Permit Parts 1, 3, and 8 Permit Attachment A</td>
<td><strong>Header on each page:</strong> New Mexico Environment Department Sandia National Laboratories January 2015 Hazardous Waste Facility Permit No. NM5890110518</td>
<td>New Mexico Environment Department Sandia National Laboratories May 2017 Hazardous Waste Facility Permit No. NM5890110518</td>
<td>Revise date to show effective date of change on revised pages.</td>
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Enclosure 2

Revisions to Permit Parts 1, 3, and 8, and Permit Attachments A and D,
Redline/Strikeout Format

Resource Conservation and Recovery Act
Facility Operating Permit

Sandia National Laboratories
NM5890110518
RESOURCE CONSERVATION AND RECOVERY ACT FACILITY OPERATING PERMIT
PARTS 1 THROUGH 8

EPA ID No. NM5890110518

issued to the

U.S. DEPARTMENT OF ENERGY/NATIONAL TECHNOLOGY AND ENGINEERING SOLUTIONS OF SANDIA, LLC 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

May 2017 January 2015
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 National Technology and Engineering Solutions of Sandia, LLC (NTESS) Corporation, operator of SNL (EPA ID Number NM5890110518).

This Permit authorizes DOE and NTESS 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
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.

“Area of Concern” (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.

“Consent Order” 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.

“Corrective Action” 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.

“Corrective Action Complete” means the requirements for corrective action have been satisfied by the Permittees as determined by the Department.

“Days” refers to calendar days unless specified otherwise in this Permit.

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

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

“EPA” means the United States Environmental Protection Agency and any successor or predecessor agency.

“Facility” 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).

“Federal Facility Compliance Order” (FFCO) means the Order issued by the Department to the United States Department of Energy, and Sandia Corporation (which is now doing business as NTESS, LLC) on October 4, 1995 pursuant to section 3012(b) of RCRA, 42 U.S.C. § 6939(c), as

"Foreign Source" means a hazardous waste source outside the United States.

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

"Hazardous Constituent" or "Hazardous Waste Constituent" 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, "hazardous constituent" and "hazardous waste constituent" also means any constituent identified in 40 CFR Part 264 Appendix IX.

"Hazardous Waste" 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.

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

"Hazardous Waste Management Unit" 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.

"Mixed Waste" 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.).

"National Technology and Engineering Solutions of Sandia, LLC (NTESS)," formerly known as Sandia Corporation, means a limited liability company organized under the laws of the State of Delaware, doing business in the State of New Mexico as a wholly owned subsidiary of Honeywell International, and the management and operating contractor at Sandia National Laboratories (SNL); Sandia Corporation is identified on the Part A application submitted pursuant to 40 CFR § 270.13.

"Off-Site Source" 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 Permittees' Facility boundary.

"Permit" 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.

Page 4
“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).

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


"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.

“Sandia Corporation” 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.

“Solid Waste Management Unit” (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)).

“Technical Area” (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 Permittees’ 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.
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 SOI)). 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
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 the Permittees DOE/Sandia (owner/operator), stating: “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to 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.”

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
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 of the Permittees 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
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 of the
Permittees 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.
8.12.4.1 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 of the Permittees shall be provided on the title page in accordance with 40 CFR § 270.11(d)(i).

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.
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 of the Permittees 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
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 of the Permittees 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.
RESOURCE CONSERVATION AND RECOVERY ACT FACILITY OPERATING PERMIT
ATTACHMENTS A THROUGH M

EPA ID No. NM5890110518

issued to the

U.S. DEPARTMENT OF ENERGY/NATIONAL TECHNOLOGY AND ENGINEERING SOLUTIONS OF SANDIA, LLC 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

May 2017 December 2016
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 operated by National Technology and Engineering Solutions of Sandia, LLC (NTESS), a wholly owned subsidiary of Honeywell International/ Lockheed Martin Corporation with work also performed for others.

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 NTESS, Sandia Corporation, a wholly owned subsidiary of Honeywell International/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.
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. Permittees’ 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 RMW MU, 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.
RESOURCE CONSERVATION AND RECOVERY ACT FACILITY OPERATING PERMIT
PARTS 1 THROUGH 8

EPA ID No. NM5890110518

issued to the

U.S. DEPARTMENT OF ENERGY/NATIONAL TECHNOLOGY AND ENGINEERING SOLUTIONS OF SANDIA, LLC

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
May 2017
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. § 6792(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. § 6792(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 National Technology and Engineering Solutions of Sandia, LLC (NTESS), operator of SNL (EPA ID Number NM5890110518).

This Permit authorizes DOE and NTESS (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
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.

“Area of Concern” (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.

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

“Corrective Action” 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.

“Corrective Action Complete” means the requirements for corrective action have been satisfied by the Permitees as determined by the Department.

“Days” refers to calendar days unless specified otherwise in this Permit.

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

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

“EPA” means the United States Environmental Protection Agency and any successor or predecessor agency.

“Facility” 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).

“Federal Facility Compliance Order” (FFCO) means the Order issued by the Department to the United States Department of Energy, and Sandia Corporation (which is now doing business as NTESS, LLC) on October 4, 1995 pursuant to section 3012(b) of RCRA, 42 U.S.C. § 6939(c), as

“Foreign Source” means a hazardous waste source outside the United States.

“Groundwater” means water below the land surface in a zone of saturation.

“Hazardous Constituent” or “Hazardous Waste Constituent” 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 I of 40 CFR § 261.24. For purposes of corrective action, “hazardous constituent” and “hazardous waste constituent” also means any constituent identified in 40 CFR Part 264 Appendix IX.

“Hazardous Waste” 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.

“Hazardous Waste Management Regulations” means the New Mexico Hazardous Waste Management Regulations, 20.4.1 NMAC.

“Hazardous Waste Management Unit” 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.

“Mixed Waste” 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.).

“National Technology and Engineering Solutions of Sandia, LLC (NTESS),” formerly known as Sandia Corporation, means a limited liability company organized under the laws of the State of Delaware, doing business in the State of New Mexico as a wholly owned subsidiary of Honeywell International, and the management and operating contractor at Sandia National Laboratories (SNL); Sandia Corporation is identified on the Part A application submitted pursuant to 40 CFR § 270.13.

“Off-Site Source” 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 Permittees’ Facility boundary.

“Permit” 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.
"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).

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


"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.

"Solid Waste Management Unit" (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)).

"Technical Area" (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 Permittees' 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 Department's decision has been served on the Permittees or such later time as the Department may specify.
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 SOI)). 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) 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
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 responsible officials of the Permittees (owner/operator), stating: “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to 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.”

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
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 representatives of the Permittees 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
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 representatives of the Permittees 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.


8.12.4.1 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 representatives of the Permittees 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.
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 representatives of the Permittees 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
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 representatives of the Permittees 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
RESOURCE CONSERVATION AND RECOVERY ACT FACILITY OPERATING PERMIT
ATTACHMENTS A THROUGH M

EPA ID No. NM5890110518

issued to the

U.S. DEPARTMENT OF ENERGY/NATIONAL TECHNOLOGY AND ENGINEERING SOLUTIONS OF SANDIA, LLC

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

May 2017
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 operated by National Technology and Engineering Solutions of Sandia, LLC (NTESS).

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 NTESS, a wholly owned subsidiary of Honeywell International 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.
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. Permittees' 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.
Enclosure 4

Summary of Revisions
Hazardous Waste Post-Closure Care Permit
Chemical Waste Landfill

Sandia National Laboratories
NM5890110518
<table>
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<tr>
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<tr>
<td>1</td>
<td>Cover: Post-Closure Care Permit (PCCP)</td>
<td>HAZARDOUS WASTE PERMIT EPA ID No. NM5890110518 to UNITED STATES DEPARTMENT OF ENERGY AND SANDIA CORPORATION for SANDIA NATIONAL LABORATORIES Located in BERNALLILO COUNTY, NEW MEXICO October 2009 prepared by the New Mexico Environment Department Hazardous Waste Bureau 2905 Rodeo Park Drive East Building 1 Santa Fe, New Mexico, 87505</td>
<td>HAZARDOUS WASTE PERMIT EPA ID No. NM5890110518 to UNITED STATES DEPARTMENT OF ENERGY AND NATIONAL TECHNOLOGY AND ENGINEERING SOLUTIONS OF SANDIA, LLC CORPORATION for SANDIA NATIONAL LABORATORIES Located in BERNALLILO COUNTY, NEW MEXICO</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change. Revise date to show effective date of change.</td>
<td>Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
</tr>
<tr>
<td>2</td>
<td>PCCP Part 1, Section 1.1</td>
<td>The Department issues this Post-Closure Care Permit to the United States Department of Energy and Sandia Corporation (the Permittees) pursuant to Section 74-4-10 of the HWA.</td>
<td>The Department issues this Post-Closure Care Permit to the United States Department of Energy and National Technology and Engineering Solutions of Sandia, LLC (NTESS) Corporation, (the Permittees) pursuant to Section 74-4-10 of the HWA.</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change.</td>
<td>Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
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Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.
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<th>Rationale</th>
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<td>PCCP Part 1, Section 1.4</td>
<td>&quot;Permittees&quot; mean Sandia Corporation and the United States Department of Energy.</td>
<td>&quot;Permittees&quot; mean National Technology and Engineering Solutions of Sandia, LLC - Corporation and the United States Department of Energy.</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change.</td>
<td>Class 1 modification.</td>
<td>Administrative and informational changes.</td>
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<tr>
<td>4</td>
<td>PCCP Part 1, Section 1.7</td>
<td>The Sandia contact person is: Vice President Waste Management Operations Sandia National Laboratories P.O. Box 5800, Albuquerque, NM 87185-5800</td>
<td>The Operator: Sandia contact person is: Vice President Waste Management Operations Sandia National Laboratories P.O. Box 5800, Albuquerque, NM 87185-5800</td>
<td>Revise to refer to Operator for consistency with other requirements throughout the PCCP that refer to the Permittees.</td>
<td>Class 1 modification.</td>
<td>Administrative and informational changes.</td>
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<td>5</td>
<td>PCCP Part 2, Section 2.7</td>
<td>Pursuant to 40 C.F.R. § 264.140(c), DOE as an agency of the Federal government is exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145. Pursuant to Pub. L. 108-199 (Jan. 23, 2004), Sandia Corporation is not required to fulfill any financial responsibility requirement relating to closure or post-closure care and monitoring of Sandia National Laboratories and is therefore exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145.</td>
<td>Pursuant to 40 C.F.R. § 264.140(c), DOE as an agency of the Federal government is exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145. Pursuant to Pub. L. 108-199 (Jan. 23, 2004), NTESSS Sandia Corporation is not required to fulfill any financial responsibility requirement relating to closure or post-closure care and monitoring of Sandia National Laboratories and is therefore exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145.</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change.</td>
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### ENCLOSEMENT 4
**SUMMARY OF CHANGES FOR SANDIA NATIONAL LABORATORIES POST-CLOSURE CARE PERMIT**

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<tr>
<td>6</td>
<td>PCCP Attachment 1, Section 1.1</td>
<td>Sandia National Laboratories (the Facility), EPA Identification Number NM5890110518, is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, manages the Facility for the Department of Energy (DOE). Work at the laboratory is also performed for the U.S. Department of Defense and the Nuclear Regulatory Commission as well as other entities. Generation and management of solid, hazardous, and mixed waste occur at the Facility as a result of these activities. The Facility is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base (KAFB) in Bernalillo County (Figure 1).</td>
<td>Sandia National Laboratories (the Facility), EPA Identification Number NM5890110518, is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. National Technology and Engineering Solutions of Sandia, LLC (NTESS) Corporation, a wholly owned subsidiary of Honeywell International/Lockheed Martin Corporation, manages the Facility for the Department of Energy (DOE). Work at the laboratory is also performed for the U.S. Department of Defense and the Nuclear Regulatory Commission as well as other entities. Generation and management of solid, hazardous, and mixed waste occur at the Facility as a result of these activities. The Facility is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base (KAFB) in Bernalillo County (Figure 1).</td>
<td>Revise name of Facility Operator. Change is limited to name only; operational control does not change.</td>
<td>Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
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| 7        | PCCP Attachment 6, Section 6.2.2 | Facility EOC staff shall include an Emergency Director and a staff of Sandia Corporation and Department of Energy (DOE) personnel who are responsible for management decisions and notifications to outside parties that are required during an emergency response. EOC staff personnel shall be available on site at the Facility from 8:00 am to 4:30 pm, Monday through Friday, except for holidays and Facility closure, and shall be on call at all times. | Facility EOC staff shall include an Emergency Director and a staff of Owner and Operator /Sandia Corporation and Department of Energy (DOE) personnel who are responsible for management decisions and notifications to outside parties that are required during an emergency response. EOC staff personnel shall be available on site at the Facility from 8:00 am to 4:30 pm, Monday through Friday, except for holidays and Facility closure, and shall be on call at all times. | Revise to refer to Owner and Operator for consistency with other requirements throughout the PCCP that refer to the Permittees. | Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1 |

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<td>8</td>
<td>PCCP Part 1 PCCP Attachments 1 and 6</td>
<td><strong>Header on each page:</strong> New Mexico Environment Department Sandia National Laboratories October 2009 (revised February 2017) Post-Closure Care Permit NM5890110518</td>
<td>New Mexico Environment Department Sandia National Laboratories October 2009 (revised May February 2017) Post-Closure Care Permit NM5890110518</td>
<td>Revise date to show effective date of change on revised pages.</td>
<td>Class 1 modification. Administrative and informational changes. 20.4.1.900 NMAC, 40 CFR 270.42, Appendix I, Modification A.1</td>
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<tr>
<td>9</td>
<td>PCCP Part 2</td>
<td><strong>Header on each page:</strong> New Mexico Environment Department Sandia National Laboratories October 2009 (Modified February 2017) Post-Closure Care Permit NM5890110518</td>
<td>New Mexico Environment Department Sandia National Laboratories October 2009 (Modified May February 2017) Post-Closure Care Permit NM5890110518</td>
<td>Revise date to show effective date of change on revised pages.</td>
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Enclosure 5

Revisions to PCCP Parts 1 and 2, and PCCP Attachments 1 and 6
Redline/Strikeout Format

Hazardous Waste Post-Closure Care Permit
Chemical Waste Landfill

Sandia National Laboratories
NM5890110518
HAZARDOUS WASTE PERMIT
EPA ID No. NM5890110518

to

UNITED STATES DEPARTMENT OF ENERGY
AND NATIONAL TECHNOLOGY AND ENGINEERING SOLUTIONS OF SANDIA, LLC CORPORATION

for

SANDIA NATIONAL LABORATORIES

Located in

BERNALILLO COUNTY, NEW MEXICO

May 2017 - October 2009

Prepared by the

New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East Building 1
Santa Fe, New Mexico, 87505
PERMIT PART 1: GENERAL PERMIT CONDITIONS

1.0 GENERAL

This Permit Part contains general permit conditions pertaining to post-closure care of the Chemical Waste Landfill (CWL) at the Sandia National Laboratories (SNL) Facility, as permitted under the New Mexico Hazardous Waste Act (HWA), NMSA 1978, §§ 74-4-1 to 74-4-14, and in accordance with the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 to 6992k.

In accordance with 40 C.F.R. § 270.1(c), owners and operators of landfills that received waste after July 26, 1982, or that certified closure after July 26, 1983, must have a Post-Closure Care permit. This permit addresses applicable 40 C.F.R. Part 264 groundwater monitoring, corrective action, and post-closure requirements. The CWL was an interim status landfill that was closed in accordance with 40 C.F.R. Part 265 Subpart G and the 1992 CWL Final Closure Plan, as amended. This Post-Closure Care Permit (the Permit) identifies the post-closure activities that shall be performed at the CWL. This Permit is designed to meet RCRA post-closure care requirements in 40 C.F.R. §§ 264.117 through 264.120 and shall become effective and immediately supersede the CWL Closure Plan (SNL/NM December 1992) upon the date of the Department’s written approval of the Permittees’ certification of the closure of the CWL.

1.1. LEGAL AUTHORITY

The Department issues this Post-Closure Care Permit to the United States Department of Energy and National Technology and Engineering Solutions of Sandia, LLC (NTESS) Corporation (the Permittees) pursuant to Section 74-4-10 of the HWA. Additionally, Section 6001 of RCRA provides, in part, that "[e]ach department, agency, and instrumentality of the executive branch of the Federal Government (1) having jurisdiction over any solid waste management facility or disposal site, or (2) engaged in any activity resulting, or which may result, in the disposal or management of solid waste or hazardous waste shall be subject to, and comply with, all Federal, State, interstate, and local requirements, both substantive and procedural..., respecting control and abatement of solid waste or hazardous waste disposal and management in the same manner, and to the same extent, as any person is subject to such requirements...." [42 U.S.C. § 6961(a)].

Any violation of any condition of this Permit may subject the Permittees, and its officers, employees, successors, and assigns, to a compliance order under Section 74-4-10 of the HWA or Section 3008(a) of RCRA, 42 U.S.C. § 6928(a); to an injunction under Section 74-4-10 of the HWA, Section 3008(a) of RCRA, 42 U.S.C. § 6928(a), or Section 7002(a) of RCRA, 42 U.S.C. § 6972(a); to civil penalties under Section 74-4-10 of the HWA, Section 3008(a) and (g) of RCRA, 42 U.S.C. § 6928(a) and (g), or Section 7002(a) of RCRA, 42 U.S.C. § 6972(a); to criminal penalties under Section 74-4-11 of the HWA or Section 3008(d), (e), and (f) of RCRA, 42 U.S.C. § 6928(d), (e), and (f), or to 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.
“DOE” means the United States Department of Energy, which is a Department of the United States government, and any successor departments or agencies.

“EPA” means the United States Environmental Protection Agency and any successor agencies.

“Facility” means Sandia National Laboratories including all contiguous land, and structures, other appurtenances, and improvements on the land. For the purposes of implementing corrective action under 40 C.F.R. § 264.101, or 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 Subtitle C of RCRA, that is, 40 C.F.R. Parts 260 through 273.

“Hazardous Constituent” or “Hazardous Waste Constituent” means any constituent identified in 40 C.F.R. Part 261 Appendix VIII, or 40 C.F.R. Part 264 Appendix IX.

“Hazardous waste” shall have the meaning set forth in the HWA, Section 74-4-3(K) and the HWMR, 20.4.1 NMAC.

“Hazardous Waste Regulations” or “HWMR” means the New Mexico Hazardous Waste Management Regulations, 20.4.1 NMAC and all provisions of 40 C.F.R. Parts 260 through 273 incorporated therein.

“Permit” means this Permit issued to the Permittees for the Facility, pursuant to the HWA and the HWMR for the Facility to conduct post-closure care of the CWL following the procedures in this Permit, EPA ID No. NM5890110518-2, as it may be modified or amended.


“Release” means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of any hazardous 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).

“Solid Waste” means a solid waste as defined in 40 C.F.R. § 261.2.

“Technical Area” (TA) means a specific parcel of land controlled by Sandia National Laboratories and owned by the DOE.

If, subsequent to the issuance of this Permit, regulations are promulgated which redefine any of the above terms, the Department may, at its discretion, apply the new definition to this Permit.

1.5. **EFFECT OF PERMIT**

The New Mexico Environment Department issues this Permit to the Permittees, the owner and operators of the CWL, located at the Facility (EPA I.D. Number NM5890110518). This Permit requires the Permittees to conduct post-closure care of the CWL, and establishes the general and specific standards for these activities, pursuant to the HWA and the HWMR.

1.5.1. **Compliance with Permit (Permit Shield)**

Compliance with this Permit during its term constitutes compliance, for purposes of enforcement,
The DOE contact person is:

Site Office Manager
U.S. Department of Energy
P.O. Box 5400,
Albuquerque, NM 87185-0184

The Operator Sandia contact person is:

Vice President
Waste Management Operations
Sandia National Laboratories
P.O. Box 5800,
Albuquerque, NM 87185-5800

All reports required by the permit shall be signed by a responsible corporate officer or principal executive officer or their duly authorized representatives in accordance with 40 C.F.R. § 270.11(b).

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.

1.8. DUTIES AND REQUIREMENTS

1.8.1. Duty to Comply

In accordance with 40 C.F.R. § 270.30(a), the Permittees shall comply with all conditions in this Permit, except to the extent and for the duration such noncompliance is authorized in an emergency permit specified in 40 C.F.R § 270.61. Any Permit noncompliance, except under the terms of an emergency permit, constitutes a violation of HWA and RCRA and may subject the Permittees, its successors and assigns, officers, directors, employees, parents, or subsidiaries, to:

1. An administrative or civil enforcement action, including civil penalties and injunctive relief, as specified under Section 74-4-10 of the HWA or Sections 3008(a) and (g), 7002, or 7003 of RCRA;
2. Permit modification, suspension, or revocation, or to denial of a permit application or modification request, under Section 74-4-4.2 of the HWA; or
3. Criminal fines or imprisonment under the HWA, NMSA § 74-4-11, or Section 3008(d), (e), or (f) of RCRA; or to a combination of the foregoing.

1.8.2. Need to Halt or Reduce Activity Not a Defense

In accordance with 40 C.F.R. § 270.30(c), it shall not be a defense for the Permittees in an enforcement action that it would have been necessary for the Permittees to halt or reduce the permitted activities in order to maintain compliance with the terms of this Permit.

1.8.3. Duty to Mitigate

In accordance with 40 C.F.R. § 270.30(d), in the event of noncompliance with this Permit, the Permittees shall take all reasonable steps to minimize releases to the environment, and shall carry out
2.6.6. Certification of Completion of Post-Closure Care

In accordance with 40 C.F.R. § 264.120, within 60 days of the end of the post-closure care period for the CWL, the Permittees shall submit to the Department, by registered mail, a written certification that post-closure care for the CWL was performed in accordance with the specifications of this Permit. Responsible officials of the Permittees, as well as an independent professional engineer, registered in the State of New Mexico, shall sign the certification. The Permittees shall furnish documentation supporting the independent registered professional engineer’s certification of completion of post-closure care to the Department upon request and at cost to the Permittees. In addition, the Permittees shall prepare a final post-closure care report containing, in an appendix, all Post-Closure Care Inspection Forms (PCIFs) generated during the post-closure care period. The final post-closure care report shall summarize pertinent PCIF information regarding post-closure care and compliance monitoring, inspections, maintenance, and repair activities and any variances from this Permit and the reasons for the variances, summarize results of groundwater and soil gas monitoring conducted during the compliance and post-closure care periods, and summarize the results of any corrective actions taken. The final post-closure care report shall be provided with the certification to the Department for approval 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 the post-closure care period for the CWL. 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 in accordance with 40 C.F.R. 264.117(a)(2)(ii).

2.7. COST ESTIMATE AND FINANCIAL ASSURANCE FOR FACILITY POST-CLOSURE CARE

Pursuant to 40 C.F.R. § 264.140(c), DOE as an agency of the Federal government is exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145. Pursuant to Pub. L. 108-199 (Jan. 23, 2004), NTESS Sandia Corporation is not required to fulfill any financial responsibility requirement relating to closure or post-closure care and monitoring of Sandia National Laboratories and is therefore exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145.

2.8. FINANCIAL RESPONSIBILITY

Reserved.

2.9. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The Permittees shall maintain at the Facility, until post-closure care is approved as completed by the Department, the following documents and all amendments, revisions, and modifications to these documents:

1. This Permit and its Attachments;

2. The Inspection Plan described in Permit Attachment 1 and the inspection schedules and results in accordance with 40 C.F.R. § 264.15(b);
PERMIT ATTACHMENT 1: POST-CLOSURE CARE PLAN FOR THE CHEMICAL WASTE LANDFILL

1.0 INTRODUCTION

This Permit Attachment presents general information and provides the context by which post-closure care activities at the Chemical Waste Landfill (CWL) shall be conducted.

1.1. GENERAL DESCRIPTION OF THE FACILITY

Sandia National Laboratories (the Facility), EPA Identification Number NM5890110518, is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. National Technology and Engineering Solutions of Sandia, LLC (NTESS) Corporation, a wholly owned subsidiary of Honeywell International, Lockheed Martin Corporation, manages the Facility for the Department of Energy (DOE). Work at the laboratory is also performed for the U.S. Department of Defense and the Nuclear Regulatory Commission as well as other entities. Generation and management of solid, hazardous, and mixed waste occur at the Facility as a result of these activities. The Facility is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base (KAFB) in Bernalillo County (Figure 1).

1.2. LOCATION, CONDITIONS, AND DESCRIPTION OF THE CWL

1.2.1. Location and General Description

The CWL is a 1.9-acre site located in the southeast corner of Technical Area (TA) III (TA-III). A Facility map, which shows the topography of the area, the location of the TAs, and the location of the CWL is presented in Figure 1. A more detailed map of TA-III is presented in Figure 2.

The regional aquifer is located within the Santa Fe Group, with the water table at a depth of approximately 485 feet below ground surface (bgs). Groundwater appears to flow toward the northwest at a rate of approximately 2 feet per year (SNL/NM December 1992; SNL/NM May 1993).

Several major well fields have been developed in the regional aquifer to supply drinking water to Albuquerque, KAFB, and surrounding areas. The closest well field is located approximately 4 miles north-northwest and down gradient of the CWL. Within that well field, the closest down gradient water supply well is KAFB-4, located approximately 4.3 miles north-northwest of the CWL. Water levels at the CWL have been declining at an approximate rate of 0.6 feet/year. Over the past 15 years, the water level has decreased by approximately 9 feet at the CWL (SNL/NM July 2004).

The surface winds at the Facility are light. Winds from the east and southwest are particularly common and generally less than 8 miles per hour (Figure 3).

From 1962 until 1981, the CWL was used for the disposal of chemical, radioactive, and solid waste generated by research activities at the Facility. The CWL was used as a hazardous waste storage unit from 1981 to 1989. Disposal of liquid waste in unlined pits and trenches ended in 1981, and after 1982 all liquid waste disposal was terminated. From 1982 through 1985, only solid waste was disposed of at the CWL. Waste disposal at the landfill after 1982 included the disposal of hazardous waste. After 1985 all waste disposal ended. After 1989, the CWL was no longer used as a hazardous waste storage unit.
After an incident or emergency, the EC shall ensure that the CWL and equipment are cleaned, waste is properly managed and disposed of, the CWL is safe, and all information necessary for notifications and reports is provided to Facility personnel, as outlined in Section 6.6.

In the event that the EC is not on site or immediately available during an incident or emergency, an alternate EC shall be contacted. The names, addresses, and phone numbers of the primary and alternate ECs for the CWL are included in Table 6-5. The EC or alternate EC shall be on site or immediately available during sampling and analysis events.

6.2.2. Emergency Response Groups

The Facility ERO consists of two response groups that respond to an emergency situation: (1) a field response group led by an IC under the Incident Command System (ICS) and (2) an EOC cadre. The ICS also includes Facility Security, the KAFB Fire Department, and the Facility personnel with relevant technical skills. An IC shall be on site at the Facility at all times (24 hours per day, 7 days per week). Facility security personnel shall also be available at all times. The Permittees shall maintain their MOU with the 377th Air Base Wing of KAFB for fire protection and other support as referenced in Section 6.2.4 of this Permit Attachment. Facility technical personnel are available on site from 8:00 am to 4:30 pm Monday through Friday and are on call the rest of the time. Facility EOC staff shall include an Emergency Director and a staff of Owner and Operator Sandia Corporation and Department of Energy (DOE) personnel who are responsible for management decisions and notifications to outside parties that are required during an emergency response. EOC staff personnel shall be available on site at the Facility from 8:00 am to 4:30 pm, Monday through Friday, except for holidays and Facility closure, and shall be on call at all times.

In the field, the IC shall maintain overall management and control of response operations during an emergency. The IC shall work in a unified command with the KAFB Fire Department and in concert with safety personnel, CWL personnel, and other emergency responders to develop and execute response plans, including on-site protective actions and recommendations for off-site protective actions. The ICS system shall be implemented at the time an emergency occurs and shall be expanded to control the emergency as needs arise, and shall remain in effect until the need for emergency management no longer exists.

6.2.3. Emergency Chain of Command

When the EC is notified of an incident, he shall first determine if the procedures for emergencies should be implemented. If an incident is an emergency, the EC shall manage the emergency response until the IC arrives at the CWL, then the EC will relinquish control to the IC. If possible, the EC shall maintain communication with the IC by telephone or radio before the IC arrives at the CWL. The EC shall remain at the CWL and assist in the emergency response as directed by the IC. The EC shall advise the IC, as needed, on CWL operations, CWL layout, characteristics of hazardous waste on site, location of records, radio and cellular communication systems, and other information as necessary to respond to the emergency.

The Facility IC is the liaison for communications with other emergency response organizations and functions, including medical and fire protection support. The EC can request both medical and fire protection services, if necessary, at the same time that he/she notifies the IC of an emergency.
Enclosure 6

Revised Pages, Final

Hazardous Waste Post-Closure Care Permit
Chemical Waste Landfill

Sandia National Laboratories
NM5890110518
HAZARDOUS WASTE PERMIT
EPA ID No. NM5890110518

to

UNITED STATES DEPARTMENT OF ENERGY
AND NATIONAL TECHNOLOGY AND ENGINEERING SOLUTIONS OF SANDIA, LLC

for

SANDIA NATIONAL LABORATORIES

Located in

BERNALILLO COUNTY, NEW MEXICO

May 2017

Prepared by the

New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East Building 1
Santa Fe, New Mexico, 87505
PERMIT PART 1: GENERAL PERMIT CONDITIONS

1.0 GENERAL

This Permit Part contains general permit conditions pertaining to post-closure care of the Chemical Waste Landfill (CWL) at the Sandia National Laboratories (SNL) Facility, as permitted under the New Mexico Hazardous Waste Act (HWA), NMSA 1978, §§ 74-4-1 to 74-4-14, and in accordance with the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 to 6992k.

In accordance with 40 C.F.R. § 270.1(c), owners and operators of landfills that received waste after July 26, 1982, or that certified closure after July 26, 1983, must have a Post-Closure Care permit. This permit addresses applicable 40 C.F.R. Part 264 groundwater monitoring, corrective action, and post-closure requirements. The CWL was an interim status landfill that was closed in accordance with 40 C.F.R. Part 265 Subpart G and the 1992 CWL Final Closure Plan, as amended. This Post-Closure Care Permit (the Permit) identifies the post-closure activities that shall be performed at the CWL. This Permit is designed to meet RCRA post-closure care requirements in 40 C.F.R. §§ 264.117 through 264.120 and shall become effective and immediately supersede the CWL Closure Plan (SNL/NM December 1992) upon the date of the Department's written approval of the Permittees' certification of the closure of the CWL.

1.1. LEGAL AUTHORITY

The Department issues this Post-Closure Care Permit to the United States Department of Energy and National Technology and Engineering Solutions of Sandia, LLC (NTESS) (the Permittees) pursuant to Section 74-4-10 of the HWA. Additionally, Section 6001 of RCRA provides, in part, that "[e]ach department, agency, and instrumentality of the executive branch of the Federal Government (1) having jurisdiction over any solid waste management facility or disposal site, or (2) engaged in any activity resulting, or which may result, in the disposal or management of solid waste or hazardous waste shall be subject to, and comply with, all Federal, State, interstate, and local requirements, both substantive and procedural..., respecting control and abatement of solid waste or hazardous waste disposal and management in the same manner, and to the same extent, as any person is subject to such requirements...." [42 U.S.C. § 6961(a)].

Any violation of any condition of this Permit may subject the Permittees, and its officers, employees, successors, and assigns, to a compliance order under Section 74-4-10 of the HWA or Section 3008(a) of RCRA, 42 U.S.C. § 6928(a); to an injunction under Section 74-4-10 of the HWA, Section 3008(a) of RCRA, 42 U.S.C. § 6928(a), or Section 7002(a) of RCRA, 42 U.S.C. § 6972(a); to civil penalties under Section 74-4-10 of the HWA, Section 3008(a) and (g) of RCRA, 42 U.S.C. § 6928(a) and (g), or Section 7002(a) of RCRA, 42 U.S.C. § 6972(a); to criminal penalties under Section 74-4-11 of the HWA or Section 3008(d), (e), and (f) of RCRA, 42 U.S.C. § 6928(d), (e), and (f), or to 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.
“DOE” means the United States Department of Energy, which is a Department of the United States government, and any successor departments or agencies.

“EPA” means the United States Environmental Protection Agency and any successor agencies.

“Facility” means Sandia National Laboratories including all contiguous land, and structures, other appurtenances, and improvements on the land. For the purposes of implementing corrective action under 40 C.F.R. § 264.101, or 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 Subtitle C of RCRA, that is, 40 C.F.R. Parts 260 through 273.

“Hazardous Constituent” or “Hazardous Waste Constituent” means any constituent identified in 40 C.F.R. Part 261 Appendix VIII, or 40 C.F.R. Part 264 Appendix IX.

“Hazardous waste” shall have the meaning set forth in the HWA, Section 74-4-3(K) and the HWMR, 20.4.1 NMAC.

“Hazardous Waste Regulations” or “HWMR” means the New Mexico Hazardous Waste Management Regulations, 20.4.1 NMAC and all provisions of 40 C.F.R. Parts 260 through 273 incorporated therein.

“Permit” means this Permit issued to the Permittees for the Facility, pursuant to the HWA and the HWMR for the Facility to conduct post-closure care of the CWL following the procedures in this Permit, EPA ID No. NM5890110518-2, as it may be modified or amended.

“Permittees” mean National Technology and Engineering Solutions of Sandia, LLC and the United States Department of Energy.


"Release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of any hazardous 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).

“Solid Waste” means a solid waste as defined in 40 C.F.R. § 261.2.

“Technical Area” (TA) means a specific parcel of land controlled by Sandia National Laboratories and owned by the DOE.

If, subsequent to the issuance of this Permit, regulations are promulgated which redefine any of the above terms, the Department may, at its discretion, apply the new definition to this Permit.

1.5. EFFECT OF PERMIT

The New Mexico Environment Department issues this Permit to the Permittees, the owner and operators of the CWL, located at the Facility (EPA I.D. Number NM5890110518). This Permit requires the Permittees to conduct post-closure care of the CWL, and establishes the general and specific standards for these activities, pursuant to the HWA and the HWMR.

1.5.1. Compliance with Permit (Permit Shield)

Compliance with this Permit during its term constitutes compliance, for purposes of enforcement, with 40 C.F.R. Parts 264 and 268, only for those management practices specifically authorized by
this permit. The Permittees must also comply with 40 C.F.R. Parts 260, 261, 262, and 263; to the extent the requirements of those Parts are applicable. The Permittees must also comply with all applicable self-implementing provisions imposed by statute or rule. Compliance with this Permit shall not constitute a defense to any order issued or any action brought under HWA, NMSA 1978, § 74-4-10(E) or § 74-4-13; RCRA § 3008(a), § 3008(h), § 3013, § 7002. or § 7003; the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. § 9601 et seq., or any other law providing for protection of public health or the environment. Pursuant to 40 C.F.R. § 270.4 and § 270.30(g), 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 in accordance with 40 C.F.R. § 270.4 and § 270.30(g).

The complete Permit consists of Permit Parts 1 through 3 and Permit Attachments 1 through 6 as follows.

<table>
<thead>
<tr>
<th>Part 1</th>
<th>General Permit Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 2</td>
<td>General Facility Conditions</td>
</tr>
<tr>
<td>Part 3</td>
<td>Post-Closure Care Requirements for the Chemical Waste Landfill</td>
</tr>
<tr>
<td>Attachment 1</td>
<td>Post-Closure Care Plan for the Chemical Waste Landfill</td>
</tr>
<tr>
<td>Attachment 2</td>
<td>Groundwater Sampling and Analysis Plan</td>
</tr>
<tr>
<td>Attachment 3</td>
<td>Soil-Gas Sampling and Analysis Plan</td>
</tr>
<tr>
<td>Attachment 4</td>
<td>Inspection Forms</td>
</tr>
<tr>
<td>Attachment 5</td>
<td>Personnel Training Program</td>
</tr>
<tr>
<td>Attachment 6</td>
<td>Contingency Plan</td>
</tr>
</tbody>
</table>

1.6. PERMIT ACTIONS

1.6.1. Term of Permit

This Permit shall be effective for a fixed period of 10 years from the effective date as specified in Section 1.0 of this Permit, in accordance with 40 C.F.R. § 270.50(a), subject to Section 1.6.2 of this Permit Part.

1.6.2. Permit Modification, Suspension, Revocation, and Termination

1.6.2.1. Permit Modification

If at any time for any of the reasons specified in 40 C.F.R. § 270.41, the Department determines that modification of this Permit is necessary, in accordance with 20.4.1.901 NMAC, the Department may modify or revoke and reissue the Permit accordingly.

1.6.2.2. Permit Modification at the Request of the Permittees

The Permittees may initiate permit modifications in accordance with 40 C.F.R. § 270.42 and 20.4.1.901 NMAC. All applicable requirements specified in 40 C.F.R. § 270.42 shall be followed.
The DOE contact person is:
Site Office Manager  
U.S. Department of Energy  
P.O. Box 5400,  
Albuquerque, NM 87185-0184

The Operator contact person is:
Vice President  
Waste Management Operations  
Sandia National Laboratories  
P.O. Box 5800,  
Albuquerque, NM 87185-5800

All reports required by the permit shall be signed by a responsible corporate officer or principal executive officer or their duly authorized representatives in accordance with 40 C.F.R. § 270.11(b). 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.

1.8. DUTIES AND REQUIREMENTS

1.8.1. Duty to Comply
In accordance with 40 C.F.R. § 270.30(a), the Permittees shall comply with all conditions in this Permit, except to the extent and for the duration such noncompliance is authorized in an emergency permit specified in 40 C.F.R. § 270.61. Any Permit noncompliance, except under the terms of an emergency permit, constitutes a violation of HWA and RCRA and may subject the Permittees, its successors and assigns, officers, directors, employees, parents, or subsidiaries, to:

1. An administrative or civil enforcement action, including civil penalties and injunctive relief, as specified under Section 74-4-10 of the HWA or Sections 3008(a) and (g), 7002, or 7003 of RCRA;

2. Permit modification, suspension, or revocation, or to denial of a permit application or modification request, under Section 74-4-4.2 of the HWA; or

3. Criminal fines or imprisonment under the HWA, NMSA § 74-4-11, or Section 3008(d), (e), or (f) of RCRA; or to a combination of the foregoing.

1.8.2. Need to Halt or Reduce Activity Not a Defense
In accordance with 40 C.F.R. § 270.30(c), it shall not be a defense for the Permittees in an enforcement action that it would have been necessary for the Permittees to halt or reduce the permitted activities in order to maintain compliance with the terms of this Permit.

1.8.3. Duty to Mitigate
In accordance with 40 C.F.R. § 270.30(d), in the event of noncompliance with this Permit, the Permittees shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.
2.6.6. Certification of Completion of Post-Closure Care

In accordance with 40 C.F.R. § 264.120, within 60 days of the end of the post-closure care period for the CWL, the Permittees shall submit to the Department, by registered mail, a written certification that post-closure care for the CWL was performed in accordance with the specifications of this Permit. Responsible officials of the Permittees, as well as an independent professional engineer, registered in the State of New Mexico, shall sign the certification. The Permittees shall furnish documentation supporting the independent registered professional engineer’s certification of completion of post-closure care to the Department upon request and at cost to the Permittees. In addition, the Permittees shall prepare a final post-closure care report containing, in an appendix, all Post-Closure Care Inspection Forms (PCIFs) generated during the post-closure care period. The final post-closure care report shall summarize pertinent PCIF information regarding post-closure care and compliance monitoring, inspections, maintenance, and repair activities and any variances from this Permit and the reasons for the variances, summarize results of groundwater and soil gas monitoring conducted during the compliance and post-closure care periods, and summarize the results of any corrective actions taken. The final post-closure care report shall be provided with the certification to the Department for approval 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 the post-closure care period for the CWL. 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 in accordance with 40 C.F.R. 264.117(a)(2)(ii).

2.7. COST ESTIMATE AND FINANCIAL ASSURANCE FOR FACILITY POST-CLOSURE CARE

Pursuant to 40 C.F.R. § 264.140(c), DOE as an agency of the Federal government is exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145. Pursuant to Pub. L. 108-199 (Jan. 23, 2004), NTESS is not required to fulfill any financial responsibility requirement relating to closure or post-closure care and monitoring of Sandia National Laboratories and is therefore exempt from the requirement to provide a cost estimate for post-closure care as required by 40 C.F.R. § 264.144 and to provide for financial assurance for post-closure care as required by 40 C.F.R. § 264.145.

2.8. FINANCIAL RESPONSIBILITY

Reserved.

2.9. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

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1.2. LOCATION, CONDITIONS, AND DESCRIPTION OF THE CWL

1.2.1. Location and General Description

The CWL is a 1.9-acre site located in the southeast corner of Technical Area (TA) III (TA-III). A Facility map, which shows the topography of the area, the location of the TAs, and the location of the CWL is presented in Figure 1. A more detailed map of TA-III is presented in Figure 2.

The regional aquifer is located within the Santa Fe Group, with the water table at a depth of approximately 485 feet below ground surface (bgs). Groundwater appears to flow toward the northwest at a rate of approximately 2 feet per year (SNL/NM December 1992; SNL/NM May 1993).

Several major well fields have been developed in the regional aquifer to supply drinking water to Albuquerque, KAFB, and surrounding areas. The closest well field is located approximately 4 miles north-northwest and down gradient of the CWL. Within that well field, the closest down gradient water supply well is KAFB-4, located approximately 4.3 miles north-northwest of the CWL. Water levels at the CWL have been declining at an approximate rate of 0.6 feet/year. Over the past 15 years, the water level has decreased by approximately 9 feet at the CWL (SNL/NM July 2004).

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After an incident or emergency, the EC shall ensure that the CWL and equipment are cleaned, waste is properly managed and disposed of, the CWL is safe, and all information necessary for notifications and reports is provided to Facility personnel, as outlined in Section 6.6.

In the event that the EC is not on site or immediately available during an incident or emergency, an alternate EC shall be contacted. The names, addresses, and phone numbers of the primary and alternate ECs for the CWL are included in Table 6-5. The EC or alternate EC shall be on site or immediately available during sampling and analysis events.

6.2.2. Emergency Response Groups

The Facility ERO consists of two response groups that respond to an emergency situation: (1) a field response group led by an IC under the Incident Command System (ICS) and (2) an EOC cadre. The ICS also includes Facility Security, the KAFB Fire Department, and the Facility personnel with relevant technical skills. An IC shall be on site at the Facility at all times (24 hours per day, 7 days per week). Facility security personnel shall also be available at all times. The Permittees shall maintain their MOU with the 377th Air Base Wing of KAFB for fire protection and other support as referenced in Section 6.2.4 of this Permit Attachment. Facility technical personnel are available on site from 8:00 am to 4:30 pm Monday through Friday and are on call the rest of the time. Facility EOC staff shall include an Emergency Director and a staff of Owner and Operator personnel who are responsible for management decisions and notifications to outside parties that are required during an emergency response. EOC staff personnel shall be available on site at the Facility from 8:00 am to 4:30 pm, Monday through Friday, except for holidays and Facility closure, and shall be on call at all times.

In the field, the IC shall maintain overall management and control of response operations during an emergency. The IC shall work in a unified command with the KAFB Fire Department and in concert with safety personnel, CWL personnel, and other emergency responders to develop and execute response plans, including on-site protective actions and recommendations for off-site protective actions. The ICS system shall be implemented at the time an emergency occurs and shall be expanded to control the emergency as needs arise, and shall remain in effect until the need for emergency management no longer exists.

6.2.3. Emergency Chain of Command

When the EC is notified of an incident, he shall first determine if the procedures for emergencies should be implemented. If an incident is an emergency, the EC shall manage the emergency response until the IC arrives at the CWL, then the EC will relinquish control to the IC. If possible, the EC shall maintain communication with the IC by telephone or radio before the IC arrives at the CWL. The EC shall remain at the CWL and assist in the emergency response as directed by the IC. The EC shall advise the IC, as needed, on CWL operations, CWL layout, characteristics of hazardous waste on site, location of records, radio and cellular communication systems, and other information as necessary to respond to the emergency.

The Facility IC is the liaison for communications with other emergency response organizations and functions, including medical and fire protection support. The EC can request both medical and fire protection services, if necessary, at the same time that he/she notifies the IC of an emergency.