RESOURCE CONSERVATION AND RECOVERY ACT
HAZARDOUS WASTE TREATMENT UNITS
DRAFT FACILITY OPERATING PERMIT
EPA ID No. NM9570042243

to

UNITE STATES DEPARTMENT OF DEFENSE

for the

OPEN BURNING AND OPEN DETONATION TREATMENT UNITS

Located at

KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO

Prepared by the

NEW MEXICO ENVIRONMENT DEPARTMENT
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PERMIT PART 1: GENERAL PERMIT CONDITIONS

1.0 INTRODUCTION

This Part (1) contains general permit conditions pertaining to hazardous waste treatment at the Open Burn (OB) and Open Detonation (OD) Units at the Kirtland Air Force Base (KAFB) Facility, as permitted under the New Mexico Hazardous Waste Act (HWA), NMSA 1978, §§ 74-4-1 to 74-4-14.

1.1. LEGAL AUTHORITY

Pursuant to Section 74-4-10 of the HWA, the New Mexico Environment Department (the **Department**) issues this Permit to the U.S. Department of Defense, hereafter referred to as the **Permittee**, the owner and operator of the Open Burn Unit and Open Detonation Unit, with U.S. Environmental Protection Agency (EPA) ID Number NM9570024423, located in Bernalillo County, New Mexico. Additionally, Section 6001 of the Resource Conservation and Recovery Act (RCRA) provides, in part, that "each 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].

1.2. PERMITTED ACTIVITY

The Department issues this Permit to the Permittee, the owner and operator of the Open Burn Unit and Open Detonation Unit located at the Explosive Ordnance Disposal (EOD) Range on Kirtland Air Force Base (EPA I.D. Number NM9570024423). This Permit authorizes the Permittee to manage and treat on-site and off-site generated hazardous wastes, including Explosive Wastes, at the Open Burn Unit and Open Detonation Unit, and establishes the general and specific standards for these activities, as required by the HWA as amended, NMSA 1978, §§ 74-4-1 to 74-4-14, and the New Mexico Hazardous Waste Management Regulations (HWMR) 20.4.1 NMAC. This Permit also establishes standards for closure and post-closure care of hazardous waste management units at the Facility pursuant to the HWA and the HWMR.

The Permittee owns and operates the following Permitted Units:

a. One Thermal Treatment Unit composed of an explosive ordnance treatment unit used for open detonation of hazardous wastes, including Explosive Wastes.
b. One Thermal Treatment Unit composed of an open burning container device used for thermal treatment of hazardous wastes, including Explosive Wastes.

This Permit authorizes the management and treatment of hazardous wastes, including Explosive Wastes, only at the Open Burn Unit and Open Detonation Unit located at the EOD Range and at no other locations at the Facility.

This Permit does not authorize the open burning or open detonation of firearms or contraband that

are not reactive or ignitable hazardous waste.

1.2.1. Compliance with Permit

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 Permittee must also comply with 40 C.F.R. Parts 260, 261, 262, and 263 to the extent the requirements of those sections are applicable. The Permittee 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), 74-4-10.1, 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 to 9675, or any other 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 does this Permit 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), which are incorporated herein by reference.

1.2.2. Effect of Inaccuracies in Permit Application

This Permit is based on the information submitted in the Part B Permit application dated November 2005 and subsequent information, referred to as the Application. Any inaccuracies found in the Application may be grounds for the termination, revocation and reissuance, or modification of this Permit pursuant to 40 C.F.R. § 270.43(a)(2). Where and when the Permittee becomes aware that it failed to submit any relevant facts in the Application, or submitted incorrect information in the Application or in any report to the Department, it shall promptly submit such facts or information pursuant to 40 C.F.R. § 270.30(l)(11).

1.3. PERMIT CITATIONS

Whenever the Permit cites a provision of 20.4.1 NMAC or 40 C.F.R. 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 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.

1.4. 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.

1.5. CONFLICT IN LANGUAGE

If there is a conflict between the language of a Permit Condition and the language of a Permit Attachment, where the Attachment includes text provided by the Permittee that is not expressly written by the Department, then the language of the Permit Condition shall control the language in the Permit Attachment. This Permit and 40 C.F.R. Parts 264, 266 and 268 establish the minimum requirements for the design, construction, operation, and maintenance of the Open Burn Unit and Open Detonation Unit. Any language in an attachment, which states or implies any discretion as to whether to comply with the minimum requirements of this Permit or 40 C.F.R. § 270.32(b)(1) is not effective and the requirements of this Permit and 40 C.F.R. § 270.32(b)(1) shall control.

1.6. 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, pursuant 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.

"Area of Concern" (AOC) means any area of the Facility under the control or ownership of the Permittee, which is not a solid waste management unit where a release of a hazardous waste or hazardous constituent has occurred, is suspected to have occurred, or may occur, regardless of the frequency or duration of the release. An area of concern includes areas and structures at which releases of hazardous waste or hazardous constituents were not remediated, including one time and accidental events.

"**CMI**" means Corrective Measures Implementation.

"**CMS**" means Corrective Measures Study.

"Corrective Measures" means all corrective action necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any Solid Waste Management Unit or AOC at the Facility, regardless of the time at which waste was placed in the unit, as required under Section 74-4-4.2(B) of the HWA and 40 C.F.R. § 264.101. Corrective Measures may address releases to air, soil, sediment, surface water, or groundwater.

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

"**Department"** means the New Mexico Environment Department and any successor agencies.

"EOD" means Explosives Ordnance Disposal

"**EPA**" means the United States Environmental Protection Agency and any successor agencies.

"**Explosive Wastes**" are explosive products that have expired or are unserviceable, or have otherwise been discarded. These include explosives, blasting agents and detonators. Explosive wastes also include, but are not limited to, discarded munitions; dynamite and other high explosives; slurries; emulsions and water gels; black powder and pellet powder; initiating explosives; blasting caps; safety fuse; squibs (electric matches); detonating cords; igniting cords; propellant explosives; and pyrotechnics (Source: *RCRA Guideline Manual for Permitting Open Burn Unit and Open Detonation Unit, Institute of Makers of Explosives*).

"Extent of contamination" means the horizontal and vertical area in which the concentrations of waste or hazardous constituents in the environmental media being investigated are above detection limits or background concentrations indicative of the region, whichever is appropriate, as determined by the Department.

"Facility" or "KAFB Facility" means Kirtland Air Force Base, including all contiguous land, structures, other appurtenances, and improvements on the land. For the purpose of implementing corrective action under 40 C.F.R. § 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 (See Map 1-1 in Permit Attachment 1, General Facility Information).

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

"Hazardous constituent" means any constituent identified in Appendix VIII of 40 C.F.R. Part 261, or any constituent identified in Appendix IX of 40 C.F.R. Part 264, incorporated by 20.4.1 NMAC.

"Hazardous waste" means a solid waste that is not excluded from regulation under 40 C.F.R. § 261.4(b), and that either is listed in 40 C.F.R. Part 261, Subpart D, exhibits any of the characteristics identified in 40 C.F.R. Part 261, Subpart C, or is a mixture of solid waste and one or more wastes listed in 40 C.F.R. Part 261, Subpart D. However, for purposes of corrective action, "hazardous waste" shall have the meaning set forth in the HWA, Section 74-4-3(K).

"**Hazardous waste regulations**" or "**Hazardous Waste Management Regulations**" 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.

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

"NMED" means New Mexico Environment Department.

"Off-site source" means a generator of Hazardous Waste located within the United States but outside the Permittee's Facility boundary.

"Open Burning" means the destruction of Explosive Wastes or munitions by self-sustained combustion, which is ignited by an external source, such as flame, heat, or a detonation wave without controlling the temperature and rate of combustion.

"**Open Detonation**" means the destruction of detonable explosives and munitions by the propagation of a high frequency energetic wave from a disposal charge to explosive or otherwise reactive wastes.

"**Permit**" means this Permit, issued to the Permittee for the Facility, pursuant to the HWA and the New Mexico Hazardous Waste Management Regulations to operate open burn and open detonation hazardous waste treatment units (OB Unit and OD Unit) at the Facility, EPA ID No. NM9570024423, as it may be modified or amended.

"**Permittee**" means U.S. Department of Defense, which is a Department in the U.S. Government.

"**RCRA**" means the Resource Conservation and Recovery Act of 1980, as amended, 42 U.S.C. §§ 6901 to 6992k.

"**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).

"**Remediation waste**" means all solid and hazardous wastes, and all media (including groundwater, surface water, soil, and sediment) and debris, which contain listed hazardous wastes or which exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action requirements. Remediation wastes may originate from releases that extend beyond the Facility boundaries.

"Secretary" means the Secretary of the New Mexico Environment Department or his designee or authorized representative.

"**Solid waste**" means a solid waste as defined in 40 C.F.R. § 261.2.

"Solid waste management unit" (**SWMU**) means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at the Facility at which solid wastes have been routinely and systematically released.

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.

1.7. THE COMPLETE PERMIT

The complete Permit consists of the regulations incorporated by reference into this Permit, the Permit Conditions in Permit Parts 1 through 5 and Permit Attachments 1 through 10 as follows.

Part 1 - General Permit Conditions

Part 2 - General Facility Conditions

Part 3 - Open Burn and Open Detonation

Part 4 - Corrective Action: General Provisions and Procedures

Part 5	-	Corrective Action: Investigation Methods and Procedures and Special Requirements for Information Submittals and Corrective Measures
Part 6		Technical Requirements
Attachment 1	-	General Facility Information
Attachment 2	-	Design and Operation of the Open Burn and Open Detonation Units
Attachment 3	-	Air Modeling
Attachment 4	-	Lists of Authorized Wastes
Attachment 5	-	Waste Analysis Plan
Attachment 6	-	Soil Sampling and Analysis Plan
Attachment 7	-	Inspection Plan
Attachment 8	-	Contingency Plan
Attachment 9	-	Personnel Training Plan
Attachment 10	-	Closure Plan

1.8. TERM OF THE PERMIT

This Permit shall be effective for a fixed period of ten (10) years from the effective date of issuance as specified in the Permit certificate, and as required by 40 C.F.R. § 270.50(a).

1.9. PERMIT ACTIONS

1.9.1. Permit Modification, Suspension, Revocation, and Termination

1. This Permit may be modified, suspended, revoked or terminated for cause in accordance with the provisions of HWA, NMSA 1978, § 74-4-4.2 and 40 C.F.R. §§ 270.41 through 270.43. The filing of a request by the Permittee 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), which is incorporated herein by reference.
2. If at any time for any of the reasons specified in 40 C.F.R. § 270.41, which is incorporated herein by reference, the Department determines that modification of this Permit is necessary, the Department may initiate a Permit modification or require the Permittee to request a Permit modification in accordance with Conditions 1.9.1.3 and 1.9.2 of this Permit Part (1) or may initiate a modification in accordance with 20.4.1.901 NMAC.
3. The Permittee may request permit modifications in accordance with 40 C.F.R. § 270.42. All applicable requirements specified in 40 C.F.R. § 270.42 and 20.4.1.900 NMAC shall be followed.
4. Modifications to the Permit do not constitute a reissuance of the Permit.

1.9.2. Unclassified Permit Modifications

Unless a permit modification is explicitly listed in Appendix I of 40 C.F.R. 270.42 as a Class 1 or 2 permit modification, the Permittee shall not submit the proposed permit modification as a Class 1 or 2 permit modification. The Permittee may only make such a permit modification as a Class 3 modification, or may request a determination from the Department that the proposed permit modification be reviewed and approved as a Class 1 or 2 modification pursuant to the requirements specified in 40 C.F.R. 270.42(d)(1), which is incorporated herein by reference.

1.10. TRANSFER OF LAND OWNERSHIP

The Permittee shall submit a permit modification request, in compliance with all requirements of 40 C.F.R. 270.42, at least 180 calendar days prior to the proposed effective date of transfer of ownership of any land which is part of the Facility. The permit modification request may be submitted as a Class 3 permit modification, or the Permittee may request a determination that the modification is a Class 1 or 2 pursuant to the requirements of 40 C.F.R. 270.42(d). In addition to the requirements of 40 C.F.R. 270.42, a permit modification request for transfer of land that is part of the Facility shall:

1. Identify the boundaries of the land proposed for transfer;
2. Describe the location and identity of any existing or prior SWMU, AOC, or hazardous waste management unit on the land proposed for transfer;
3. Describe any known or suspected presence of hazardous waste or hazardous constituents in soil, groundwater, or any other media at any depth within the boundaries of the land proposed for transfer;
4. Describe the status of any past, present, or planned investigations or remediation of any release of hazardous waste or hazardous constituents within the boundaries of the land proposed for transfer;
5. Include a revised map of the Facility (e.g., a revised Permit Figure 1-2);
6. Propose and describe all provisions necessary to ensure that the Permittee can meet the corrective action obligations, the HWA, and the Hazardous Waste Management Regulations (e.g., covenants, deed restrictions, proposed replacement of monitoring wells or enforceable agreements for access to monitoring wells on transferred land) [40 C.F.R. 264.101; 40 C.F.R. 270.30(l)(1), 270.32(b) and 270.42; and 20.4.1.901 NMAC]; and
7. Describe all measures taken to comply with Section 120(h) of CERCLA, 42 U.S.C. § 9629(h).

1.11. PERMIT RENEWAL

If the Permittee wishes to continue the activities regulated by this Permit after the expiration date of this Permit, in accordance with 40 C.F.R. § 270.30(b), the Permittee must apply for and obtain a new permit. The Permittee may request renewal of this Permit by submitting an application for a new permit at least one hundred and eighty (180) calendar days before the expiration date of this Permit

as required by 40 C.F.R. § 270.10(h).

1.12. CONTINUATION OF EXPIRING PERMIT

Pursuant to 40 C.F.R. § 270.51, if the Permittee has 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 Permittee, the Department has not issued a new permit on or before the expiration date of this Permit. [40 C.F.R. § 270.51(incorporated herein by reference)].

1.13. TRANSFER OF PERMIT

The Permittee 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 operation of the Facility or any SWMUs or AOCs during its operating life or post-closure care period, the Permittee shall notify the new owner or operator in writing of the requirements of 40 C.F.R. Part 264, and Part 270, and the HWA, pursuant to 40 C.F.R. § 264.12(c), and 40 C.F.R. § 270.30(l) (3), which are incorporated herein by reference, and shall provide the Department with a copy of this notice.

1.14. PERMIT REVIEW

The Department may review this Permit five (5) 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, 270.50(b), and 270.50(d). Such modification shall not extend the effective term of this Permit as specified in Condition 1.8 of this Permit. Nothing in this Section (1.14) shall preclude the Department from reviewing and, in accordance with applicable requirements, modifying the Permit at any time during its term.

1.15. ENFORCEMENT

Any violation of any condition of this Permit may subject the Permittee, 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 Section (1.15) is not exhaustive, and the Department reserves the right to take any action authorized by the law to enforce the requirements of this Permit.

1.16. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary for the Permittee to halt or reduce the permitted activities in order to maintain compliance with the terms of this Permit. [40 C.F.R. § 270.30(c) (incorporated herein by reference)].

1.17. DUTY TO MITIGATE

In the event of noncompliance with this Permit, the Permittee 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. [40 C.F.R. § 270.30(d) (incorporated herein by reference)].

1.18. PROPER OPERATION AND MAINTENANCE

The Permittee 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 Permittee 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 Condition (1.19) requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit. [40 C.F.R. § 270.30(e) (incorporated herein by reference)].

1.19. DUTY TO PROVIDE INFORMATION

The Permittee 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, revoking, reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Department, upon request, copies of records required to be kept by this Permit. [40 C.F.R. § 264.74(a), and 40 C.F.R. § 270.30(h) (incorporated herein by reference)].

This Permit Condition (1.20) shall not be construed to limit, in any manner, the Department's authority under the HWA, NMSA 1978, § 74-4-4.3, or RCRA § 3007(a), or any other applicable law or regulation.

1.20. IINSPECTION AND ENTRY

In accordance with 40 C.F.R. § 270.30(i), the Permittee 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 Permittee's 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 or HWA, any substances or parameters at any location, including waste, soil, sediment, surface water, and groundwater at the Facility.

This Permit Condition (1.21) shall not be construed to limit, in any manner, the Department's authority under the HWA, NMSA 1978, § 74-4-4.3, or RCRA, § 3007(a), 40 C.F.R. § 270.30(i), or any other applicable law or regulation.

1.21. MONITORING AND RECORDS

1.21.1. Representative Sampling

The Permittee shall take representative samples and measurements in accordance with the procedures included in this Permit. All samples and measurements taken by the Permittee under any condition in this Permit shall be representative of the waste, media, equipment or structure being sampled. This includes, but is not limited to, sampling and analyis of waste, treatment residues, soil, groundwater, spills, and includes sampling of media for purposes of conducting corrective action pursuant to Parts 4, 5, and 6 of this Permit. To obtain a representative sample of a waste stream the Permittee shall use an appropriate method from Appendix I of 40 C.F.R. 261 or an equivalent method approved by the Department. Laboratory methods must be those specified in the current edition of *Test Methods for Evaluating Solid Waste Physical/Chemical Methods SW-846*, or an equivalent method, as specified in the *Waste Analysis Plan* in Attachment 5. [40 C.F.R. § 270.30(j)(1) (incorporated herein by reference)]. At a minimum, these analyses shall contain all of the information which must be known to treat, store, or dispose of the wastes properly as required by 40 C.F.R § 264.73(b)(9).

1.21.2. Record Retention

The Permittee shall retain the following records until completion of closure, or if post-closure is required until the completion of post-closure.

- All monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation
- Accelerated corrective measures implementation reports
- Interim measures reports
- Non-compliance written reports
- Certification of construction or modification
- Military munitions assessment reports

- Solid waste management unit assessment reports
- RCRA facility investigation reports
- Corrective measures implementation reports
- Risk assessment reports
- Contingency plan
- Contingent post-closure plan
- Closure plan as it may be amended
- The Permit and any modifications thereof
- The Permit application
- Records from all groundwater monitoring wells and associated groundwater surface elevations
- All other corrective action reports, work plans, and data not specified above

All other reports and records required by this Permit shall be retained for a minimum of three years from the date of the report or record.

The period of record retention 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. [40 C.F.R. § 270.30(j) (2) (which is incorporated herein by reference)].

1.21.3. Monitoring Records Contents

Records of monitoring information shall include:

1. The dates, exact place, and times of sampling or measurements.
2. The names and qualifications of the individuals who performed the sampling or measurements.
3. The name and address of the laboratory that performed the analysis.
4. The dates on which analyses were performed.
5. The names and qualifications of the individuals who performed the analyses.
6. The analytical techniques or methods used.
7. The results of such analyses including units of measurement.
8. Calibration data.
9. Quality control data.
10. Detection limits.
11. Data qualifiers.

12. Data validation results.

[40 C.F.R. § 270.30(j)(3) (incorporated herein by reference)].

1.22. REPORTED PLANNED CHANGES

The Permittee shall give advance notice to the Department of any planned physical alterations or additions to the Open Burn Unit and Open Detonation Unit. [40 C.F.R. § 270.30(l)(1) (incorporated herein by reference)]

1.23. REPORTING ANTICIPATED NONCOMPLIANCE

The Permittee shall give advance notice to the Department of any planned physical alterations or additions to any permitted unit or of any activities, which may result in noncompliance with Permit requirements. [40 C.F.R. § 270.30(l)(2) (incorporated herein by reference)].

1.24. CERTIFICATION OF CONSTRUCTION OR MODIFICATION

If any permitted unit is modified, the Permittee shall not treat or store hazardous waste in the modified portion of the permitted unit, unless the following conditions have been satisfied:

1. The Permittee has submitted to the Department, by certified mail or hand delivery, a letter signed by the Permittee and an independent professional engineer registered in New Mexico stating that the permitted unit modification meets the requirements of this Permit; and
2. The Department has:
    a. Inspected the modified or newly constructed portion of the permitted unit and finds it meets the conditions of this Permit; or
    b. Waived the inspection or, within fifteen (15) calendar days from the date of receipt of the letter required by paragraph 1, has not notified the Permittee of its intent to inspect.

[40 C.F.R. § 270.30(1)(2) (incorporated herein by reference)].

1.25. TWENTY-FOUR HOUR AND SUBSEQUENT REPORTING

1. **Oral Report -** The Permittee 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 Permittee becomes aware of the circumstances. The oral report shall include:
    a. Information concerning release of any hazardous waste that may cause an endangerment to public drinking water supplies; and
    b. Any information about a release or discharge of hazardous waste or hazardous constituent or of a fire or explosion at a permitted unit which could threaten the environment or human health including:

i. A description of the noncompliance and its cause.

ii. The name, address, and telephone number of the owner, operator, and name of responsible official.

iii. The name, address, and telephone number of the Facility.

iv. The period of the occurrence including exact date and time and, if the noncompliance has not been corrected, the anticipated time it is expected to continue.

v. The name and quantity of materials involved.

vi. The extent of injuries, if any.

vii. An assessment of actual or potential hazards to the environment and human health at and outside the Facility, where this is applicable.

viii. The estimated quantity and disposition of recovered material that resulted from the incident.

ix. The steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

[40 C.F.R. § 270.30(l)(6)(ii), and 40 C.F.R. § 270.30(1)(6)(i)].

2. **Written Report -** The Permittee shall also submit a written report within five (5) calendar days from the time the Permittee become aware of the circumstance of any noncompliance. The written report shall contain the following:

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

b. Any information about a release or discharge of hazardous waste or hazardous constituent or of a fire or explosion at a permitted unit which could threaten the environment or human health, including:

i. A description of the noncompliance and its cause;

ii. The name, address, and telephone number of the owner, operator, and name of responsible official;

iii. The name, address, and telephone number of the Facility;

iv. The period of the occurrence including exact date and time and, if the noncompliance has not been corrected, the anticipated time for which it is expected to continue;

v. The name and quantity of materials involved;

vi. The extent of injuries, if any;

vii. An assessment of actual or potential hazards to the environment and human health at and outside the Facility, if applicable;

viii. The estimated quantity and disposition of recovered material that resulted from the incident; and

ix. The steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

The Department may extend the time for submitting the written report up to fifteen (15) calendar days. [40 C.F.R. § 270.30(l)(6)(iii) (incorporated herein by reference)].

3. **Reports Required by the Contingency Plan -** If any incident requires implementation of the Contingency Plan provided in Permit Attachment 8, the Permittee shall comply with the reporting requirements of 40 C.F.R. § 264.56(j), which is incorporated herein by reference.

1.26. CORRECTIVE ACTION

Corrective action required pursuant to 40 C.F.R. § 264.101, shall continue under this Permit for any period necessary to comply with the requirements specified in Parts 4 and 5 of this Permit.

1.27. ADMISSIBILITY OF DATA

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

1.28. OTHER NONCOMPLIANCE

The Permittee 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 1.26 of this Permit Part (1). [40 C.F.R. § 270.30(l)(10) (incorporated herein by reference)].

1.29. SIGNATORY AND CERTIFICATION REQUIREMENTS

The Permittee shall sign and certify all applications, reports, or information submitted to the Department or required by this Permit, in accordance with the certification requirements in 40 C.F.R. § 270.11(a)(1) and (3), which is incorporated herein by reference.

1.30. MONITORING REPORTS

The Permittee shall submit Monitoring Reports to the Department at the intervals specified in Condition 1.33 of this Permit. [40 C.F.R. § 270.30(l)(4) (which is incorporated herein by reference)].

1.31. 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 to the

Department no later than 14 calendar days following each schedule date. [40 C.F.R. § 270.30(l)(5) (which is incorporated herein by reference)].

1.32. INFORMATION REPOSITORY

Upon written notification, the Department may require the Permittee to establish and maintain an information repository at any time, based on the factors set forth in 40 C.F.R. § 124.33(b). The information repository shall be governed by the provisions in 40 C.F.R. 124.33(c).

1.33. REPORTS, NOTIFICATIONS, AND INFORMATION SUBMITTALS TO THE DEPARTMENT

The Permittee shall submit to the Department by certified mail or hand delivery all reports, notifications, or other submittals that are required by this Permit to be sent or given to the Department, at the following address:.

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

Summaries of the reporting requirements pursuant to this Permit are found in Table 1-1 below and Table 4-1 of Part 4 of this Permit. Two (2) copies of these plans, reports, notifications, or other submissions shall be submitted to the Department.

Table 1-1 Document Submittal Summary	
Facility Submission Requirements	**Due Date**
Biennial Reports	
Biennial Report (Part2, Section 2.7.4)	March 1 of every even-numbered year
Annual Reports	
Waste Minimization Program Report (Part 2, Section 2.6.2)	Annually, by December 1 for previous year ending September 30
Annual Sampling and Analysis Report (Part 3.4)	Annually by March 31
Other Submittals/Reports	
Permit renewal (Part 1.11)	180 days before Permit expiration.
Non-Compliance Oral Report (Part 1.2.6.1)	Within twenty four (24) hours of non-compliance activity.
Non-Compliance Written Report (Part 1.2.6.2)	Within five (5) days of non-compliance activity.
Certification of Construction or Modification (Part 1.25)	Prior to treatment or storage of hazardous waste in the modified portion of the permitted unit
Facility Map (Part 2.7.1)	Within 30 days of the effective date of this Permit
Notification and Certification Statements associated with the treatment of hazardous wastes in compliance with 40 C.F.R. § 268.7 and § 268.9 (Part 2.7.6)	Upon hazardous waste generation/treatment.
Revised Closure Plan (Part 2.8.2.1 and 2.8.2.2)	Within 60 days after discovering that a revised Closure Plan is required in accordance with this Permit, or within 60 days after receiving written notification by the Department whichever is earlier
Closure Plan (Part 2.8.2)	Sixty calendar days (60) prior to final receipt of hazardous waste at the Open Burn Unit and Open Detonation Unit.
Notification of Closure (Part 2.8.3)	45 days prior to closure of either Unit
Final Closure Report and written Closure Certification (Part 2.8.7)	Within sixty (60) calendar days from the date of completion of closure of each of the Open Burn Unit and Open Detonation Unit.

Table 1-1 Document Submittal Summary	
Facility Submission Requirements	**Due Date**
Contingent Post-Closure Plan (Part 2, Section 2.9.1)	Within 90 days of the effective date of this Permit.
Human Risk screening: exceedances of SSLs (Part 3, Section 3.5)	Within 15 days of exceedance
Monitoring Well Installation Plan (Part 3, Section 3.6.1)	Within 90 days of the effective date of this Permit
Well Completion Report (Part 3, Section 3.6.1)	Within 30 days of completing well installation.
Groundwater Sampling and Analysis Report (Part 3, Section 3.6.2)	Within 90 days of groundwater sampling
General Facility Information (Attachment 1)	30 days from effective date of this Permit and annually thereafter by March 31 if update needed.
Report on Potential Receptors (Part 4, Section 4.2.2)	30 days from effective date of this Permit and no later than March 31 of subsequent years if an update is needed.
Surface Water and Sediment contamination Assessment Report (Part 4, Section 4.2.3)	30 days from effective date of this Permit and annually thereafter if update needed.
Air Contamination Report (Part 4, Section 4.2.4)	30 days from effective date of this permit and annually thereafter if update needed.
Subsurface Gas Report (Part 4, Section 4.2.5)	30 days from effective date of this Permit and annually thereafter if update needed.
CMS Work Plan: Landfills with contents not removed (Part 5, Section 5.1.1)	Upon Department request
CMS Report: Landfills with contents not removed (Part 5, Section 5.1.1)	Within 90 days of completion of CMS
Military Munitions Assessment Report (Part 5, Section5.1.2)	Within 90 days after effective date of Permit.

1.34. WORK PLANS AND OTHER DELIVERABLE DOCUMENTS

All work plans, schedules, reports, and other deliverable documents that the Permittee is required to prepare under this Permit shall be submitted to the Department for review. In the case of documents that need approval by the Department, the Department may approve the document as submitted, modify the document and approve it as modified, or disapprove the document. The Department will send the Permittee a written notice of approval, approval with modification, or disapproval, and will state in writing the deficiencies and other reasons for any modification or disapproval. If the Department disapproves the document, the Department may include in the written notice directions

to the Permittee to modify and resubmit the document. Upon receipt of a written notice of disapproval, the Permittee shall revise the document to incorporate all modifications and comments, and otherwise correct all deficiencies that gave rise to the disapproval. Within 30 days after Permittee's receipt of a written disapproval or within such other time period as specified by the Department, the Permittee shall resubmit the revised document to the Department for approval. Once the Department approves a work plan, schedule, report, or other document it shall be incorporated herein and become an enforceable part of this Permit.

Documents approved by the Department include, but are not limited to:

- RCRA facility investigation work plans
- Sampling and analysis plans
- Groundwater monitoring plans
- RCRA facility investigation reports and corrective action reports
- Corrective measures implementation work plans and implementation reports
- Corrective measures study work plans
- Interim measures work plans
- Interim measures reports
- Solid waste management unit assessment reports
- Schedules
- Accelerated corrective measures work plans and reports
- Risk assessment reports
- Permit modification requests
- Certification of construction or modification requests
- Amendments to closure plans
- Final closure reports
- Contingent post-closure plan and components thereof
- Post-closure plans and components thereof

1.35. PLANS AND SCHEDULES INCORPORATION INTO THE PERMIT

All work plans, reports, and schedules approved by the Department 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

Permittee to enforcement action under Section 74-4-10 of the HWA, or other applicable provisions of law, which may include fines, or suspension or revocation of the Permit.

Any noncompliance with approved plans and schedules shall be noncompliance with this Permit. The Department may grant extensions of written requests for due dates for submittals of reports and other deliverables, provided that the Permittee includes a written justification and a proposed schedule for submittal.

In the event of an inconsistency between a requirement of Parts 1-6 of this Permit and a requirement of an Attachment or a plan or schedule approved under this Permit, the requirements of Parts 1-6 of this Permit shall control.

1.36. CONFIDENTIAL INFORMATION

The Permittee 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 the procedures in NMSA 1978, § 74-4-4.3 (D) of the HWA.

1.37. DOCUMENTS TO BE MAINTAINED UNTIL COMPLETION OF CLOSURE

The Permittee shall maintain at the Facility until completion of closure and, if necessary post-closure, the following documents and all amendments, revisions and modifications to these documents.

1. This Permit, including all the Attachments.
2. Waste Analysis Plan set forth in Attachment 5, as required by 40 C.F.R. § 264.13(b), and this Permit.
3. Inspection Plan set forth in Attachment 7, schedules and results, for three years from the date of the inspection as required by 40 C.F.R. § 264.15(b)(2), and this Permit.
4. Personnel Training documents and records, including both introductory and continuing training programs, used to prepare employees to safely operate and maintain the Open Burn Unit and Open Detonation Unit, as required by 40 C.F.R. § 264.16(d), and this Permit as set forth in Attachment 9.
5. Contingency Plan set forth in Attachment 8, as required by 40 C.F.R. § 264.53(a), and this Permit, and including summary reports and details of all incidents that require implementation of the Contingency Plan, and a copy of all Memorandums of Agreement, Memorandums of Understanding, Mutual Aid Agreements and contracts with emergency response contractors and suppliers, as required by 40 C.F.R. § 264.56(j).
6. Records described under "Record Keeping" under Attachment 2, as required by 40 C.F.R. § 264.73, and this Permit.

7. Closure Plan set forth in Attachment 10, as required by 40 C.F.R. § 264.112(a), and this Permit.
8. Contingency Post Closure Plan set forth in Permit Condition 2.9 (Part 2), as required by 40 C.F.R. § 264.112(a), and this Permit.
9. The name(s), address(es), and telephone number(s) of the Emergency Coordinator(s) (EC) and all such information for persons designated as alternate ECs, as required by Permit Condition 2.4.4 in Part 2 of this Permit, and as set forth in Permit Attachment 8.
10. A list of all equipment listed in Permit Attachment 8, as required by 40 C.F.R. Part 264, Subpart C.
11. Records related to corrective action shall be retained as required in Parts 4 and 5 of this Permit.
12. The Permittee shall maintain the information and records by this Permit Condition (1.37) in paper form or in an electronic form acceptable to the Department.

PERMIT PART 2: GENERAL FACILITY CONDITIONS

2.0 INTRODUCTION

Permit Part 2 specifies general conditions applicable to the Facility.

2.1. OPERATION OF THE FACILITY

This Permit authorizes the management and treatment of hazardous wastes, including Explosive Wastes, only in the permitted Open Burn (OB) and Open Detonation (OD) Units located at the Explosive Ordnance Disposal (EOD) Range, Kirtland Air Force Base (KAFB). The Permittee shall not treat reactive or other hazardous wastes at any other location at this Facility. The Permittee shall not store for more than 90 days any hazardous waste at any location at this Facility except as provided in 40 C.F.R. § 262.34(b).

The Permittee shall maintain and operate the Open Burn Unit and Open Detonation Unit to minimize the possibility of any sudden or nonsudden release of hazardous waste or hazardous constituents to air, soil, sediment, groundwater, or surface water or any unplanned fire or explosion which could threaten human health or the environment, as required by 40 C.F.R. § 264.31.

When conditions arise that prevent a planned burning of waste in the OB Unit, the Permittee shall resume the planned burning within 24 hours after conditions allow the burn.

2.2. GENERAL FACILITY STANDARDS

2.2.1. Security

In order to prevent the unknowing entry and to minimize the possibility of unauthorized entry of persons into the Open Burn Unit and Open Detonation Unit, the Permittee shall comply with the security provisions and procedures described in Permit Attachment 2, and as required by 40 C.F.R. § 264.14, which is incorporated herein by reference.

2.2.2. Inspections

The Permittee shall inspect the Open Burn Unit and Open Detonation Unit for malfunctions and deterioration, operator errors, and discharges which may cause a release of hazardous waste or hazardous constituents into the environment or a threat to human health, as required by 40 C.F.R. § 264.15 which is incorporated herein by reference, and according to the Inspection Plan (Permit Attachment 7). The Permittee shall remedy any such deterioration or malfunction, operator error, or discharge, as required by 40 C.F.R. § 264.15(c). The Permittee shall maintain records of all such inspections in the Operating Record, as required by 40 C.F.R. § 264.15(d).

2.2.3. Personnel Training

The Permittee shall follow the personnel training procedures specified in Permit Attachment 9. [40 C.F.R. § 264.16 incorporated herein by reference]. The Permittee shall maintain training documents and records for at least three (3) years from the date that the employee last worked at the Facility. [40 C.F.R. § 264.16(d) and (e) which is incorporated herein by reference].

The Permittee shall comply with 40 C.F.R. § 264.16 (d) and submit to the Department within 30 days the following documents: a job title for each position and the name of each employee filling each position; a written description for each position including the requisite skill, education, or other qualifications, and duties; and a written description of introductory and continuing training for each person filling each position. The Permittee shall not treat any hazardous waste at the Open Burn Unit and Open Detonation Unit until this Permit Condition is fully satisfied as determined by the Department.

2.2.4. Location

Although the Open Burn Unit and Open Detonation Unit are located in Bernalillo County of New Mexico, which is listed in Appendix VI of 40 C.F.R. Part 264, the Permittee has demonstrated consideration of seismic and floodplain standards, as required by 40 C.F.R. § 264.18 and as specified in Permit Attachment 1. The Permittee has further demonstrated that no Holocene seismic activity has occurred at the location of the Open Burn Unit and Open Detonation Unit. In addition, the Permittee provided a topographic map, which indicated that the Open Burn Unit and Open Detonation Unit proposed for permitting are not located within a 100-year floodplain. Therefore, the Permittee meets the floodplain standards specified in 40 C.F.R. § 264.18(b).

2.3. PREPAREDNESS AND PREVENTION

2.3.1. Required Equipment

At a minimum, the Permittee shall maintain at the Open Burn Unit and Open Detonation Unit the equipment set forth in the Contingency Plan in Permit Attachment 8, and as required by 40 C.F.R. § 264.32 which is incorporated herein by reference.

2.3.2. Testing and Maintenance of Equipment

The Permittee shall test and maintain the equipment specified in the Contingency Plan in Permit Attachment 8, as necessary, to assure its proper operation in time of emergency, as required by 40 C.F.R. § 264.33 which is incorporated herein by reference.

2.3.3. Access to Communication or Alarm System

The Permittee shall maintain access to the communications or alarm system as required by 40 C.F.R. § 264.34 which is incorporated herein by reference.

2.3.4. Required Aisle Space

At a minimum, the Permittee shall maintain enough aisle space to allow the unobstructed movement of personnel, fire protection equipment, spills control equipment, and decontamination equipment to any area of waste management unit operation, as required by 40 C.F.R. § 264.35 which is incorporated herein by reference.

2.3.5. Arrangements with Local Authorities

The Permittee shall attempt to enter into coordination agreements with the City of Albuquerque Fire Department, the Bernalillo County Fire Department, the Albuquerque Police Department,

and Albuquerque Regional Medical Center, as described in the Contingency Plan (Permit Attachment 8), and as required by 40 C.F.R. § 264.37 which is incorporated herein by reference. Copies of all such agreements and any documentation showing any unsuccessful attempts to enter into such an agreement shall be maintained at the Facility EOD office as part of the Operating Record.

2.4. CONTINGENCY PLAN

2.4.1. Implementation of the Plan

The Permittee shall immediately implement the Contingency Plan contained in Permit Attachment 8, whenever there is a release of hazardous waste or hazardous waste constituents or unplanned fire or explosion that could threaten human health or the environment, as required by 40 C.F.R. § 264.51(b).

2.4.2. Copies of the Plan

The Permittee shall maintain copies of the current Contingency Plan and all revisions and amendments to the plan at the EOD Office and at the EOD Range bunker as required by 40 C.F.R. § 264.53(a) which is incorporated herein by reference. The Permittee shall provide copies of the current Contingency Plan and all revisions and amendments to the plan to the Department and to each entity with which the Permittee has an emergency agreement pursuant to Permit Condition 2.3.5 of Part 2, as required by 40 C.F.R. § 264.53(b) which is incorporated herein by reference.

2.4.3. Amendments to the Plan

The Permittee shall review at least annually and immediately amend, if necessary, the Contingency Plan, as required by 40 C.F.R. § 264.54 which is incorporated herein by reference.

2.4.4. Emergency Coordinator

Either the Emergency Coordinator (EC) or an alternate EC, as specified in Permit Attachment 8, 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. [40 C.F.R. § 264.55 incorporated herein by reference]. In the event of an imminent or actual emergency, the EC shall activate the internal emergency alarm or emergency communication device, notify the appropriate State or local agencies with designated response roles, and implement other procedures, as required by 40 C.F.R. § 264.56 which is incorporated herein by reference, and as described in Permit Attachment 8.

The Permittee shall submit to the Department a revised Table 8-1, Permit Attachment 8, within 30 days of the issuance of this Permit. The revised table shall contain the following emergency coordinator contact information in compliance with 40 C.F.R. 264.52(d): names, home and office addresses, and the home and office telephone numbers of all persons qualified to act as emergency coordinator. When more than one person is listed, one must be named as the primary emergency coordinator and the others must be listed in the order in which they will assume responsibility as alternates. The Permittee shall not treat any hazardous waste at the Open Burn

Unit and Open Detonation Unit until this Permit Condition is fully satisfied as determined by the Department.

2.5. WASTE CHARACTERIZATION

2.5.1. General Requirement

The Permittee shall not treat any hazardous waste at a permitted hazardous waste management unit at the Facility unless the hazardous waste has been fully characterized pursuant to this Permit. [40 C.F.R. Part 264 and 40 C.F.R. Part 268].

2.5.2. Characterization by Acceptable Knowledge

2.5.2.1. *Use of Acceptable Knowledge*

The Permittee shall characterize the waste as required under Permit Condition 2.5.1 above by contemporaneous sampling and analysis or by use of acceptable knowledge. The Permittee shall characterize the waste by sampling and analysis whenever feasible and as appropriate.

"Acceptable Knowledge" means generator knowledge of the process that generated a waste, including but not limited to process knowledge, waste analysis data from generators of similar wastes, and facility records of analysis that is used by a generator to characterize wastes.

Acceptable knowledge may be used as the sole method to characterize waste only when the waste is generated from processes that are consistent and well-documented. Documentation of the process must include information that meets all characterization requirements of this Permit, including the requirement to determine the status of the waste for the purposes of the Land Disposal Restrictions (LDR) as specified in Permit Condition 2.5.3 of this Part (2). Acceptable knowledge may be used if there is prior sampling and analysis data with documentation that demonstrates conformance to the sampling and analysis requirements of this Permit. Acceptable knowledge may be used for wastes that by their inherent unstable nature would pose a life-threatening hazard to personnel conducting waste analysis. Acceptable knowledge is a suitable waste characterization method for waste that is an unused, commercial chemical product, reagent, or chemical of known physical and chemical constituents and is documented by a packaging label, a Material Safety Data Sheet, or equivalent information supplied by the manufacturer identifying the chemical content of the waste.

2.5.2.2. *Documentation of Acceptable Knowledge*

The Permittee shall maintain documentation used to support acceptable knowledge of a waste stream in the Facility's Operating Record in accordance with 40 C.F.R. § 268.7(a)(6) and 40 C.F.R. § 264.73(b)(3). This documentation may be located where the particular waste is generated but must be readily retrievable upon request during a Department inspection, and must be maintained in the record for a minimum of three years from the date the waste was last managed at the Facility. For each waste stream, the Permittee shall maintain in the Operating Record, at a minimum, the following process knowledge information:

1. The location where the waste stream is generated,
2. The waste stream volume and time period of generation,

3. A description of the waste generating process, and
4. All material inputs or other information that identifies the chemical content and physical form of the waste stream.

2.5.3. Characterization by Analysis

2.5.3.1. *Sampling*

The Permittee shall establish and utilize a Sampling and Analysis Plan (SAP) for each waste stream for which sampling is required. The SAP shall identify the appropriate sampling methods to characterize the waste stream in accordance with Section 2.5 of this Part (2). The Permittee shall maintain the SAP and all documents showing compliance with the SAP, in the Facility's Operating Record for a minimum of three years from the date the waste was last managed at the Facility.

The SAP shall identify the sample containers, preservation techniques, and holding times for each waste sampled. The SAP must conform to the most recent version of *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, (U.S. EPA Publication SW-846) Chapter 9, Sampling Plan.* The SAP must ensure collection of a representative sample of waste by means that preserve its original physical form and composition and ensure prevention of contamination or changes in concentration of the constituents to be analyzed. The SAP shall ensure that sample collection meets the quality assurance objectives required under Permit Condition Section 6.3 of Attachment 6. The number of samples of each waste shall be sufficient to demonstrate that the Upper Confidence Limit (UCL) of the mean based on at least 95% confidence level is less than the applicable regulatory threshold.

2.5.3.2. *Laboratory Analysis*

The SAP shall identify the appropriate laboratory analytical methods to characterize the waste stream in accordance with Permit Condition 2.5.1 of this Part. The Permittee shall perform or obtain laboratory analysis of wastes in accordance with the conditions of this Permit, and the Waste Analysis Plan (WAP) contained in Permit Attachment 5. The SAP shall include the appropriate laboratory analytical methods, detection limits, and reporting limits. The Permittee shall maintain the SAP in the Facility's Operating Record for three years from the date any hazardous waste was managed at the Facility.

To use any alternative analytical method, the Permittee must submit to the Department a petition for approval of such method in accordance with 40 C.F.R. § 260.21 which is incorporated herein by reference.

If the Permittee uses an independent contract laboratory to perform analyses, the Permittee shall inform the laboratory in writing that it must operate under the waste analysis conditions set forth in this Permit.

When using laboratory analysis as part of a hazardous waste determination, the Permittee shall require the laboratory to report concentrations of *all* hazardous constituents that the analytical test method is capable of measuring as identified in analytical method specific tables in the most current version of the United States Environmental Protection Agency's (EPA's) *Test Method for Evaluating Solid Wastes (SW-846), Chapter 2*. When using laboratory analysis to

demonstrate that the waste meets its applicable LDR treatment standard concentrations (specified at 40 C.F.R. § 268.40), the Permittee shall demonstrate that the analytical method detection limit is not higher than the treatment standard for each hazardous constituent that can reasonably be expected to be present.

2.5.3.3. *Quality Assurance/Quality Control (QA/QC)*

The Permittee shall perform and record all waste characterization QA/QC procedures in accordance with SW-846 for data used to support waste characterizations required under this Permit Part (2). The precision, accuracy, completeness, comparability, and representativeness of the analytical data, as described at SW-846, shall be addressed. The Permittee shall maintain a record of all QA/QC determinations in a manner traceable to specific wastes in the Facility Operating Record.

When performing waste sampling required under this Permit Part (2), the Permittee shall use the applicable sample collection QA/QC procedures specified in *Chapter 1, Section 3.4, Field QA and QC Requirements Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, (U.S. EPA Publication SW-846),* including, but not limited to those dealing with equipment preparation and field equipment maintenance, calibration, and cleaning. The SAP shall identify and the Permittee shall collect the appropriate number of quality control samples associated with each waste sampled.

When performing laboratory analysis required under this Permit Part (2), the Permittee shall analyze method blanks, laboratory duplicates, and other laboratory control samples to assess the quality of the data resulting from laboratory analytical programs. The results of both field and laboratory quality control data shall be reported with the results of waste characterization samples.

2.5.4. Re-evaluation of Characterization Information

The Permittee shall re-evaluate the characterization of routinely generated wastes to ensure that the characterization remains accurate and up to date for subsequent batches of waste, in compliance with 40 C.F.R. § 264.13(b)(4) which is incorporated herein by reference. The frequency in which characterization of waste shall be re-evaluated is specified in the *Waste Analysis Plan*. The results of the re-evaluation shall be thoroughly documented and placed in the Operating Record for a minimum of three years from the date the waste was last managed at the Facility.

The Permittee shall perform re-evaluation of a waste in accordance with these minimum requirements:

1. Re-evaluation shall be performed annually to verify the accuracy of initial characterization results achieved. For wastes originally characterized through sampling and analysis, re-evaluation shall be achieved using the same sampling and analysis methods used in the initial analysis unless otherwise required by the Department. For wastes characterized through acceptable knowledge, re-evaluation may be achieved through a review of that information.

2. Re-evaluation shall be performed when there is a change in waste-generating processes. Any information that indicates a change in the process that generates the waste and may affect the waste shall cause the waste to be re-characterized.

3. Re-evaluation shall be performed when the Permittee is notified by an off-site facility receiving hazardous waste from the Facility that the characterization of the waste received at the receiving facility does not match a pre-approved waste analysis certification or accompanying waste manifest or shipping paper. The Permittee shall notify the Department within 24 hours of its receipt of such a discrepancy notice.

Wastes listed at 40 C.F.R. § 261.33, with P and U listings, and for which the Permittee possesses a Material Safety Data Sheet or equivalent information from the manufacturer identifying chemical content, are exempt from the re-evaluation requirements of this Permit Condition.

2.5.5. Characterization of Specific Wastes

2.5.5.1. *Waste Received From Off-Site*

The Permittee shall obtain a detailed chemical and physical analysis of any hazardous waste received at the Facility from an off-site facility, in compliance with 40 C.F.R. § 264.13(c) which is incorporated herein by reference. This characterization may be in the form of documented acceptable knowledge if all applicable waste characterization requirements specified in this Permit Part (2) are met and documented. This includes, but is not limited to, identification of any underlying hazardous constituents.

The Permittee shall physically examine the shipment of waste from the off-site facility at the time of acceptance for correct documentation, including appropriate waste container identification and labeling. The Permittee shall not accept at the Facility a hazardous waste shipment from an off-site facility without Uniform Hazardous Waste Manifests and LDR Notification Forms, as applicable. If discrepancies are found for waste shipped to the OB Unit, the Permittee shall notify the Department of the discrepancy within five days, and shall return the waste to the off-site facility within 90 days, unless the off-site facility provides acceptable resolution to the discrepancy within 90 days after receipt of the waste at the Facility. The Permittee shall inform the Department in writing of the resolution of the discrepancy. [40 C.F.R. § 264.72 which is incorporated herein by reference]. If discrepancies are found for waste shipped to the OD Unit, the Permittee shall immediately return the waste to the generator.

2.5.5.2. *Waste to Be Shipped Off-Site*

Prior to shipping any hazardous waste off-site, the Permittee shall characterize the waste as necessary for treatment and disposal and to ensure proper packaging, labeling, marking, and placarding in accordance with the Department of Transportation regulations at 49 C.F.R. Parts 172, 173, 178, and 179.

2.5.5.3. *Remediation Waste*

Should there be an unexpected release of hazardous waste or hazardous constituents at the Open Burn Unit and Open Detonation Unit, or en route to the Units, the Permittee shall characterize

any remediation waste (as defined at 40 C.F.R. § 260.10) resulting from the release, in compliance with 40 C.F.R. § 264.1(j) which is incorporated herein by reference. The Permittee shall characterize remediation waste, including contaminated soil or other media that becomes waste, in compliance with all waste characterization requirements in this Permit Condition 2.5, including but not limited to, a hazardous waste determination, an identification of all applicable hazardous waste codes, and a LDR status determination.

The Permittee shall also include, at a minimum, the following information when characterizing remediation waste: the origin of the waste and how it was subsequently managed, the time and circumstances of the release that created the waste, and any investigation or other reports describing the release.

2.5.5.4. *Containerized Waste*

The Permittee shall characterize hazardous wastes placed inside containers, including over packed drums, to ensure that the wastes do not react dangerously with, decompose, or ignite sorbent material in the container, in compliance with 40 C.F.R. § 264.316(c), which is incorporated herein by reference, and to ensure that the wastes are not incompatible or reactive with one another, in compliance with 40 C.F.R. § 264.316(d) and § 264.316(e), which are incorporated herein by reference. The Permittee shall characterize laboratory packs, if they are intended to undergo the alternative treatment standards at 40 C.F.R. §268.42 (c), to determine whether they contain any prohibited hazardous wastes.

2.5.6. Records of Waste Characterization

The Permittee shall record and maintain in the Operating Record the results of waste analysis and waste determinations performed by knowledge of process, acceptable knowledge, or sampling and analysis, as specified in this Permit Part (2) in compliance with 40 C.F.R. § 264.73(b)(3), (b)(7), (b)(10), (b)(15), and (b)(16) which is incorporated herein by reference, and copies of the notification and certification statements required in Permit Condition 2.7.6 of this Part (2). The requirements of this Permit Condition apply to solid wastes even when the hazardous characteristic is removed prior to disposal, or when waste is excluded from the definition of hazardous or solid waste under 40 C.F.R. § 261.2 through § 261.6, or exempted from Subtitle C regulation, subsequent to the point of generation. [40 C.F.R. § 268.7(a)(8)].

2.6. WASTE MANAGEMENT

2.6.1. Authorized Wastes and Waste Sources

2.6.1.1. *Permitted Waste*

The Permittee shall treat at the Open Burn Unit and Open Detonation Unit only those wastes listed in the *Lists of Authorized Wastes* under Permit Attachment 4.

2.6.1.2. *Prohibited Waste*

The Permittee shall not treat by open burning or open detonation any radioactive or mixed waste, any polychlorinated biphenyls, or any other wastes not listed in the *Lists of Authorized Wastes* contained in Permit Attachment 4. The Permittee shall not treat hazardous wastes by any other

means not authorized by this Permit.

2.6.1.3. *Waste from Foreign Sources*

The Permittee shall not accept reactive or other hazardous wastes from a foreign source.

2.6.1.4. *Waste from Off-site Sources*

The Permittee shall receive off-site hazardous waste only in compliance with the Conditions of this Permit. The Permittee shall receive for treatment at the permitted Open Burn Unit and Open Detonation Unit, only the hazardous wastes listed in Permit Attachment 4 (Lists of Authorized Wastes).

2.6.2. Waste Minimization

The Permittee shall submit to the Department a certified report annually by December 1, for the year ending the previous September 30th, certifying that the Permittee has a program in place to reduce the volume and toxicity of all hazardous wastes which are generated by the Facility to the degree determined to be economically practicable, and that the proposed method of treatment is the practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment. This certified report must include these items:

1. Any written policy or statement that outlines goals, objectives, and methods for source reduction and recycling of hazardous waste at the Facility.
2. Any employee training or incentive programs designed to identify and implement source reduction and recycling opportunities for all hazardous wastes.
3. Any source reduction or recycling measures implemented in the last five years or planned for the near future.
4. An itemized list of the dollar amounts of capital expenditures (plant and equipment) and operating costs devoted to source reduction and recycling of hazardous waste.
5. A discussion of factors that have prevented implementation of source reduction or recycling.
6. Sources of information on source reduction or recycling received at the Facility (e.g., local government, trade associations, suppliers).
7. An investigation of additional waste minimization efforts that could be implemented at the Facility. This investigation shall analyze the potential for reducing the quantity and toxicity of each waste stream through production process change, production reformulation, recycling, and all other appropriate means. The analysis shall include an assessment of the technical feasibility, cost, and potential waste reduction for each option.
8. A flow chart or table detailing all hazardous wastes the Facility produces, by quantity and type, and by building or area, and program if consistent with security considerations.

9. A demonstration of the need to use those processes which produce a particular hazardous waste due to a lack of alternative processes, available technology, or available materials that would produce less volume of hazardous waste.

The Permittee shall include the Certified Report in the Operating Record.

2.6.3. Impermissible Dilution

The Permittee shall not dilute a restricted waste, as a substitute for treatment. [40 C.F.R. § 268.3]. Impermissible dilution to avoid an applicable treatment standard includes, but is not limited to, the addition of solid waste to reduce a hazardous constituent's concentration, and an ineffective treatment method that does not destroy, remove, or permanently immobilize hazardous constituents. Aggregating or mixing wastes as part of a legitimate treatment process are not considered impermissible dilution for purposes of this Permit Condition.

2.6.4. Dust Suppression

The Permittee shall not use waste or used oil or any other material which is contaminated with dioxin, PCB, or any other hazardous waste, other than a waste identified solely on the basis of ignitability, for dust suppression or road treatment. [40 C.F.R. § 266.23(b) incorporated herein by reference].

2.6.5. Ignitable, Reactive, and Incompatible Wastes

The Permittee shall take precautions to prevent accidental ignition or reaction of ignitable or reactive wastes, as required by 40 C.F.R. § 264.17 which is incorporated herein by reference. The Permittee shall follow the procedures for handling ignitable, reactive, and incompatible wastes specified in Permit Attachment 2.

2.6.6. Air Emissions

The Permittee shall comply with all air emission limitations and air monitoring requirements for the Open Burn Unit and Open Detonation Unit set forth in the air quality permit for the Units issued by the City of Albuquerque Environmental Health Department. The Permittee shall also comply with the applicable requirements of 40 C.F.R. Part 264, Subpart BB. The Permittee shall maintain all records relating to the air quality permit in the Operating Record for the Facility. Part 3, Section 3.7 and Attachment 3 of this Permit contain more detailed requirements for air emissions.

2.6.7. Off-Site Shipments

Prior to shipping any hazardous waste off-site, the Permittee shall comply with all applicable generator requirements at 40 C.F.R. Part 262, as required by 40 C.F.R. §§ 262.10(h) and 264.71(c), which are incorporated herein by reference.

2.6.8. Land Disposal Restrictions

The Permittee shall comply with the restrictions of land disposal of 40 C.F.R. Part 268 which is incorporated herein by reference. Where the Permittee has applied for an extension, waiver or variance under 40 C.F.R. Part 268, the Permittee shall comply with all restrictions on land

disposal.

2.6.8.1. *Storage of Restricted Waste*

The Permittee shall comply with 40 C.F.R. Part 268, Subpart E for any storage of hazardous waste restricted from land disposal under 40 C.F.R. Part 268, Subpart C.

2.6.8.2. *Disposal of Restricted Waste*

The Permittee shall not land dispose of any hazardous waste restricted from land disposal under 40 C.F.R. Part 268, unless:

1. The waste meets treatment standards specified in 40 C.F.R. § 268.40, § 268.41, § 268.42, or § 268.43; or
2. A variance from the treatment standards has been granted pursuant to 40 C.F.R. § 268.44.

2.7. RECORD KEEPING AND REPORTING

2.7.1. Submittal of Facility Map

The Permittee shall submit to the Department within 30 days of the effective date of this Permit an updated map of the Facility. The items to be shown on the map shall include:

1. Buildings, tanks and other structures;
2. The Open Burn Unit and Open Detonation Unit;
3. The correct locations of the Open Burn Unit and Open Detonation Unit on Figures E-1, F-1, F-2, I-1 and I-2;
4. Paved roads;
5. Dirt or gravel roads;
6. Recreational areas;
7. Perennial streams;
8. Intermittent streams;
9. Wells that are used to provide water for drinking or for livestock;
10. Springs;
11. Groundwater monitoring wells;
12. The KAFB boundary;
13. Scale (in miles) and arrow indicating true north;
14. Coordinate grid system (latitude/longitude or Universal Transverse Mercator [UTM] coordinates); and
15. Date the map was prepared.

2.7.2. Manifest System

The Permittee shall comply with the manifest requirements of 40 C.F.R. § 264.71, § 264.72, and § 264.76 which are incorporated herein by reference. With the exception of waste shipments from conditionally exempt small quantity generators, the Permittee shall not accept for management or treatment any hazardous waste from an off-site source without an accompanying manifest.

2.7.3. Operating Record

The Permittee shall maintain a written operating record for each hazardous waste treated at the Open Burn Unit and Open Detonation Unit at the Facility EOD office as required by 40 C.F.R. § 264.73, which is incorporated herein by reference. The Permittee shall maintain all records in the Operating Record until completion of closure and, if necessary, post closure care, unless specified otherwise in this Permit. The retention period for all records is extended automatically during the course of any unresolved enforcement action regarding the Facility, or as may be requested by the Department, as required by 40 C.F.R. § 264.74(b), which is incorporated herein by reference. The Permittee shall make the Operating Record available at all reasonable times for inspection by any officer, employee, or authorized representative of the Department or EPA, upon request, or shall furnish copies of documents within the record, as required by 40 C.F.R. § 264.74 which is incorporated herein by reference.

2.7.4. Biennial Report

The Permittee shall prepare and submit to the Department two copies of a biennial report by March 1 of each even numbered year, as required by 40 C.F.R. § 264.75 which is incorporated herein by reference.

2.7.5. Personnel and Telephone Number Changes

The Permittee shall inform the Department in writing of changes in Base Commander, Environmental Management Director, and the person responsible for Facility Environmental Compliance and their telephone numbers within fifteen (15) calendar days of the changes.

2.7.6. Notification and Certification

The Permittee shall provide the Department notification and certification statements associated with the treatment of hazardous wastes in compliance with 40 C.F.R. § 268.7 and § 268.9 which are incorporated herein by reference

2.8. GENERAL CLOSURE REQUIREMENTS

2.8.1. Performance Standard

The Permittee shall clean close the OB Unit and the OD Unit following the procedures described in the approved *Closure Plan*, Permit Attachment 10, and as required by 40 C.F.R. § 264.111, which is incorporated herein by reference.

2.8.2. Closure Plan

The Permittee shall implement the *Closure Plan* in Attachment 10 of this Permit, as amended, upon closure of the OB Unit and the OD Unit.

2.8.2.1. *Submittal of Revised Closure Plan*

The Permittee shall submit to the Department for approval a revised Closure Plan within 60 days after discovering that a revised Closure Plan is required in accordance with this Permit, or within 60 days after receiving written notification by the Department whichever is earlier. The Permittee shall amend the Closure Plan whenever changes in circumstances necessitate a modification of the Closure Plan, as required by 40 C.F.R. § 264.112(c) which is incorporated herein by reference. The Permittee shall amend the Closure Plan for any other reasons set forth in 40 C.F.R. 264.112(c). The Permittee shall comply with all the requirements of 40 C.F.R. 264.112(c) in amending the Closure Plan.

When amending or revising the Closure Plan, the Permittee shall submit to the Department for approval detailed and as necessary updated procedures and methods (contained in Permit Attachment 10) describing decontamination procedures and sampling methods to verify decontamination of hazardous waste management equipment and removal of treatment residues and any hazardous or solid wastes. At a minimum, the Permittee shall include in the revised Closure Plan for each treatment unit:

1. Unit history and description, identifying, at a minimum, the following:
    a. Constituents of concern, including all hazardous waste and hazardous constituents managed at the Unit, listed by category of constituent subject to the same sampling methods;
    b. Spills or other releases of hazardous waste and hazardous constituents during operation of the Unit; and
    c. Visible staining, cracks, sumps, and other Unit-specific conditions indicating potential release locations.
2. Proposed decontamination procedures.
3. Proposed sample locations, including outdoor surfaces, for example asphalt or concrete pads, and soil.
4. Sample methods, equipment, and procedures.
5. Analytes and analytical methods.
6. Detection limits.
7. QA/QC procedures.
8. Sample management and preservation procedures.
9. Data quality objectives.

2.8.2.2. *Additional Requirements of the Revised Closure Plan for Post-Closure Care*

If the OB Unit or the OD Unit cannot be clean closed as determined by the Department, post-

closure care is required. Closure of the Open Burn Unit and Open Detonation Unit shall include the construction of a final cover to be placed over the ground surface occupied by the Unit and construction of all needed drainage structures to minimize the infiltration and percolation of water into and beneath the final cover. The final cover shall be of a design equivalent to that which would be required for a hazardous waste landfill. If groundwater is contaminated or may potentially become contaminated in the future, the Permittee shall also immediately implement corrective action to remediate the contamination or prevent the contamination threat pursuant to the requirements of Parts 4 and 5 of this Permit.

The revised Closure Plan shall meet all of the applicable closure requirements of 40 C.F.R. §§ 264.111 through 264.116 and 264.310, including the applicable closure requirements for landfills. The revised Closure Plan shall also include, at minimum:

1. The results of performance modeling of the final cover;
2. A description of the design (including engineering drawings) and material specifications for construction of the final cover and drainage structures;
3. A description of how the closure performance standards under 40 C.F.R. §§ 264.111 and 264.310(a)(1 through 5) will be met by the design;
4. A construction quality-assurance plan;
5. A description of the construction procedures and equipment to be used;
6. A description of the qualifications of those responsible for the design and oversight of the construction of the cover and the drainage structures; and
7. A schedule to construct and complete the final cover and drainage structures.

The Permittee shall implement the revised Closure Plan within 90 days after approval by the Department and shall complete construction of the final cover and drainage structures by the deadlines in the approved Closure Plan.

2.8.3. Notification of Closure

The Permittee shall notify the Department in writing at least forty-five (45) calendar days prior to the date on which it expects to begin closure of the OB Unit and the OD Unit, as required by 40 C.F.R. § 264.112(d) which is incorporated herein by reference.

2.8.4. Time Allowed For Closure

Within ninety (90) calendar days after the final volume of hazardous waste is received at the OB Unit or the OD Unit, the Permittee shall treat the waste in accordance with this Permit and remove all treatment residues and all other hazardous waste from the Unit. The waste shall be sent to an off-site permitted treatment, storage or disposal facility. The Permitee shall complete closure activities for the Unit within 180 days, as required by 40 C.F.R. § 264.113, following the schedule and requirements in the Closure Plan, Permit Attachment 10, as required by Permit Condition 2.8.2 of this Part (2).

If this Permit is terminated, or if the Facility is otherwise ordered, by judicial decree or final order under the HWA or Section 3008 of RCRA, to cease treating hazardous wastes or to close

the OB Unit or the OD Unit, then the Permittee shall close the Unit in accordance with the deadlines established in 40 C.F.R. § 264.113.

2.8.5. Disposal or Decontamination of Equipment, Structures, and Soils

The Permittee shall decontaminate or dispose of all contaminated equipment, structures, and soil, as specified in the Closure Plan, Permit Attachment 10. [40 C.F.R. § 264.114 (incorporated herein by reference)].

2.8.6. Management of Remediation Waste

By removing hazardous waste or hazardous constituents or contaminated media during closure activities, the Permittee becomes a generator of hazardous waste, and shall manage that waste in accordance with all applicable requirements of 40 C.F.R. Part 262.

2.8.7. Certification of Closure

Within 60 calendar days from the date of completion of closure of each of the OB Unit and the OD Unit, the Permittee shall submit to the Department a final closure report and written closure certification signed by the Permittee and an independent professional engineer registered in the State of New Mexico, that the OB Unit or the OD Unit was closed as required by the procedures specified in the Closure Plan contained in Permit Attachment 10. [40 C.F.R. § 264.115 (incorporated herein by reference)].

2.9. POST-CLOSURE CARE

Pursuant to 40 C.F.R. § 264.603, if any OB/OD Unit operations release hazardous waste or hazardous constituents into soil, sediment, or groundwater that cannot be completely removed or decontaminated during closure (clean closed), then the Unit or Units shall be subject to the requirements for closure and post-closure care for landfills in 40 C.F.R. §§ 264.117 through 120, and 264.310, which are incorporated herein by reference. The Permittee shall also meet the requirements of 40 C.F.R. § 264.601 (incorporated herein by reference) during post-closure care for the Units. The post-closure plan required under 40 C.F.R. § 264.118 (incorporated herein by reference) must specify the procedures that will be used to satisfy these requirements.

2.9.1. Contingent Post-Closure Plan

The Permittee shall submit to the Department for approval within 90 days of the effective date of this Permit a written Contingent Post-Closure Plan meeting the requirements of 40 C.F.R. § 264.118 for each treatment unit. The Contingent Post-Closure Plans must identify the activities that will be carried on after closure and the frequency of these activities, and at a minimum include all of the information required pursuant to 40 C.F.R. § 264.118(b).

2.9.2. Revisions to Contingent Post-Closure Plan

The Permittee shall amend the Contingent Post-Closure Care Plan whenever changes in circumstances necessitate a modification of the post-closure plan, as required by 40 C.F.R. § 264.118(d) which is incorporated herein by reference. The Permittee shall submit to the Department for approval a revised Post-Closure Care Plan within 60 days after discovering that a

revised Post-Closure Care Plan is required in accordance with 40 C.F.R. § 264.118(d), or within 60 days after receiving written notification by the Department, whichever is earlier.

2.10. FINANCIAL RESPONSIBILITY

2.10.1. Cost Estimate for Closure

Pursuant to 40 C.F.R. § 264.140(c), as a federal entity, the Permittee is exempt from the requirement to provide a cost estimate for closure as specified at 40 C.F.R. § 264.142.

2.11. FINANCIAL ASSURANCE FOR CLOSURE

Pursuant to 40 C.F.R. § 264.140(c), as a federal entity, the Permittee is exempt from the requirement to submit a signed duplicate original of the closure financial assurance instrument as specified at 40 C.F.R. § 264.143.

2.11.1. Liability Insurance Requirements

Pursuant to 40 C.F.R. § 264.140(c), as a federal entity, the Permittee is exempt from the requirement to have and to maintain liability coverage for sudden and accidental occurrences as specified at 40 C.F.R. § 264.147(a).

2.11.2. Incapacity of Owners or Operators, Guarantors, or Financial Institutions

Pursuant to 40 C.F.R. § 264.140(c), as a federal entity, the Permittee is exempt from the requirement to notify the Department of the commencement of bankruptcy as specified at 40 C.F.R. § 264.148.

2.11.3. Disclosure Statement

Pursuant to NMSA 1978, Section 74-4-4.7(F)(1), as a federal entity, the Permittee is not required to file a disclosure statement.

PERMIT PART 3: OPEN BURN AND OPEN DETONATION TREATMENT UNITS

3.0 INTRODUCTION

This Permit Part (3) contains conditions setting the maximum quantities of hazardous waste allowed to be treated in the Open Burn Unit and the Open Detonation Unit. It also contains conditions for the design, construction, and operation of these Units. The conditions related to operation of the Units include restriction on the hours of operation, safety requirements, and requirements for routine maintenance. In addition, this Part (3) contains conditions for the analysis of waste, and for air, soil, and groundwater monitoring including the installation of groundwater monitoring wells.

3.1. MAXIMUM QUANTITY OF WASTE TO BE TREATED

The amount of hazardous waste open burned by the Permittee shall not exceed 5,000 lbs per treatment event, 80,000 pounds per calendar year, or 800,000 pounds for the term of the Permit as specified in Table 3-1 below. The Permittee shall not open detonate more than 1,500 pounds uncased explosives or 200 pounds cased munitions per treatment event, 18,000 pounds per calendar year or 180,000 pounds for the term of the Permit. The Permittee shall not treat more than the above quantities, except in case of an emergency and after authorization by the Department.

The Permittee is permitted to open burn or detonate only the wastes listed in Tables 4-1 and 4-2 of Attachment 4, subject to the terms of this Permit.

TABLE 3-1

TREATMENT UNIT	DESCRIPTION OF TREATMENT UNIT	GENERALIZED DESCRIPTION OF HAZARDOUS WASTE	HAZARDOUS WASTE NUMBERS	MAXIMUM QUANTITY OF WASTE ALLOWED
Open Burn	The Unit consists of a stationary rectangular steel container on a concrete pad, which is surrounded by concrete walls on three sides. The steel container is 11 feet (ft) long, with an inner height of 4.3 ft, and an overall height of 5.25 ft. The steel container has a capacity of 12 cubic yards.	Explosive Wastes and other hazardous wastes. Reactive Wastes.	D001, D003, D007, D008, D018, and D034	80,000 lbs per year, 800,000 lbs total over Permit term.
Open Detonation	The Unit is circular in shape with a diameter of 800 ft. Typical excavations (craters) where treatment takes place are rectangular and are about 30 ft long, 15 ft wide and about 12 ft deep.	Explosive Wastes and other hazardous wastes.	D001, D002, D003, D005, D007, D008, D009, D018, D030, D034, and D040	18,000 lbs per year, 180,000 lbs total over Permit term.

3.2. DESIGN, CONSTRUCTION, OPERATION, AND ROUTINE MAINTENANCE

3.2.1. General Requirements

The Permittee shall design, construct, operate, and maintain the Open Burn Unit and Open Detonation Unit to minimize the possibility of an accidental fire, explosion, or any sudden or nonsudden release of hazardous waste or hazardous constituents into air, soil, sediment, surface water, or groundwater which could threaten human health or the environment, as required by 40 C.F.R. §§ 264.31 and 264.601 which are incorporated herein by reference.

The Permittee shall design, construct, operate, and maintain the Open Burn Unit and Open Detonation Unit to minimize emissions of air pollutants, and to minimize the possibility of human exposure to toxic or hazardous air pollutants.

The Permittee shall design, construct, operate, and maintain the Open Burn Unit and Open Detonation Unit to minimize noise.

The Permittee shall operate and maintain the Open Burn Unit and Open Detonation Unit with a cover and secondary containment system.

The Permittee shall design, construct, operate, and maintain the Open Burn Unit and Open Detonation Unit in accordance with the conditions of this Permit.

3.2.2. Run-Off and Run-On Controls

The Permittee shall design, construct, operate, and maintain run-off control systems at the Open Burn Unit and Open Detonation Unit to prevent precipitation from leaving the Units and transportation of hazardous waste or hazardous constituents, as required by 40 C.F.R. § 264.601(b). The Permittee shall operate and maintain run-off control systems in accordance with the conditions of the *General Facility Information* (Permit Attachment 1) and *Design and Operation of the Open Burn and Open Detonation Units* (Permit Attachment 2).

The Permittee shall design, construct, operate, and maintain run-on control systems at the Open Burn Unit and Open Detonation Unit to prevent precipitation from entering the Units, as required by 40 C.F.R. § 264.601(b). The Permittee shall design, construct, operate, and maintain run-on control systems in accordance with the conditions of *General Facility Information* (Permit Attachment 1) and *Design and Operation of the Open Burning and Open Detonation Units* (Permit Attachment 2).

The Permittee shall maintain the protective berm around the OD Unit to prevent surface drainage from entering any pits or craters, as required by 40 C.F.R. § 264.601(b).

3.2.3. Restrictions on Operations

3.2.3.1. *Hours of Operation*

The Permittee shall conduct open burning and open detonation operations only between sunrise and sunset, except in an emergency.

3.2.3.2. *Weather Conditions*

The Permittee shall not conduct open burning or open detonation operations at any time when wind speed exceeds 15 miles per hour (25 kilometers per hour).

The Permittee shall not conduct open burning or open detonation operations on any day when a thunderstorm is imminent or within 10 miles (16 kilometers) of the Open Burn Unit and Open Detonation Unit.

The Permittee shall not conduct open burning or open detonation operations during a snowstorm.

The Permittee shall not conduct open burning or open detonation operations during a dust storm or sandstorm.

3.2.3.3. *Range Fire*

The Permittee shall not conduct open burning or open detonation operations if a range fire has the potential to reach the boundary of the EOD Range.

3.2.3.4. *Other Restrictions*

The Permittee shall cease operations immediately upon the discovery of an unsafe situation including loss of communication with EOD Range Control or aircraft in dangerous proximity to the EOD Range.

3.2.4. Operation Safety

3.2.4.1. *Personnel Safety*

The Permittee shall not conduct open burning operations if unauthorized personnel are within 1500 feet of the Open Burn Unit. The Permittee shall ensure that at least two authorized persons are present during any open burning or open detonation operation. No one shall be allowed to conduct open burning or open detonation operations alone.

Following an open burning operation, no personnel shall enter the Unit for a minimum of 24 hours after the fire has died out. The explosive ordnance Team Leader shall then be responsible for determining whether or not it is safe to enter the unit.

The Permittee shall not conduct open detonation operations if unauthorized personnel are within sight of the Open Detonation Unit.

3.2.4.2. *Safety Precautions*

The Permittee shall conduct all open burning and open detonation operations in accordance with all the safety precautions provided in the *Design and Operation of the Open Burn and Open Detonation Units* (See Permit Attachment 2) and Section 3.2.4 of this Part (3).

3.2.4.3. *Posting of Warning Signs*

The Permittee shall post bilingual (English and Spanish) warning signs on the outer fence surrounding the EOD Range at spacing not to exceed 300 feet. The signs shall be conspicuously placed on the north, south, east, and west sections of the fence and at the entrance gate.

3.2.5. Routine Maintenance

3.2.5.1. *Accumulated Precipitation*

The Permittee shall not allow standing water in the OB Unit steel container or within the concrete walls surrounding the container or in any open detonation pit or crater. The Permittee shall remove any standing water within 24 hours after a precipitation event. The Permittee shall analyze any water removed from the Open Burn Unit and Open Detonation Unit to determine whether it is a hazardous waste in accordance with the *Waste Analysis Plan* (Permit Attachment 5), and shall manage it appropriately.

3.2.5.2. *Treatment Residue*

Within 24 hours after each open burning operation, the Permittee shall remove any treatment residue in the OB Unit. This removal of treatment residue shall be conducted only after it has been determined that it is safe for personnel to enter the treatment unit. The Permittee shall collect a sample of the residue pursuant to Section 5.2 of Permit Attachment 5, and sweep up the remaining residue and place it in a 6-mil plastic bag or other appropriate container. The Permittee shall manage residues from open burning as provided in Permit Attachments 2 and 5.

3.2.5.3. *Unexploded Ordnance and Other Kick-Out*

Within 24 hours after each open detonation or open burning operation, the Permittee shall inspect the cleared area within the inner fence for untreated waste, unexploded ordnance (UXO), fragments of waste (including metal casings) or other kick-out originating from the treatment operations. This inspection shall be conducted only after it has been determined that it is safe for personnel to enter the active portion of the treatment unit. Any untreated waste, UXO, waste fragments, metal casings, or other kick-out shall be placed in appropriate containers and managed and disposed of as hazardous waste or solid waste, as appropriate. Kick-out shall not be stored at the Open Burn Unit and Open Detonation Unit.

3.2.5.4. *Open Burn Container*

Within 24 hours after each open burning operation, the Permittee shall conduct an inspection of the OB Unit steel container and surrounding concrete walls to ensure that the Unit is in good condition.

3.3. WASTE ANALYSIS

3.3.1. Explosive Wastes

The Permittee shall characterize Explosive Wastes using acceptable knowledge or sampling and analysis in accordance with Attachment 5 of this Permit, as appropriate.

3.3.2. Treatment Residues

The Permittee shall analyze treatment residue to determine if it is a hazardous waste and for purposes of meeting LDR requirements in accordance with Section 5.3 of Permit Attachment 5 (Waste Analysis Plan), and shall manage it accordingly.

3.4. AIR AND SOIL MONITORING

The Permittee shall evaluate the potential impact of the air pollutants on human health before, during, and after open burning or open detonation operations by screening and assessment, in compliance with 40 C.F.R. § 264.601(c)(5) which is incorporated herein by reference.

The Permittee shall specify in an annual sampling and analysis report on air quality the types and schedules of air monitoring required by the Albuquerque Environmental Health Department, and the instrumentation required. The Permittee shall submit this report to the Department and include in the report any air monitoring data from the previous calendar year. The report is due by March 31 of each calendar year.

The Permittee shall conduct an annual soil sampling and analysis program in accordance with Permit Attachment 6, as required by 40 C.F.R. § 264.278 and § 264.601(b).

The Permittee shall carry out the required annual soil sampling within 24 hours after an open burn or open detonation event. The soil sampling shall be preceded by an inspection of the Open Burn Unit and Open Detonation Unit and removal of any unexploded ordnance or other kick-out by trained ordnance disposal personnel.

The Permittee shall implement the quality assurance/quality control program set forth in Attachments 5 and 6 of this Permit.

3.5. HUMAN RISK SCREENING

Until commencement of closure of the OB and OD Units, the Permittee shall sample and analyze soil in accordance with the SSAP in Permit Attachment 6. The annual soil sample results for metals shall be compared with background levels listed in Table 6-5, Attachment 6 of this Permit. If a sample result exceeds the applicable background level, the result shall then be compared to the most recent EPA Region 6 and the Department's soil screening level (SSL) for an industrial scenario. Analytical results for explosives shall be compared to the SSLs. The Department's SSLs for industrial scenarios are set forth in the Department's 2004 edition of the *Technical Background Document for Development of Soil Screening Levels*, as it may be updated (EPA, 2004; NMED, 2004).

If a Department or EPA SSL does not exist for a substance, the Permittee shall calculate a screening level based on an industrial scenario and a cancer risk of 10^{-5} for carcinogens, and a HQ of 1.0 for noncarcinogens. This calculated SSL shall be subject to Department approval and shall be revised if determined by the Department not to be protective of human health.

Any exceedance of an EPA Region 6 SSLs, a Department SSL, or a calculated SSL if a Department or EPA SSL does not exist, shall be reported to the Department in writing within 15 calendar days. The Department will review the information and, at its discretion, may require additional site characterization. If the Department requires additional site characterization, the Permittee shall prepare a SAP and submit it to the Department for approval. The SAP shall be prepared and submitted to the Department within 60 calendar days of the request. Upon the Department's approval of the SAP, the Permittee shall implement the plan within 30 calendar days.

3.6. GROUNDWATER MONITORING

The Open Burn Unit and Open Detonation Unit are subject to 40 C.F.R. § 264.90(d) and the environmental performance standards of 40 C.F.R. § 264.601, which are incorporated herein. The Permittee shall comply with the requirements of 40 C.F.R. §§ 264.91 through 264.100 in lieu of 40 C.F.R. § 264.101 for purposes of detecting, characterizing, and responding to releases to the uppermost aquifer. Groundwater monitoring shall be conducted during the entire period of operations, including the period for closure, to ensure the protection of groundwater. Groundwater monitoring shall also be conducted during post-closure care, if post-closure care is required.

Because groundwater contaminants have not been detected at the Open Burn Unit and Open Detonation Unit in the past, the Permittee shall institute a detection monitoring program as required by 40 C.F.R. §§ 264.91(a)(4) and 264.98. The groundwater monitoring system may cover both the OB and OD Units.

3.6.1. Installation of Monitoring Wells

The Permittee shall install at least one well up gradient at the boundary of the Open Burn Unit and Open Detonation Unit, and at least three wells down gradient at the boundary of the Units. Within 90 days after the effective date of this Permit, the Permittee shall submit to the Department for approval a proposed monitoring well installation plan, which at a minimum shall include well locations, drilling specifications, well construction specifications, well development procedures, and a schedule for implementation and completion of the well installations and submittal of a well completion report. Upon Department approval of the plan, the Permittee shall implement the monitoring well installation plan according to the approved schedule. Upon completion of well installation, the Permittee shall submit to the Department a well completion report in accordance with the approved plan. The well completion report shall include at a minimum a map depicting surveyed well locations, as-built drawings and specifications, well construction logs, geological logs, and geophysical logs.

All wells installed at the Open Burn Unit and Open Detonation Unit must meet the general groundwater monitoring requirements of 40 C.F.R. §§ 264.97(a)(2), (b), and (c), as required by 40 C.F.R. § 264.98(b).

If any of the wells at the Open Burn Unit and Open Detonation Unit cannot be sampled due to a declining water table or for any other reasons, the Permittee shall apply for a permit modification to modify this Permit to propose replacement wells.

3.6.2. Sampling and Analysis

Within 90 days after the effective date of this Permit, the Permittee shall submit to the Department for approval a proposed groundwater sampling and analysis plan as a modification to this Permit. Upon approval, the groundwater sampling and analysis plan shall become Attachment 11 of this Permit. The plan shall meet the requirements of 40 C.F.R. § 264.98 for a detection monitoring program in 40 C.F.R. § 264.98 which is incorporated herein by reference. The plan shall require:

1. At least one sequence of four samples shall be collected from each well at least

semiannually in accordance with 40 C.F.R. § 264.98(d).

2. Samples of groundwater shall be collected from each of the monitoring wells and field and laboratory analysis of the samples shall be conducted for the parameters listed in Table 3-2 of this Permit, pursuant to 40 C.F.R. § 264.98(a).
3. A report on the field and laboratory analytical data shall be submitted to the Department within 90 days after the samples have been collected.
4. The groundwater flow rate and direction in the uppermost aquifer shall be determined at least annually as required by 40 C.F.R. § 264.98(e).
5. A determination shall be made whether there is statistically significant evidence of contamination at each monitoring well after each sampling event in accordance with 40 C.F.R. § 264.98(f).
6. The method used to make the statistical determination shall be identified.
7. The applicable groundwater investigation requirements of Section 5.1.3 of Part 5 of this Permit shall be met, including but not limited to the requirements for the collection and analysis of quality control samples, proper selection and use of sampling equipment, labeling, containers, preservatives, and analytical methods, use of chain-of-custody procedures, and validation of analytical data.

TABLE 3-2 **GROUNDWATER MONITORING PARAMETERS**
Volatile organic compounds
Semi-volatile organic compounds
Perchlorate
Metals (all metals listed in Appendix IX to 40 C.F. R. Part 264, including antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, tin, vanadium, and zinc)
Explosives
General chemistry parameters tabled in Section 6.3.1.2 in Part 6 of this Permit

Upon Department approval of the plan, the Permittee shall implement the groundwater sampling and analysis plan according to the approved schedule in the plan and as required by 40 C.F.R. § 264.98(c).

If the Permittee or the Department determines that there is statistically significant evidence of contamination at any monitoring well, the Permittee shall implement the requirements of 40 C.F.R. § 264.98(g), including the submittal of an application for a permit modification containing a plan for a compliance monitoring program pursuant to 40 C.F.R. §§ 264.98(g)(4)

and 264.99.

The Permittee shall meet the groundwater protection standard at 40 C.F.R. § 264.92. Should corrective action be required, the Permittee shall meet the requirements of Parts 4 and 5 of this Permit, and shall implement corrective action as necessary to protect human health and the environment from all releases of hazardous waste or hazardous constituents.

Pursuant to 40 C.F.R. § 264.98(h), if the Permittee determines that the detection monitoring program no longer satisfies the HWMR, the Permittee shall within 90 days submit to the Department an application for a permit modification to make any appropriate changes to the program.

3.7. ORGANIC AIR EMISSIONS REQUIREMENTS

The Permittee shall comply with all applicable requirements of 40 C.F.R. Part 264, Subpart BB.

3.7.1. Additional Waste Characterization Requirements for Air Emissions

The Permittee shall characterize hazardous waste to ensure compliance with applicable emission requirements of 40 C.F.R. Part 264, Subpart BB.

3.7.2. Equipment Containing or Contacting Hazardous Waste

Each piece of equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight shall be marked in such a manner that it can be distinguished readily from other pieces of equipment in accordance with 40 C.F.R. § 264.1050(d).

Pursuant to 40 C.F.R. § 264.1050(f), equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year is excluded from the requirements of 40 C.F. R. §§ 264.1052- 264.1060 if it is identified, as required in 40 C.F.R. § 264.1064(g)(6). Such equipment shall be identified in writing in a log that shall be kept with the Facility Operating Record in accordance with 40 C.F.R. § 264.1064(g)(6). The information required pursuant to 40 C.F.R. § 264.1064(k)(1-3) shall also be recorded in a log that is kept with the Facility Operating Record.

The Permittee shall comply with all applicable requirements of 40 C.F.R. § 264.1052 through 264.1060 for any equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for 300 or more hours per calendar year. The log shall note the total time elapsed that any equipment contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight.

PERMIT PART 4: CORRECTIVE ACTION: GENERAL PROVISIONS AND PROCEDURES

4.0 INTRODUCTION

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 Permittee shall implement corrective action as necessary to protect human health and the environment from all releases of hazardous waste or hazardous constituents from operating or closed units, and from any releases of hazardous waste or hazardous constituents from any Solid Waste Management Unit (SWMU) or Area of Concern (AOC) at the Facility.

A summary of submittals and reports for corrective actions required of the Permittee is found in Table 4-1, below.

4.1. GENERAL REQUIREMENTS

4.1.1. Offsite Access

To the extent any requirement of this Permit, including any work plan approved under this Permit, requires access to property not owned or controlled by the Permittee, the Permittee shall use its best efforts to obtain access from the present owners of such property to conduct required activities, and to allow the Department access to such property to oversee such activities. In the event that access is not obtained when necessary, the Permittee shall notify the Department in writing regarding its best efforts and its failure to obtain such access.

4.1.2. Field Activities

The Permittee shall notify the Department in writing (for example, e-mail, fax, letter) of any field sampling or other field activities undertaken pursuant to any work plan or requirement of this Permit, and shall provide the Department the opportunity to collect split samples upon request of the Department. For such sampling or other field activities, the Permittee shall provide the Department with as much advance notice as is practicable, but no less than 15 days prior to the conduct of such sampling.

The Permittee shall notify the Department in writing a minimum of 15 days prior to the implementation of any work plan required under this Permit.

4.1.3. Record Preservation

Until ten years after the Permittee's receipt of the Department's written notice that corrective action has been completed for all SWMUs and AOCs listed on Table 4-2 of this Part (4), the Permittee shall maintain all records, documents, data, and other information that are required to be prepared under this Permit for corrective action.

4.1.4. Releases beyond Facility Boundary

The Permittee shall notify the Department orally, within 24 hours of discovery, of any release of hazardous waste or hazardous constituents, and has the potential to migrate beyond the Facility

boundary or has migrated beyond the Facility boundary.

In the event that a hazardous waste or a hazardous constituent migrates beyond the Facility boundary, the Permittee shall implement corrective actions beyond the Facility property boundary as necessary to protect human health and the environment, unless the Permittee can demonstrate to the Department that, despite the Permittee's best efforts, the Permittee is unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of any responsibility to clean up a release that has migrated beyond the Facility boundary where offsite access has been denied. On-site measures to address such releases will be determined on a case-by-case basis and will be subject to the approval of the Department.

4.1.5. Work Plans and Other Deliverable Documents

All corrective action-related work plans, schedules, reports, and other deliverable documents that the Permittee is required to prepare under this Part (4) shall be submitted to the Department for review and approval as detailed in Part 1, Section 1.35.

4.1.6. Quarterly Progress Reports

The Permittee shall submit to the Department quarterly reports summarizing all corrective action activities conducted pursuant to this Permit by January 31, April 30, July 31, and October 31 of each year. Each report shall summarize the corrective action activities for the quarter (i.e., 3 month time period) ending the month preceding the due date of the report. The content of these reports shall include the information specified in Section 4.5.1.

4.1.7. Lists of SWMUs and AOCs and Annual Reporting of Outdoor Testing Activities

Figure 4-1 is a map showing the locations of SWMUs and AOCs at the Facility. Corrective action is required for all SWMUs and AOCs identified in Table 4-2 of this Part (4). Table 4-3 of this Part (4) contains a listing of all SWMUs and AOCs for which the Department has determined that corrective action is complete without controls.

Given the need to monitor current and future activities that could lead to creation of new SWMUs and AOCs, the Permittee shall submit to the Department an annual report containing a brief summary of outdoor testing and training activities. The report shall list the name, location, and a general description of the type or types of testing (e.g., firing site, explosives testing, drop testing, burn testing) and training conducted at each outdoor area. The first annual report shall be submitted to the Department within 90 days of the effective date of this Permit; subsequent reports shall be submitted annually thereafter by March 31 of each year.

4.1.8. Newly discovered SWMUs, AOCs, and Releases

The Permittee shall notify the Department orally, within 24 hours of discovery, of any newly identified SWMU or AOC. Within 15 days after the discovery of any newly identified or suspected SWMU or AOC, the Permittee shall notify the Department in writing of such discovery. The notification shall include, at a minimum, the location of the SWMU or AOC and all available information pertaining to the nature of any release of contaminants from the SWMU or AOC, including the contaminants that were released, the magnitude of the release, and the media affected by the release.

Within 60 days after submitting such written notification, the Permittee shall submit to the Department for approval a SWMU Assessment Report (SAR) for each newly identified or suspected SWMU or AOC. At a minimum, the report shall provide the following information, to the extent available:

1. Location of each unit on a topographic map of appropriate scale;
2. Designation of type and function of each unit;
3. General dimensions, capacities and structural description of each unit (including any available plans and drawings);
4. Dates of operation for each unit;
5. Identification of all wastes that have been managed at or in each unit, including any available data on hazardous constituents in the waste; and
6. All available information pertaining to any release of contaminants from each unit, including analytical data for groundwater, soil, sediment, rock, air, and surface water.

Based on the results of the report and any other relevant information, the Department will determine the need for further investigations at the SWMUs or AOCs covered in the report, including the need for a RCRA Facility Investigation (RFI) Report, pursuant to this Section (4.1.8). The Department may also require corrective measures of the SWMU or AOC, based on a finding that releases of contaminants have occurred, are occurring, or are likely to occur from the unit.

Within 15 days after the discovery of any previously unknown release of a contaminant into soil, sediment, surface water, or groundwater, the Permittee shall notify the Department in writing of such discovery. The Department may determine that further investigation of the release of contaminants is needed, including the need for an RFI Report. The Department may also require corrective measures of the SWMU or AOC, based on a finding that releases of contaminants have occurred, are occurring, or are likely to occur from the unit.

4.1.9. Determination of Corrective Action Complete (No Further Action)

Based on the results of an RFI Report or other relevant information, the Permittee may submit a request to the Department for a Class 3 permit modification under 40 C.F.R. **§** 270.42(c) to terminate corrective action for a specific SWMU or AOC. This permit modification request must contain information demonstrating that there are no releases of hazardous waste including hazardous constituents from a particular SWMU or AOC at the Facility that pose a threat to human health or the environment, as well as any additional information required in 40 C.F.R. **§** 270.42(c).

If the Department determines that releases or suspected releases which were investigated either are non-existent or do not pose a threat to human health or the environment, based upon review of the Permittee's request for a permit modification, the results of an RFI Report, or other information, including comments received during the public comment periods required for Class 3 permit modifications, the Department will grant the requested modification.

A determination of Corrective Action Complete shall not preclude the Department from requiring continued or periodic monitoring of air, sediment, soil, groundwater, or surface water, when site-specific circumstances indicate that releases of hazardous waste or hazardous constituents may

occur, and it is necessary to protect human health or the environment,.

A determination of Corrective Action Complete shall not preclude the Department from requiring further investigations, studies, or remediation at a later date, if new information or subsequent analysis indicates a release or likelihood of a release from a SWMU or AOC at the Facility that may pose a threat to human health or the environment. In such a case, the Department may initiate a modification to the Permit according to Condition 1.9.1 of Part 1 of this Permit.

4.1.10. Health and Safety Plan

The Permittee shall maintain a Facility Health and Safety Plan, which shall include:

1. A description of the Facility including availability of resources such as roads, water supply, electricity and telephone service;
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;
11. Routine and special training requirements for responders; and
12. Procedures for protecting workers from weather-related problems.

The Facility Health and Safety Plan shall be in accordance with:

1. NIOSH Occupation Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
2. EPA Order 1440.1 - Respiratory Protection;
3. EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;
4. Facility Contingency Plans included in this Permit;
5. EPA Operating Safety Guide (1984);
6. OSHA regulations, particularly 29 C.F.R. § 1910 and 1926;

7. State and local regulations; and
8. Other applicable EPA guidance.

4.1.11. Community Relations Plan

The Permittee shall maintain a plan for dissemination of information to the public regarding investigation and remediation activities and results. The plan shall:

1. Require the creation and maintenance of an active mailing list of interested parties, to be updated annually, including those on the official mailing list in accordance with 40 C.F.R. § 124.10;
2. Require informal meetings, including briefings and workshops as appropriate, with the public and local officials before and during the corrective action process, which shall be held at least twice every calendar year for as long as corrective action is required;
3. Require that news releases, fact sheets, work plan submittals, report submittals, and publicly available quarterly progress reports that explain the progress and conclusions of investigations and clean-ups be timely posted on the Permittee's website and timely provided to interested citizen groups and the public as requested;
4. Require the creation and maintenance of a public information repository and reading room;
5. Require that public tours and briefings be conducted to inform and to listen to public concerns, and to answer questions related to environmental monitoring, characterization, and remediation;
6. Require immediate written and, if possible, oral notification to affected parties of any discovered off-site release that could impact them; and
7. Require that interested community groups be notified of and be given opportunities to observe field data gathering activities conducted during the corrective action process (notices shall specify the time and need for any required safety and security training).

4.1.12. Land Transfer

In transferring land to another entity, the Permittee shall comply with the terms of Section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. § 9620(h), and as implemented in 40 C.F.R. Part 373. These provisions apply to any property owned by the Permittee on which any hazardous substance was stored for one year or more, known to have been released, or disposed of, subject to the limitations of 40 C.F.R. § 373.2. Consistent with CERCLA Section 120(h)(3)(A), the Permittee shall include in any deed that transfers property, the information required by CERCLA Section 120(h)(3)(A)(i), the covenant required by CERCLA Section 120(h)(3)(A)(ii), and the access clause required by CERCLA Section 120(h)(3)(A)(iii). The Permittee may defer the requirement of Section 120(h)(3)(A)(ii)(I), consistent with the terms of CERCLA Section 120(h)(3)(C).

For any deed transferring title from the Permittee that contains a restriction on future land use, the Permittee shall, within 90 days of transfer of the property, notify the U.S. Environmental Protection Agency (EPA) Region VI of the transfer and identify for the EPA the location of the property that is the subject of the transfer so that the EPA can, as appropriate, include such property in its pilot

institutional controls data base and tracking system.

4.1.13. Abandoned Septic Systems

In addition to the corrective action specified in this Permit, the Permittee shall close all abandoned septic systems in accordance with the New Mexico Environment Department's Liquid Waste Disposal System Regulations 20.7.3.307 NMAC.

4.2. SPECIAL INFORMATION SUBMITTALS

4.2.1. General Facility Information

The Permittee shall submit in a report to the Department, within thirty (30) days of the effective date of this Permit, the following information.

1. Maps and tables indicating the surveyed coordinates and locations of all existing springs, wells, and surface water gauging stations.
2. Water-level contour map of known radii-of-effects from pumping of municipal and Facility supply wells.
3. Water level data presented graphically and in tabular format.
4. Maps showing the boundaries of all Facility Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs).

This report is a one-time submittal, unless new information becomes available; in that case, the report shall be updated and resubmitted at least annually by March 31 of each year for each case that new information becomes available.

4.2.2. Potential Receptors Information

The Permittee shall submit a report to the Department describing human populations and environmental systems that are susceptible to contaminant exposure from the Facility. Chemical and radiological analysis of biological samples may be needed. Data on observable effects in ecosystems may also be required. The following information shall be gathered and reported.

1. Local uses and possible future uses of groundwater, including:
   a). Type of use (for example., potable, domestic, agricultural, residential, industrial, municipal) and
   b). Locations of all groundwater wells, names of owners or tenants at those locations, and current use of those wells within one mile of the Facility.
2. Local uses and possible future uses of surface waters within 1.5 miles of the Facility, including domestic and municipal, recreational, agricultural, industrial, and environmental.
3. Human use of or access to the Facility and adjacent lands, including but not limited to recreational, residential, commercial, and industrial.
4. A demographic profile of people who use or have access to the Facility and adjacent land, including, but not limited to age, gender, and sensitive subgroups.

5. A description of the local ecology, including biota in surface water bodies on, adjacent to, or affected by the Facility, and a description of any endangered or threatened species near the Facility.

This report is a one-time submittal, unless new information becomes available; in which case, the report shall be updated and resubmitted at least annually by March 31 of each year for each case that new information becomes available.

4.2.3. Information on Surface Water and Sediment Contamination

The Permittee shall submit a report to the Department pertaining to contamination in surface water bodies and sediment resulting from contaminant releases at the Facility, within ninety (90) days of the effective date of this Permit. The investigation shall at minimum include the following.

1. A description of each surface water body, including location, elevation, flow, velocity, depth, width, seasonal fluctuations, flooding tendencies, drainage patterns, and evapotranspiration rates.
2. A description of sediment characteristics, including depositional area, thickness, mineralogy, grain size, density, ion exchange capacity, and total natural organic carbon content.
3. Maps for all areas included in surface water and sediment investigations that meet requirements in 40 C.F.R. **§** 270.14 and are sufficiently detailed and accurate to depict all the information required.
4. A description of the horizontal and vertical extent of any immiscible or dissolved contaminant plumes originating from the Facility, and the extent of contamination in the underlying sediments.
5. The horizontal and vertical direction and velocity of contaminant movement.
6. An evaluation of the physical, biological, chemical and radiochemical factors influencing contaminant movement.
7. An extrapolation to future contaminant movement.
8. A description of the chemistry of the contaminated surface waters and sediments, including pH, temperature, total dissolved solids, total suspended solids, biochemical oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, and specific contaminant concentrations.

4.2.4. Information on Air Contamination

The Permittee shall submit a report to the Department pertaining to particulate and gaseous contaminants released into the atmosphere. The report shall provide the following information.

1. A description of the horizontal and vertical direction and velocity of contaminant movement.
2. The rate and amount of the release.

3. The chemical, radiological, and physical composition of the contaminants released, including horizontal and vertical concentration profiles.

4.2.5. Information on Subsurface Gas

The Permittee shall submit a report to the Department pertaining to the nature, rate and extent of releases of subsurface gases from the SWMUs and AOCs. The report shall include, but is not limited to:

1. Results of monitoring subsurface gases released from the SWMU and AOC, and
2. An assessment of the potential for threat to human health or the environment.

4.3. CORRECTIVE ACTION PROCEDURES

The corrective action process for a given SWMU or AOC begins with a site investigation to characterize any releases of contaminants. If found to be necessary by risk assessment or by comparison to water quality standards, corrective measures are conducted at a contaminated site to remove or isolate contaminants that pose unacceptable risk to human or ecological receptors. Verification sampling is required to determine if cleanup levels have been successfully achieved.

4.3.1. Site Investigations

The Permittee shall conduct a site investigation for each SWMU and AOC listed on Table 4.2 of this Permit. The Department may determine that further investigation is needed at any SWMU or AOC at the Facility. If the Department determines that such further investigation is needed, it will notify the Permittee in writing.

4.3.1.1. *RCRA Facility Investigation (RFI) Work Plans*

The Permittee shall submit to the Department for approval a RFI Work Plan, in the format and with the content described in Section 4.5.2 of this Part (4), for each SWMU and AOC needing further investigation, including those listed on Table 4-2 of this Part (4). An individual RFI Work Plan may cover several SWMUs or AOCs. The RFI Work Plans shall be submitted by the date specified in the Department's written notification or in accordance with the schedule in Table 4-2 of this Part (4). Additional characterization required by the Department that is not already covered in an approved RFI Work Plan, or that is not addressed during implementation of field activities conducted under an existing approved RFI Work Plan, shall be proposed in a supplemental RFI Work Plan submitted to the Department for approval. The supplemental RFI Work Plan may reference a prior approved RFI Work Plan and any corresponding RFI Report for background information.

4.3.1.2. *Site Investigations*

The Permittee shall perform the site investigations only in accordance with approved RFI Work Plans.

4.3.1.3. *RFI Reports*

The Permittee shall submit to the Department for approval an RFI Report, in the format and with the content described in Section 4.5.3 of this Part (4), that presents the results of field activities, summarizes the data collected, and presents the recommendations and conclusions of each

investigation conducted pursuant to an approved RFI Work Plan. An individual RFI Report may cover several SWMUs or AOCs.

4.3.2. Corrective Measures

4.3.2.1. *General*

The Department will require corrective measures if the Department determines, based on a RFI Report or other relevant information available to the Department, that there has been a release of hazardous waste or hazardous constituents into the environment 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 Permittee in writing.

4.3.2.2. *CMS Work Plan*

If the Department requires corrective measures, the Permittee shall submit to the Department for approval a Corrective Measures Study (CMS) Work Plan, in the format and with the content described in Section 4.5.6 of this Part (4), within 90 days of notification by the Department that a CMS Work Plan is required or by such other due date as is stated in the notification. The CMS Work Plan shall contain a schedule to conduct the CMS. Upon approval of the CMS Work Plan by the Department, the Permittee shall implement the work plan.

The CMS 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 levels.

4.3.2.3. *CMS Report*

The Permittee shall submit a CMS Report, in the format and with the content described in Section 4.5.7 of this Part (4), to the Department within 90 days of completion of the CMS. When the Department determines that there are no deficiencies in the CMS Report, the Department will seek and consider public comment prior to selecting a remedy.[1]

4.3.2.4. *Cleanup Standards*

The Permittee shall evaluate corrective measures and propose a preferred remedy that is capable of achieving the cleanup levels outlined in Section 4.4 of this Part (4) including, as applicable, any approved alternate cleanup goals established by a risk assessment.

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1. In selecting a remedy, the Department may select a remedy for a particular SWMU or AOC that encompasses several separate actions. The use of the term “remedy” refers to all such actions.

4.3.2.5. *Remedy Evaluation Criteria*

4.3.2.5.1. Threshold Criteria

The Permittee shall evaluate each of the remedy alternatives against 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 within a reasonable timeframe;
3. Control the source or sources of releases so as either to reduce to the extent practicable, or to eliminate, further releases of hazardous waste or hazardous constituents that may pose a threat to human health and the environment; and
4. Comply with applicable standards for management of wastes.

4.3.2.5.2. Remedial Alternative Evaluation Criteria

The Permittee shall evaluate each of the remedial alternatives for the factors described in this Section. These factors shall be balanced in proposing a preferred remedy.

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 that will be required after implementation of the remedy; the uncertainties associated with leaving wastes in place; and the potential for failure of the remedy. The Permittee shall give preference to a remedy that reduces risks with little long-term management and that has proven effective under similar conditions.

Reduction of Toxicity, Mobility, or Volume

The remedy shall be evaluated for its effectiveness in reducing the toxicity, mobility, and volume of hazardous wastes and hazardous constituents. The Permittee shall give preference to a remedy that will more completely, permanently, and promptly reduce the toxicity, mobility, and volume of hazardous wastes and hazardous constituents.

Short-Term Effectiveness

The remedy shall be evaluated for its short-term effectiveness in reducing the toxicity, mobility, and volume of hazardous wastes and hazardous constituents. This factor includes considerations 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 Permittee shall give preference to a remedy that quickly reduces short-term risks, without creating significant additional risks.

Implementability

The remedy shall be evaluated for its implementability or the difficulty of implementing the remedy. This factor includes consideration of potential installation and construction difficulties; operation and maintenance difficulties; difficulties with cleanup technology; permitting and approval

requirements; and the availability of necessary equipment, services, expertise, and waste storage and disposal capacity. The Permittee shall give preference to a remedy that can be implemented quickly and easily, and poses fewer and lesser difficulties.

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 management costs, 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. All costs shall be calculated based on their net present value. The Permittee shall give preference to a remedy that is less costly, but does not sacrifice protection of human health and the environment.

4.3.2.6. *Remedy Selection*

Upon deeming the CMS Report to be complete, the Department will select a proposed remedy or remedies for the SWMU or AOC. The Department may propose a different remedy from that recommended by the Permittee in the CMS Report. The Department will issue a Statement of Basis for the proposed 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. The Department will provide an opportunity for a public hearing on the proposed 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, if a hearing is held. The public hearing will follow the 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 Section 20.4.1.901 NMAC and 40 C.F.R. Part 270.

4.3.2.7. *CMI Work Plan*

Within ninety (90) days after the Department's selection of a final remedy, or as otherwise specified by the Department in writing, the Permittee shall submit to the Department for approval a CMI Work Plan describing the design, construction, operation, maintenance, and performance monitoring for the selected remedy, and a schedule for its implementation. The CMI Work Plan shall be submitted to the Department for review in accordance with Part 1, Section 1.35. Upon approval of the work plan by the Department, the Permittee shall implement the work plan.

The CMI Work Plan shall, at a minimum, include the elements found in the format provided in Section 4.5.8 of this Part (4).

4.3.2.8. *Corrective Measures Implementation*

The Permittee shall implement the final remedy selected by the Department according to the

approved CMI Work Plan and implementation schedule.

4.3.2.9. *Progress Reports*

The Permittee shall submit to the Department progress reports in accordance with the schedule approved in the CMI Work Plan. The progress reports shall, at a minimum, include the information specified in Section 4.5.9 of this Part (4).

4.3.2.10. *CMI Report*

Within ninety (90) days after completion of a remedy, the Permittee shall submit to the Department for approval a CMI Report. The CMI Report shall include the information specified in Section 4.5.10 of this Part (4).

4.3.3. Accelerated Cleanup Process

4.3.3.1. *General*

If the Permittee identifies a corrective measure that, if implemented voluntarily, will reduce risks to human health and the environment to levels acceptable to the Department, will reduce cost or will achieve cleanup of a SWMU or AOC ahead of schedule, the Permittee may implement the corrective measure as provided in this Section, in lieu of the process established in Section 4.3.2 of this Part (4). The accelerated cleanup process shall be used only at sites to implement presumptive remedies at small-scale and relatively simple sites where groundwater contamination is not a component of the accelerated cleanup, where the remedy is considered likely 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.

4.3.3.2. *ACM Work Plan*

The Permittee shall submit to the Department for approval a proposed Accelerated Corrective Measures (ACM) Work Plan, which shall include the following:

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 sampling and analytical methods and procedures for characterization and remediation verification; and
4. A schedule for implementation and reporting on the proposed cleanup action.

The Permittee shall obtain approval of an ACM Work Plan from the Department prior to implementation of the work. The Permittee shall prepare the ACM Work Plan in accordance with the requirements of this Section (4.3.3.2), and shall include a proposed implementation schedule. In accordance with Part 1, Section 1.34, if the Department disapproves the ACM Work Plan, the Department will notify the Permittee in writing of the work plan deficiencies and will specify a due date for submittal of a revised ACM Work Plan.

4.3.3.3. *ACM Implementation*

The Permittee shall implement the accelerated cleanup measure according to the approved ACM Work Plan. Within 90 days of completion of the ACM, the Permittee shall submit to the Department for approval a CMI Report that is written in a format in accordance with Section 4.5.10 of this Part (4). If upon review, the Department identifies any deficiencies in the CMI Report, the Department will notify the Permittee in writing and will specify a due date for submittal of a revised CMI Report.

4.3.4. Interim Measures

4.3.4.1. *General*

The Department may require interim measures, if the Department determines that such measures are necessary, to reduce or prevent migration of hazardous wastes or hazardous constituents that have, or may result in, an unacceptable human or environmental receptor exposure to hazardous wastes or hazardous constituents while long-term corrective action remedies are being evaluated and implemented. Upon making such determination, the Department will notify the Permittee in writing. Alternatively, the Permittee may identify the need to implement interim measures and may submit an Interim Measures Work Plan in writing to the Department for approval. The Permittee may initiate emergency interim measures without prior approval of the Department pursuant to Section 4.3.4.4 of this Part (4).

4.3.4.2. *Interim Measures Work Plan*

Within 60 days after receiving notification from the Department that interim measures are required, or such other period as stated in the notification, the Permittee shall submit to the Department for approval an Interim Measures Work Plan. The Interim Measures Work Plan shall include the same elements as specified in Section 4.5.8 of this Part (4).

4.3.4.3. *Interim Measures Implementation*

The Permittee shall implement the interim measures in accordance with an approved Interim Measures Work Plan and implementation schedule unless the Permittee is implementing an emergency interim measures without prior Department approval in accordance with Section 4.3.4.4 of this Part (4).

4.3.4.4. *Emergency Interim Measures*

The Permittee 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 Permittee shall notify the Department within three business days 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 Permittee may implement the proposed emergency interim measures without submitting an Interim Measures 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 Permittee 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 who handled 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.

4.3.4.5. *Interim Measures Report*

Within 60 days after completion of interim measures, or as otherwise specified in the implementation schedule contained in the approved Interim Measures Work Plan, the Permittee shall submit to the Department for approval an Interim Measures Report summarizing the results of the interim measures, that shall include copies of the results of all field screening, monitoring, sampling, analyses, and other data generated as part of the interim measures implementation.

4.4. CLEANUP LEVELS

The Permittee shall adhere to the requirements of this Section (4.3) for implementing and completing cleanup of groundwater, surface water, and soil at all SWMUs and AOCs at the Facility. All proposed cleanup levels will be subject to the Department's review and approval

4.4.1. Cleanup Levels for Contaminants in Groundwater (other than Perchlorate)

The cleanup levels for groundwater shall be the WQCC water quality standards (20.6.2.3103 and 20.6.2.4103 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). If both a WQCC standard and an MCL have been established for a contaminant, then the most stringent of the two levels shall be considered the cleanup level for that contaminant.

If a WQCC standard or MCL has not been established for a contaminant, the EPA Region VI Human Health Medium-Specific Screening Level (HHMSSL) for tap water shall be used as the cleanup level. If a HHMSSL for tap water does not exist for a contaminant, and toxicological information is available, the Permittee shall propose a cleanup level based on a residential scenario, a total target human health excess cancer risk level of 10^{-5}, and for non-carcinogenic contaminants a HQ of one (1.0).

4.4.2. Cleanup Levels for Perchlorate in Groundwater

As described in Section 5.1.4 of Part 5 of this Permit, the Permittee shall determine the nature and extent of any perchlorate contamination at the Facility and, if necessary, down gradient of the Facility. If the New Mexico WQCC or the EPA adopts a groundwater standard for perchlorate, then the standard will become the cleanup level. Pending WQCC or EPA adoption of a groundwater standard, if perchlorate is detected at concentrations at or greater than 4 µg/L, then the Permittee shall use as a cleanup goal a HI of one (1.0) and a residential scenario as the basis for proposing a cleanup level.

4.4.3. Cleanup Levels for Soil Contaminants (Other than PCBs and Lead)

For contaminants in soil (other than polychlorinated biphenyls [PCBs], and lead), the Permittee shall propose a cleanup level based on a total human health excess cancer risk level of 10-5, and for noncarcinogenic contaminants a total HQ of one (1.0) for residential land use. Alternatively, the

Permittee may propose cleanup levels using the screening levels and procedures listed in the Department's most current version of "*Technical Background Document for Development of Soil Screening Levels*" (as it may be updated) for a residential land use scenario.

4.4.4. Cleanup Levels for Polychlorinated Biphenyls (PCBs) in Soil

For PCB contamination in soil, the Permittee shall propose a cleanup level based on the Department's Position Paper "*Risk-based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites*" (March 2000), as it may be updated. The soil cleanup level for PCBs is either a default concentration of 1.00 milligram per kilogram (mg/kg) or a risk-based PCB concentration level established through performing a human-health risk assessment assuming a residential land use scenario.

4.4.5. Cleanup Levels for Lead in Soil

The lead concentration in soil shall not exceed 400 mg/kg.

4.4.6. Cleanup Levels for Surface Water

The Permittee 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), and the procedures for alternate abatement standards (20.6.2.4103 NMAC).

4.4.7. Ecological Risk Evaluation and Cleanup Levels

Ecological risk shall be evaluated for any SWMU or AOC where there has been a release of contaminants. The Permittee shall evaluate ecological risk and propose a cleanup level derived using the methods in the Department's most current version of *"Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment"* (March 2000, as it may be updated). The Permittee may use EPA's ECO-SSLs with Department approval if a substance is not addressed in the Department's guidance on ecological risk.

4.4.8. Requests for Variance from Cleanup Levels

The Permittee may request a variance from a particular cleanup level. The nature of the request shall differ depending on whether a WQCC standard is involved. If a WQCC standard is involved, the Permittee may request an alternative abatement standard in accordance with the process specified in the WQCC Regulations at 20.6.2.4103.E and F NMAC.

For all other instances in which the Permittee requests a variance from a cleanup level, the Permittee shall submit a demonstration to the Department that achievement of the cleanup level is impracticable. In making such demonstration, the Permittee may propose consideration of such factors as technical or physical infeasibility of the project, ineffectiveness of proposed solutions, cost of the project, potential hazards to workers or to the public, and any other basis that may support a finding of project impracticability. In addition to demonstrating the basis for its impracticability request, the Permittee's written submittal shall propose the action to be taken by the Permittee if the Department approves the impracticability demonstration. Such action shall include, but is not limited to, completion of a site-specific risk assessment and identification of alternate clean-up

levels. The proposed alternative cleanup level will be subject to the Department's review and approval.

4.5. REPORTING REQUIREMENTS

The purpose of this Section is to provide reporting requirements for corrective action activities required under this Permit. This Section is not intended to provide reporting requirements for every potential type of activity conducted at the Facility; therefore, other formats or types of reports may be necessary or better suited for some activities. Described below are general reporting requirements and formats for Quarterly Reports, RFI Work Plans, RFI Reports, periodic monitoring reports, risk assessment reports, CMS Work Plans, CMS Reports, CMI Work Plans, CMI Work Plan Progress Reports, and CMI Reports. All Work Plans and Reports shall be prepared with technical and regulatory input from the Department. All Work Plans and Reports shall be submitted to the Department in the form of one electronic copy in a format acceptable to the Department and two paper copies.

4.5.1. Quarterly Reporting

Quarterly reports, as specified in Section 4.1.6 of this Part (4), shall include the following information.

1. A description of the work completed and an estimate of the percentage of total planned work completed;
2. Summaries of all findings, including summaries of laboratory data;
3. Summaries of all problems or potential problems encountered during the reporting period and actions taken to rectify problems;
4. Planned work for the next reporting period;
5. Summaries of contacts pertaining to corrective action with representatives of the local community, public interest groups, or State government during the reporting period;
6. Changes in key project personnel during the reporting period;
7. Summaries of any variances from approved investigation or remediation work plans; and
8. Brief summaries of any periodic monitoring reports prepared in accordance with the requirements in Section 4.5.4 of this Part (4).

4.5.2. RFI Work Plans

The Permittee shall prepare a RFI Work Plan using the format set forth below. An RFI Work Plan should be based on the data quality objective process, including, but not limited to, discussion on problem definition, development of a conceptual site model, data need assessment, and decision criteria. All research, locations, depths and methods of exploration, field procedures, analytical requirements, data collection methods, and schedules shall be included in a work plan. In general, interpretation of data acquired during previous investigations should be presented only in the background sections of a work plan. The other text sections of a work plan should be reserved for presentation of anticipated site-specific activities and procedures relevant to the project. Required sections for a RFI Work Plan are:

1. Title Page and Signature Block (for the name, title, and organization of the preparer and the responsible Facility representative).
2. Executive Summary.
3. Table of Contents.
4. Introduction.
5. Background Information.
6. Site Conditions.
7. Scope of Activities.
8. Investigation Methods.
9. Monitoring and Sampling Program.
10. Schedule.
11. Tables.
12. Figures.
13. Appendices (e.g., Investigation–Derived Waste Management Plan).

4.5.3. RFI Report

The Permittee shall prepare a RFI Report using the format set forth below. This Section describes the minimum requirements for reporting. All data collected during investigation of a SWMU or AOC shall be included in the RFI Report. In general, interpretation of data should be presented only in the background, conclusions and recommendations sections of the report. The other text sections of the report should be reserved for presentation of facts and data without interpretation or qualifications. Requirements for an RFI report are:

1. Title Page and Signature Block (for the name, title and organization of the preparer and the responsible Facility representative).
2. Executive Summary (Abstract).
3. Table of Contents.
4. Introduction.
5. Background Information.
6. Scope of Activities.
7. Field Investigation Results – Including, but not limited to (as applicable): surface conditions; subsurface conditions; monitoring well construction, boring or excavation abandonment; groundwater conditions; materials testing results; and pilot testing results.
8. Regulatory Criteria.
9. Site Contamination – Including as applicable, but not limited to: soil, rock and sediment sampling analytical results; soil, rock and sediment sample field screening results; groundwater sampling results; surface water sampling results; and subsurface vapor

sampling results; and conclusions.

10. Conclusions and Recommendations.
11. Tables - An explanation shall be provided on each table for all abbreviations, symbols, acronyms, and qualifiers.
12. Figures - All map figures shall include an accurate bar scale and a north arrow; other types of figures shall include a bar scale, if appropriate. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers.
13. Appendices - Including, as appropriate, field methods, boring/test pit logs and well construction diagrams, chemical analytical reports, and other appendices as required by the Department.

4.5.4. Periodic Monitoring Report

The Permittee shall prepare a Periodic Monitoring Report using the format set forth below. The reports shall present the results of periodic or routine groundwater and remediation system monitoring at the Facility. All data collected during each monitoring and sampling event in the reporting period shall be included in a periodic monitoring report. In general, interpretation of data should be presented only in the background, conclusions, and recommendations sections of a report. The other text sections of a report should be reserved for presentation of facts and data without interpretation or qualifications.

1. Title Page and Signature Block (for the name, title and organization of the preparer and the responsible Facility representative).
2. Executive Summary (Abstract).
3. Table of Contents.
4. Introduction.
5. Scope of Activities.
6. Regulatory Criteria.
7. Monitoring Results.
8. Conclusions and Recommendations.
9. Tables - An explanation shall be provided on each table for all abbreviations, symbols, acronyms, and qualifiers.
10. Figures - All map figures shall include an accurate bar scale and a north arrow; other types of figures shall include a bar scale, if appropriate. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers.
11. Appendices - Including, as appropriate, field methods, boring/test pit logs and well construction diagrams, chemical analytical reports, and other appendices as required by the Department.

4.5.5. Risk Assessment Report

The Permittee shall prepare a Risk Assessment Report using the format set forth below. Risk Assessment Reports may be appended to or combined with a CMS Report or a RFI Report to create a single document for a given SWMU or AOC. This Section provides a general outline for risk assessments and also lists the minimum requirements for describing risk assessment elements. In general, interpretation of data should be presented only in the background, conceptual site and risk exposure models, and conclusions and recommendations sections of a report. The other text sections of a Risk Assessment Report should be reserved for presentation of sampling results from investigations, the conceptual and mathematical elements of the risk assessment, and presentations of toxicity information and screening values used in the risk assessment. Human health and ecological risk assessments should be presented in separate sections, but the general risk assessment outline applicable to both sections is provided below as guidance. The conceptual site model shall be discussed in all risk assessments.

1. Title Page and Signature Block (for the name, title and organization of the preparer and the responsible Facility representative).
2. Executive Summary (Abstract).
3. Table of Contents.
4. Introduction.
5. Background Information -- Including site description and sampling results.
6. Conceptual Site and Risk Exposure Models.
7. Risk Screening Results.
8. Conclusions and Recommendations.
9. Tables.
10. Figures.
11. Appendices.

A section in the risk assessment report shall summarize the analytical results of sampling at the SWMU or AOC. It shall include a description of the history of releases of contaminants, the known and possible sources of contamination, the vertical and lateral extent of contamination present in each medium, and a discussion of any uncertainties that are associated with contaminant characterization. Sources that are no longer considered to be ongoing but represent the point of origination for contaminants transported to other locations shall be included. This section shall reference any pertinent figures, data summary tables, and references in other reports. References made to other reports shall include page number, table numbers, and figure numbers for the referenced information. Summaries of data for each contaminant shall include the maximum value detected, the detection limit, and the upper confidence limit (UCL) of the mean based on a 95% confidence level (if applicable to the data set) with the statistical method used to calculate the UCL. Background values used for comparison to inorganic constituents and discussion of how “non-detect” analytical results were handled in the averaging of data shall also be included.

Another section in the report shall present the conceptual site and risk exposure models. It shall

include information on the expected fate and transport of contaminants detected at the SWMU or AOC. 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 and risk exposure models shall appear in the figures section of the document. For human health risk assessments, the conceptual site and risk exposure models shall include the current and foreseeable future land use (such as industrial or recreational) 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 and risk exposure models presented for ecological risk assessments shall identify assessment endpoints and measurement receptors for the SWMU or AOC. The discussion of the models shall explain how the measurement receptors are protective of the ecological receptors.

If risk screening is utilized, a section in the report shall present the actual screening values used for each contaminant for comparison to all applicable human health and ecological risk screening levels. Other regulatory levels that are applicable to screening the site, such as drinking water MCLs or WQCC standards shall also be included in this section.

For risk assessments a section of the report shall present risk values, hazard quotients (HQ), and HIs for human health under projected future land use and residential scenarios and any site-specific scenarios. A similar section shall also present for each contaminant the HQ for each ecological receptor.

Finally, a section shall also be included in the report that contains a discussion of qualitative, semi-quantitative, and quantitative uncertainty in the risk assessment and provides estimates of the potential impact of the various uncertainties. 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.

4.5.6. CMS Work Plan

The Permittee shall prepare a CMS Work Plan using the format set forth below. Required sections for a CMS Work Plan are:

1. Title Page and Signature Block (for the name, title, and organization of the preparer and the responsible Facility representative).
2. Executive Summary.
3. Table of Contents.
4. Introduction.
5. Background Information.
6. Identification of Potential Remedies.
7. Analysis of Potential Remedies.
8. Proposed Remedy.
9. Schedule to complete CMS.

10. Estimated Cost to Conduct CMS.
11. Qualifications of Personnel who will conduct the CMS.
12. Tables.
13. Figures.
14. Appendices.

4.5.7. CMS Report

The Permittee shall prepare a CMS Report using the format set forth below. Investigation summaries, site condition descriptions, corrective action goals, corrective action options, selection criteria, and schedules shall be included in the CMS Report. In general, interpretation of historical investigation data should be presented only in the background sections. At a minimum, detections of contaminants encountered during previous site investigations shall be presented in table format with an accompanying site map showing sample locations. The other text sections of the CMS Report should 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 required format for CMS Reports is as follows.

1. Title Page and Signature Block (for the name, title and organization of the preparer and the responsible Facility representative).
2. Executive Summary (Abstract).
3. Table of Contents.
4. Introduction.
5. Background Information.
6. Site Conditions -- Including, as appropriate, surface, subsurface, and groundwater conditions.
7. Potential Receptors -- Including sources, pathways, and receptors.
8. Regulatory Criteria.
9. Identification of Corrective Measures Options.
10. Evaluation of Corrective Measures Options -- Including the required information in Section 4.2.2.4.
11. Selection of a proposed preferred remedy.
12. Design Criteria to Meet Cleanup Objectives.
13. Schedule.
14. Tables.
15. Figures.
16. Appendices.

A CMS Report shall include the following information.

1. A description of the location, status, and current use of the site.
2. A description of the history of site operations, including an identification of hazardous and solid wastes managed at the site, and any releases of hazardous waste or hazardous constituents.
3. A description of site surface conditions.
4. A description of site subsurface conditions.
5. A description of on-site and any 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 contaminant receptors.
9. An identification and description of applicable cleanup standards or other regulatory criteria.
10. An identification and description of remedial alternatives.
11. Remedial alternative pilot or bench scale testing results, if applicable.
12. A detailed evaluation and rating of each of the remedial alternatives, applying the criteria set forth in Section 4.2.2.4.
13. An identification of a proposed preferred remedy.
14. Basic design criteria of the proposed preferred remedy.
15. A schedule for implementation of the proposed preferred remedy.

4.5.8. CMI Work Plan

The Permittee shall prepare a CMS Work Plan using the format set forth below. The CMI Work Plan shall provide details on the design, construction, operation, maintenance, and performance monitoring for the selected remedy, and a schedule for implementation. The CMI Work Plan shall, at a minimum, include as necessary depending on the type of remedy to be implemented:

1. A description of the selected remedy.
2. A description of the remediation system objectives.
3. An identification and description of the qualifications of key 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 and construction quality assurance work plan.
6. An operation and maintenance plan, if applicable.
7. The results of any remedy pilot tests, such as landfill cover test plots.
8. A schedule for submission to the Administrative Authority of periodic progress reports.

9. A schedule for implementation of the remedy.
10. A health and safety plan.

4.5.9. CMI Work Plan Progress Report

The Permittee shall make progress reports on the execution of the CMI Work Plan to the Department, as described in Section 4.5.8 of this Part (4). At a minimum, a progress report shall 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 remedial work projected for the next reporting period, including all sampling events.
5. Copies of the results of all monitoring, including sampling and laboratory analyses, and any other data generated during the reporting period.
6. Copies of all waste disposal records generated during the reporting period.

4.5.10. CMI Report

A CMI Report shall, at a minimum, include the following information:

1. A summary of the work completed.
2. A statement, signed by a registered professional engineer, that the remedy has been completed in accordance with the Department approved CMI Work Plan for the remedy.
3. As-built drawings and specifications signed and stamped by a registered professional engineer.
4. Copies of the results of all monitoring, including sampling and laboratory analyses, and other data generated during the remedy implementation, if not previously submitted in a progress report.
5. Copies of all waste disposal records, if not previously submitted in a progress report.

4.5.11. Certification

All corrective action documents shall include a certification, signed by a responsible official of the Facility, 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."

4.6. COMPLIANCE SCHEDULE TABLES

The Permittee shall meet the specified compliance schedules for all actions and deliverables required by this Permit. Corrective action is required for all SWMUs and AOCs identified in Table 4-2 of this Part (4). Table 4-3 of this Part contains a listing of all SWMUs and AOCs for which the Department has determined that corrective action is complete without controls.

TABLE 4-1 SUBMITTAL REQUIREMENTS	
TYPE OF SUBMITTAL	**DUE DATE**
ANNUAL REPORTS	
Annual Report: Outdoor Testing and Training Activities (Part 4, Section 4.1.7)	90 days from effective date of this Permit and annually thereafter by March 31 of each year
Quarterly Reports	
Quarterly Progress Reports (Part 4, Section 4.1.6)	January 31, April 30, July 31, and October 31 of each calendar year
Quarterly Perchlorate Screening Reports (Part 5, Section 5.14)	January 31, April 30, July 31, and October 31 of each year for at least 8 consecutive quarters
Other Reports/Submittals	
Offsite Access (Part 4, Section 4.1.1)	With applicable submittal/report.
Field Sampling/Activities (Part 4, Section 4.1.2)	At least 15 days prior to field sampling or activity
Verbal notification of newly-discovered releases (Part 4, Section 4.1.8)	Within 24 hours after release discovery.
Written notification of newly-discovered releases (Part 4, Section 4.1.8)	Within 15 days after release discovery.
SWMU Assessment Report (SAR) (Part 4, Section 4.1.8)	Within 60 days after submitting written notification of newly-discovered SWMU/AOC
Notification of Land Transfer (Part 4, Section 4.1.12)	Within 90 days of transfer of the property
RFI Work Plan (Part 4, Section 4.3.1.1)	Date specified in Table 4.2

Table 4-1 (cont'd)	
RFI Report (Part 4, Section 4.3.1.3)	Schedule provided in Table 4-2.
Corrective Measures Study (CMS) Work Plan (Part 4, Section 4.3.2.1)	Upon Department request
Corrective Measures Study (CMS) Report (Part 4, Section 4.3.2.3)	Within 90 days of completion of CMS
Risk Assessment Report (Part 4, Section 4.5.5)	Within 90 days of completion of CMS
CMI Work Plan (Part 4, Section 4.3.2.7)	Within ninety (90) days after the Department's selection of a final remedy, or as otherwise specified by the Department in writing
CMI Work Plan Progress Report (Part 4, Section 4.3.2.9)	In accordance with the schedule approved in the CMI Work Plan
CMI Report (Part 4, Section 4.3.2.10)	Within 90 days of completion of remedy or ACM
Accelerated Corrective Measures (ACM) (Part 4, Section 4.3.3.2)	Prior to ACM initiation
ACM CMI Report (Part 4, Section 4.3.3.3)	Within ninety (90) days of completion of ACM
Interim Measures Work Plan (Part 4, Section 4.3.4.2)	Within 60 days after receiving notification from the Department that interim measures are required, or such other period as stated in the notification
Emergency Interim Measures (Part 4, Section 4.3.4.4)	Within three (3) days of discovery that Emergency IM are required
Interim Measures Report (Part 4, Section 4.3.4.5)	90 days after completion of Interim Measure or as otherwise specified in the Interim Measures Work Plan.
Periodic Monitoring Reports (Part 4, Section 4.5.4	Within 90 days of completion of monitoring fieldwork or in accordance with work plan schedules.
Periodic Monitoring Reports – Surface water and Springs (Part 6.3.1.5)	Within 90 days of completion of monitoring fieldwork

Landfills LF-001, LF-002 and LF-008 CMI Report (Part 5, Section 5.2.1)	Within 90 days of completion of CMI
Landfills 001, 002 and 008 Quarterly Progress Reports (Part 5, Section 5.2.2)	January 31, April 30, July 31, and October 31 of each year
Long-Term Monitoring and Maintenance Plan for Landfills LF-001, LF-002 and LF-008 (Part 5, Section 5.2.3)	Within 180 days of the Department's approval of the CMI Report
Closure Report	
Closure Report (Part 2, Section 2.8.7)	Within 60 days of closure of the Open Burn Unit or Open Detonation Unit

TABLE 4-2 SOLID WASTE MANAGEMENT UNITS (SWMUS) AND AREAS OF CONCERN (AOCS) REQUIRING CORRECTIVE ACTION				
SWMU/AOC	**IRP SITE**	**DESCRIPTION**	**REQUIRED SUBMITTAL**	**DUE DATE**
6-1	LF-001	Landfill #1	Remedy Completion Report (Corrective Measures Implementation Report)	6/13/06
	LF-001	Landfill #1	Long Term Monitoring and Maintenance Plan	180 days after Remedy Completion Report approved
	LF-001	Landfill #1	Quarterly Progress Reports	January 31, April 30, July 31, and October 31 of each year until remedy is completed
6-2	LF-002	Landfill #2	Remedy Completion Report (Corrective Measures Implementation Report)	9/07/06
	LF-002	Landfill #2	Long Term Monitoring and Maintenance Plan	180 days after Remedy Completion Report approved
	LF-002	Landfill #2	Quarterly Progress Reports	January 31, April 30, July 31, and October 31 of each year until remedy is completed
6-3	LF-007	Landfill #3	Remedy Completion Report	12/31/07*

Table 4-2
(cont'd)

SWMU/AOC	IRP SITE	DESCRIPTION	REQUIRED SUBMITTAL	DUE DATE
6-4	LF-008	Landfills #4, 5 and 6	Remedy Completion Report (Corrective Measures Implementation Report)	3/31/07*
	LF-008	Landfills #4, 5 and 6	Investigation Plan (groundwater selenium)	3/31/07
	LF-008	Landfills #4, 5 and 6	Investigation Report (groundwater selenium)	3/31/08
	LF-008	Landfills #4, 5 and 6	Long Term Monitoring and Maintenance Plan	180 days after Remedy Completion Report approved
6-11	LF-044	Fill Area SE of Sewage Lagoons	Remedy Completion Report	12/31/07*
6-19	OT-029	EOD Range	Investigation Report	12/28/07
6-22	OT-046		Remedy Completion Report	12/31/07
6-24	WP-016	Manzano Sewage Treatment Facility	Investigation Report	3/31/07*
	WP-016	Manzano Sewage Treatment Facility	Investigation Work Plan (groundwater)	6/30/07
	WP-016	Manzano Sewage Treatment Facility	Investigation Report (groundwater)	12/31/09
MBG	MBG	Manzano Base Groundwater	Investigation Work Plan	6/30/07
	MBG	Manzano Base Groundwater	Investigation Report	12/31/09
6-30	RW-006	Radioactive Burial 11	Investigation Report	10/01/09*
10-2-A	ST-325	Corrosion Control Shop Storm Drain Bldg. 482	Investigation Report	12/28/08
10-2-B	ST-220	Paint Shop, Storm Drain	Investigation Report	12/28/08
10-2-C	ST-220	Plating & Anodizing Bldg. 1001	Investigation Report	12/28/08
10-2-D	ST-329	Propulsion Branch Floor Drain Bldg. 336	Investigation Report	12/28/08

Table 4-2
(cont'd)

SWMU/AOC	IRP SITE	DESCRIPTION	REQUIRED SUBMITTAL	DUE DATE
10-2-F	ST-325	H-3/H-53 Phase Dock Bldg. 1000 Floor Drains	Investigation Report	12/28/08
10-2-G	ST-331	C-130 Maintenance Shop Bldg. 1009 Storm Sewer	Investigation Report	12/28/08
10-2-H	ST-285	West Storm Sewer System	Investigation Report	12/28/09
10-2-I	ST-286	East Storm Sewer System	Investigation Report	12/28/09
10-7-V	ST-267	Oil/Water Separator Bldg. 57007	Investigation Report	12/31/08
10-21-A	ST-287	Septic System Bldg. 525	Investigation Report	12/31/09
	ST-288	Septic System Bldg. 614	Investigation Report	12/31/09
	ST-289	Septic System Bldg. 617& 620	Investigation Report	12/31/09
	ST-290	Septic System Bldg. 619	Investigation Report	12/31/09
	ST-291	Septic System Bldg. 617	Investigation Report	12/31/09
	ST-292	Septic System Bldg. 622	Investigation Report	12/31/09
10-21-C	ST-294	Septic System Bldg. 633	Investigation Report	12/31/09
	ST-295	Septic System Bldg. 638	Investigation Report	12/31/09
10-21-D	ST-296	Septic System Bldg. 702	Investigation Report	12/31/09
	ST-297	Septic System Bldg. 707	Investigation Report	12/31/09
	ST-298	Septic System Bldg. 730 &734	Investigation Report	12/31/09
	ST-299	Septic System Bldg. 751	Investigation Report	12/31/09
10-21-E	ST-300	Septic System Bldg. 20199	Investigation Report	12/31/09
10-21-F	ST-301	Septic System Bldg. 20560	Investigation Report	12/31/09
10-21-G	ST-302	Septic System Bldg. 20599	Investigation Report	12/31/09
10-21-H	ST-303	Septic System Bldg. 20749	Investigation Report	12/31/09
10-21-I	ST-304	Septic System Bldg. 20797	Investigation Report	12/31/09
10-21-J	ST-305	Septic System Bldg. 28054	Investigation Report	12/31/09
	ST-306	Septic System Bldg. 28054	Investigation Report	12/31/09

Table 4-2
(cont'd)

SWMU/AOC	IRP SITE	DESCRIPTION	REQUIRED SUBMITTAL	DUE DATE
10-21-K	ST-307	Septic System Bldg. 30101	Investigation Report	12/31/09
	ST-315	Septic System Bldg. 30102	Investigation Report	12/31/09
10-21-L	ST-308	Septic System Bldg. 37511	Investigation Report	12/31/09
10-21-M	ST-309	Septic System Bldg. 37504	Investigation Report	12/31/09
10-21-N	ST-310	Septic System Bldgs. 37507, 37508 & 37513	Investigation Report	12/31/09
	ST-322	Septic System Bldgs. 37507, 37508 & 37513	Investigation Report	12/31/09
10-21-O	ST-311	Septic System Plant 1 & Bldg. 37501	Investigation Report	12/31/09
10-21-P	ST-312	Septic System Plant 2 & Bldg. 37503	Investigation Report	12/31/09
10-21-Q	ST-313	Septic System Bldgs. 37529 & 37530	Investigation Report	12/31/09
10-21-R	ST-293	Septic System Bldg. 37570	Investigation Report	12/31/09
10-21-S	ST-314	Septic System Bldgs. 48056 & 48059	Investigation Report	12/31/09
10-21-T	ST-316	Septic System CERF Bldgs. 57003 & 57012	Investigation Report	12/31/09
	ST-317	Septic System CERF Bldg. 57011	Investigation Report	12/31/09
	ST-340	Septic System CERF Bldgs. 57001 & 57002	Investigation Report	12/31/09
10-21-U	ST-318	Septic System Bldg. 37200	Investigation Report	12/31/09
10-21-V	ST-319	Septic System Bldg. 37541	Investigation Report	12/31/09
10-21-W	ST-320	Septic System Bldg. 20149	Investigation Report	12/31/09
10-21-X	ST-323	Septic System Bldg. 29042	Investigation Report	12/31/09
10-21-Y	ST-324	Septic System Bldg. 29051	Investigation Report	12/31/09
10-21-Z	ST-330	Septic System Bldg. 1032	Investigation Report	12/31/09
10-21-AA	ST-333	Septic System SOR Bldg. 66001	Investigation Report	12/31/09

Table 4-2
(cont'd)

SWMU/AOC	IRP SITE	DESCRIPTION	REQUIRED SUBMITTAL	DUE DATE
	ST-342	Septic System SOR Bldg. 66029	Investigation Report	12/31/09
	ST-343	Septic System SOR Bldgs. 66000 & 66008	Investigation Report	12/31/09
	ST-344	Septic System SOR Bldgs. 66042	Investigation Report	12/31/09
	ST-345	Septic System SOR Bldg. 66006	Investigation Report	12/31/09
10-21-BB	ST-346	Trestle Site Septic Tank	Investigation Report	12/31/09
ST-70-A	ST-070	Oil/Water Separator & Sediment Trap Bldgs. 333/334	Investigation Report	12/31/07
ST-70-B	ST-070	Oil/Water Separator Tank & Drying Rack Bldg. 377	Investigation Report	12/31/07
ST-70-C	ST-070	Oil/Water Separator Bldg. 381	Investigation Report	12/31/07
ST-70-D	ST-070	Oil/Water Separators (2) Bldg. 471	Investigation Report	12/31/07
ST-70-E	ST-070	Oil/Water Separator Bldgs. 481/482	Investigation Report	12/31/07
ST-70-F	ST-070	Oil/Water Separator Bldg. 2637	Investigation Report	12/31/07
ST-70-G	ST-070	Oil/Water Separator Bldg. 20205	Investigation Report	12/31/07
ST-70-H	ST-070	Oil/Water Separator Bldg. 20375	Investigation Report	12/31/07
ST-70-I	ST-070	Oil/Water Separator Bldg. 20422	Investigation Report	12/31/07
ST-73	ST-073	CERF Drain	Investigation Report	12/31/07
ST-106	ST-106	Bulk Fuels Spill	Investigation Report	12/31/07
DP-088	DP-088	Trestle Site Disposal Area	Investigation Report	9/30/08*
WP-026	WP-026	Sewage Lagoons & Golf Course Pond	Investigation Work Plan	12/31/07

Table 4-2
(cont'd)

SWMU/AOC	IRP SITE	DESCRIPTION	REQUIRED SUBMITTAL	DUE DATE
	WP-026	Sewage Lagoons & Golf Course Pond	Investigation Report	12/31/08
SS-102	SS-102	ARES Test Facility	Investigation Report	12/31/10
TAG	TAG	Tijeras Arroyo Groundwater Area	Investigation Report	6/30/07
TAG	TAG	Tijeras Arroyo Groundwater Area	CME Report	9/30/08
6-11	LF-044	Fill Area SE of Sewage Lagoons	Investigation Report	12/31/10
6-32	FT-014	Manzano Fire Training Area	Investigation Report	12/31/10
8-35	ST-214	Waste Oil Storage Tank Bldg. 471	Investigation Report	12/31/10
10-2-E	SS-063	Jet Engine Test Cell	Investigation Report	12/31/10
	ST-348	Building 610 Septic Tank	Investigation Report	12/31/10
	ST-349	Building 626 Septic Tank	Investigation Report	12/31/10
SS-077	SS-077	Abandoned Railroad Spur	Investigation Report	12/31/10
SS-78-B	SS-078	Water Tower Soils (WT-21871)	Investigation Report	12/31/10
SS-78-C	SS-078	Water Tower Soils (WT-2474)	Investigation Report	12/31/10
SS-78-D	SS-078	Water Tower Soils (ITRI WTs)	Investigation Report	12/31/10
ST-64	ST-064	COE Vehicle Maintenance Yard	Investigation Report	12/31/10
ST-107	ST-107	Hospital Demolition Debris	Investigation Report	12/31/10
ST-108	ST-108	Abandoned JP-4 Fuel Line (ST-108)	Investigation Report	12/31/10
ST-356	ST-356	Skeet Range Septic Tank [Domestic Sewage]	Investigation Report	12/31/10

*Document submitted prior to due date; pending Department review or Permittee's response.

TABLE 4-3 OPERATING UNITS, SOLID WASTE MANAGEMENT UNITS (SWMUS), AND AREAS OF CONCERN (AOCS) FOR WHICH CORRECTIVE ACTION IS COMPLETE WITHOUT CONTROLS				
Unit		**DESCRIPTION**	**DATE OF APPROVAL**	**COMMENTS**
Operating Units[1]				
		EOD Subpart X Open Burn (OB) Treatment Unit Ibid.	N/A	
		EOD Subpart X Open Detonation (OD) Treatment Unit Ibid.	N/A	
Closed Units				
		Hazardous Waste Container Storage Unit (CSU) Ibid.	N/A	
SWMUs/AOCs				
SWMU/AOC	**IRP SITE**	**DESCRIPTION**	**DATE OF APPROVAL**	**COMMENTS**
6-A1	RW-021	Radioactive Burial 7	8/03/05	
6-A2-A	RW-004	Radioactive Holding Tank 4	9/21/05	
6-A2-B	RW-005	Radioactive Holding Tank 5	9/21/05	
6-A2-C	RW-017	Radioactive Holding Tank 6	9/21/05	
6-A2-D	RW-019	Radioactive Holding Tank 8	9/21/05	
6-A2-E	RW-023	Radioactive Holding Tank 9	9/21/05	
6-7	LF-018	Landfill A	8/28/03	Not in 2004 AUA
6-8	LF-015	Landfill B	9/21/05	
6-10	LF-009	Abandoned Landfill	8/28/03	Not in 2004 AUA
6-14	ST-051	Sewage Effluent Line	2/27/06	
6-15	LF-045	Unnamed Dump	8/28/03	Not in 2004 AUA
6-16	FT-013	Kirtland Fire Training Area	8/28/03	Not in 2004 AUA
6-22	OT-046	Lake Christian	Pending	
6-29	LF-020	Manzano Landfill	9/21/05	
6-31	OT-028	McCormick Ranch Range	6/02/06	

TABLE 4-3
(cont'd)

SWMU/AOC	IRP SITE	DESCRIPTION	DATE OF APPROVAL	COMMENTS
8-5	ST-201	Oil/Water Separator Bldg. 255	2/27/06	
8-6	WP-047	Silver Recovery Unit	2/27/06	
8-13	ST-071	Bldg. 1000/1001 Oil/Water Separator	9/21/05	
8-26	ST-242	Oil/Water Separator Bldg. 1063	2/27/06	
	ST-243	Oil/Water Separator Bldg. 1063	2/27/06	
8-28	ST-250	Oil/Water Separator Bldg. 20338	2/27/06	
8-29	ST-251	Oil/Water Separator Bldg. 20344	2/27/06	
8-31	ST-252	Oil/Water Separator Bldg. 20348	2/27/06	
	ST-253	Oil/Water Separator Bldg. 20348	2/27/06	
8-41	ST-274	Waste Battery Storage Area Bldg. 20423	2/27/06	
8-47	ST-261	Oil/Water Separator (OW/S) Bldg. 20423	2/27/06	
8-49	SS-061	Fuel Shop Waste Battery Storage Bldg. 20667	8/03/05	
8-53	ST-335	Paint Shop Floor Drain, Bldg. 20681	8/28/03	Not in 2004 AUA
8-55	ST-262	O/WS CE Bldg. 20698	2/27/06	
8-58	ST-321	Battery Storage Area, Bldg. 57007	8/28/03	Not in 2004 AUA
9-4	ST-276	Waste Accumulation Area Bldg. 617	6/02/06	
9-14	ST-270	Buried Caustic Drain Line Bldg. 617	9/21/05	
9-15	ST-271	Neutralization Pit Bldg. 617	9/21/05	
9-16	ST-272	Evaporation/Infiltration Pond Bldg. 617	9/21/05	
9-20	SS-062	Waste Accumulation Area Bldg. 909	6/02/06	
10-1-A	ST-278	Sanitary Sewer System A	2/27/06	
10-1-B	ST-279	Sanitary Sewer System B	2/27/06	
10-1-C	ST-280	Sanitary Sewer System C	2/27/06	
10-1-D	ST-281	Sanitary Sewer System D	2/27/06	
10-1-E	ST-282	Sanitary Sewer System E	2/27/06	
10-1-F	ST-284	Sanitary Sewer System G	2/27/06	
10-1-G	ST-327	Manzano Sanitary Sewer System	2/27/06	
10-3	ST-249	Waste Oil Storage Tank, Bldg. 20205	8/28/03	Not in 2004 AUA

TABLE 4-3
(cont'd)

SWMU/AOC	IRP SITE	DESCRIPTION	DATE OF APPROVAL	COMMENTS
10-7-A	ST-204	Sediment Trap Bldg. 333	11/29/05	
	ST-205	Oil/Water Separator Bldg. 333	11/29/05	
10-7-B	ST-206	Oil/Water Separator Bldg. 336	11/29/05	
	ST-207	Oil/Water Separator Bldg. 336	11/29/05	
	ST-208	Oil/Water Separator Bldg. 336	11/29/05	
	ST-209	Catch Basin Bldg. 336	11/29/05	
10-7-C	ST-212	Oil/Water Separator Bldg. 381	11/29/05	
	ST-213	Area Drain Bldg. 381	11/29/05	
10-7-D	ST-217	Oil/Water Separator Bldg. 481	11/29/05	
10-7-E	ST-218	Oil/Water Separator Bldg. 482	11/29/05	
10-7-F	ST-222	Oil/Water Separator Bldg. 1031	11/29/05	
	ST-223	Sewage ejector Unit Bldg. 1031	11/29/05	
	ST-224	Area Drain Bldg. 1031	11/29/05	
	ST-225	Holding Tank Bldg. 1031	11/29/05	
10-7-G	ST-226	Oil/Water Separator Bldg. 1037	11/29/05	
	ST-227	Holding Tank Building 1037	11/29/05	
10-7-H	ST-228	Area Drain Bldg. 1040	11/29/05	
10-7-I	ST-229	Sewage Ejector Unit Bldg. 1043	11/29/05	
10-7-J	ST-230	Oil/Water Separator Bldg. 1046	11/29/05	
	ST-231	Holding Tank Bldg. 1046	11/29/05	
	ST-232	Sewage Ejector Unit Bldg. 1046	11/29/05	
	ST-233	Area Drain Bldg. 1046	11/29/05	
10-7-K	ST-234	Oil/Water Separator Bldg. 1051	11/29/05	
	ST-235	Oil/Water Separator Bldg. 1051	11/29/05	
	ST-236	Oil/Water Separator Bldg. 1051	11/29/05	
	ST-237	Area Drain Bldg. 1051	11/29/05	
10-7-L	ST-238	Oil/Water Separator Bldg. 1056	11/29/05	
	ST-239	Oil/Water Separator Bldg. 1056	11/29/05	
10-7-M	ST-240	Holding Tank Bldg. 1058	11/29/05	

TABLE 4-3
(cont'd)

SWMU/AOC	IRP SITE	DESCRIPTION	DATE OF APPROVAL	COMMENTS
10-7-N	ST-241	Oil/Water Separator Bldg. 1061	11/29/05	
10-7-O	ST-244	Oil/Water Separator Bldg. 1064	11/29/05	
	ST-245	Holding Tank Bldg. 1064	11/29/05	
10-7-P	ST-246	Oil/Water Separator Bldg. 1070	11/29/05	
10-7-Q	ST-254	Oil/Water Separator Bldg. 20365	11/29/05	
10-7-R	ST-255	Oil/Water Separator Bldg. 20375	11/29/05	
	ST-256	Oil/Water Separator Bldg. 20375	11/29/05	
	ST-257	Oil/Water Separator Bldg. 20375	11/29/05	
10-7-S	ST-259	Oil/Water Separator Bldg. 20422	11/29/05	
10-7-T	ST-263	Oil/Water Separator Bldg. 23226	11/29/05	
10-7-U	ST-264	Oil/Water Separator Bldg. 30142	11/29/05	
10-21-B	ST-273	Septic System Bldg. 618	6/02/06	
	ST-351	Building 635 Septic Tank	6/02/06	
	ST-352	Building 613/614 Septic Tank	6/02/06	
	ST-353	Bldg. 48057 Septic Tank	9/21/05	
	ST-354	Sheep Grooming Septic Tank	9/21/05	
DP-067	DP-067	Three Mine Shafts	8/03/05	
DP-099	DP-099	Disposal Pit Bldg. 29015	6/02/06	
DP-101	DP-101	Old EOD Disposal Pits	6/02/06	
FT-015	FT-015	NMERI Fire Suppression Test Area	6/02/06	
LF-56	LF-056	Landfill D	8/03/05	
LF-268	LF-268	Active Landfill	6/02/06	
OT-74	OT-074	Pistol Range Sites	6/02/06	
OT-086	OT-086	Former Small Arms Range	8/03/05	
OT-091	OT-091	South Coyote Firing Site	6/02/06	
RW-68	RW-68	Radium Dump/Slag Piles and Cratering Area	8/28/03	Not in 2004 AUA
RW-084	RW-084	Manzano Burial Site	6/02/06	
RW-085	RW-085	Manzano Maintenance Building	8/03/05	

TABLE 4-3
(cont'd)

SWMU/AOC	IRP SITE	DESCRIPTION	DATE OF APPROVAL	COMMENTS
SD-090	SD-090	JATO Rocket Motor Disposal Site	6/02/06	
SS-65	SS-065	Horizontal Dipole Drum Rack	8/03/05	
SS-69	SS-069	Drum Storage Area	9/21/05	
SS-76	SS-076	Fuel Tank Burn Area	8/28/03	Not in 2004 AUA
SS-078	SS-078	Water Tower Soils	6/02/06	
SS-079	SS-079	Building 381 Spill Site	6/02/06	
SS-081	SS-081	Detention Pond and Yard Bldg. 907	6/02/06	
SS-082	SS-082	ALECS Facility	8/03/05	
SS-83	SS-83	Skeet Range and Landfill	8/28/03	Not in 2004 AUA
SS-089	SS-089	Transportation Yard	6/02/06	
SS-103	SS-103	Jet Engine Test Fuel Line	8/03/05	
ST-59	ST-059	ART Drum	8/03/05	
ST-60	ST-060	ART Pit	8/03/05	
ST-66	ST-066	Trestle Facility Oil Water Separator and Pit	8/28/03	
ST-72	ST-072	30146	6/02/06	
ST-080	ST-080	Auto Hobby Shop Bldg. 30124	6/02/06	
ST-100	ST-100	Coyote Springs Cess Pool	9/21/05	
ST-326	ST-326	Waste-Oil Storage Tank, Bldg. 20375	8/28/03	Not in 2004 AUA
ST-328	ST-328	Blast Overpressure Site Cesspools	8/28/03	
ST-341	ST-341	Condensate Tank Bldg. 1033	9/21/05	
ST-347	ST-347	Building 29015 Cess Pool	6/02/06	
WP-58	WP-58	East Laundry, Bldg. 20451	9/21/05	Not in 2004 AUA
WP-087	WP-087	Grab Site Waste Pile	6/02/06	
WP-339	WP-339	Contractor Yard West of Bldg. 20423	6/02/06	
10-21-X	ST-350	600 Area Field Office Septic Tank [Domestic Sewage]		
10-21-OO	ST-355	Riding Stables Residence [Domestic Sewage]	9/21/05	Not in 2004 AUA

TABLE 4-3 (cont'd)				
SWMU/AOC	**IRP SITE**	**DESCRIPTION**	**DATE OF APPROVAL**	**COMMENTS**
OT-010	OT-010 (AOC)	Radiation Training Sites 5-8, TS-5, TS-6, and TS-7	9/21/05	Not in 2004 AUA
RW-075	RW-075 (AOC)	South Tijeras Radiation Trench	9/21/05	Not in 2004 AUA

1. The Operating Units, i.e. – OB and OD units are Hazardous Waste Management Units.

PERMIT PART 5: CORRECTIVE ACTION: INVESTIGATION METHODS AND PROCEDURES AND SPECIAL REQUIREMENTS FOR INFORMATION SUBMITTALS AND CORRECTIVE MEASURES

5.0 INTRODUCTION

5.1. SPECIAL INVESTIGATION REQUIREMENTS

5.1.1. Landfills to Be Closed with Waste Left in Place

For each landfill that the Permittee proposes to close by leaving all or a portion of the contents of the landfill in place, the Permittee shall implement the corrective measures procedures set forth in Section 4.3.2. Within 180 days after the effective date of this Permit, the Permittee shall submit to the Department for approval in accordance with Section 4.2.2.2 a CMS Work Plan for each such landfill.

5.1.2. Military Munitions Ranges

The Permittee has conducted operations at areas that were used to research, develop, test, and evaluate military munitions and explosives, and other ordnance, or weapons systems, or to train military personnel in their use and handling. The Facility contains numerous military ranges where explosives are and were used for the purpose of conducting military exercises, munitions testing, research development, and demonstrations. These military ranges may include firing lines and positions, maneuver areas, firing lanes, test pads, impact areas, simulator sites, training sites, research facilities, and buffer zones.

This Section (5.2.2) applies to military munitions that meet the statutory definition of “solid waste” in NMSA 1978, 74-4-3(M), whether or not they also meet the regulatory definition of “solid waste” in 40 C.F.R. § 261.2.

Within 90 days of the effective date of this Permit, the Permittee shall submit to the Department for approval a Military Range Assessment report that contains the following information.

1. A list of all active, inactive, and closed military ranges located on Facility property.
2. A list of any military ranges located on property that has been transferred from the Facility to another federal, private, or other entity.
3. An identification of those military ranges that are active, inactive., and closed
4. For each inactive and closed military range, a description of the current use of the property.
5. Maps (or a map) that clearly illustrate the boundaries of all active, inactive, and closed military ranges, including transferred ranges. The map must also illustrate any buffer zone around the ranges.
6. A qualitative assessment of the nature and extent of contamination at each active, inactive, and closed military range, including the potential risk to human health and the environment from the military munitions and other contamination.
7. A recommendation for further investigation necessary to fully characterize the nature

and extent of the contamination on each of the active, inactive, and closed military ranges.

8. A proposed schedule for implementation of the recommended investigation.

5.1.3. Areas with Groundwater Contamination

Groundwater contamination or the potential for groundwater contamination has been identified at the following areas:

1. Tijeras Arroyo Groundwater (TAG) Area – trichloroethylene (TCE) and nitrate.
2. Landfills #4, #5, and #6, LF-008 (SWMU 6-4)–potential for contamination by selenium and TCE.
3. Manzano Landfill, LF-020 (SWMU 6-29) area – TCE.
4. Sewage Lagoons and Golf Course Pond, WP-026 (SWMU WP-026) – TCE, nitrate.
5. Manzano Sewage Treatment Facility, WP-16 (SWMU 6-24) – potential for contamination.
6. Monitoring well WYO-4 area.
7. McCormick Ranch Nitrate Plume.

The Permittee shall complete an RFI Work Plan, install groundwater-monitoring wells, and collect and analyze groundwater samples to fully characterize each area of groundwater contamination in accordance with the compliance schedules in Table 4-2 (Part 4). In addition, Permittee shall investigate other areas of the Facility, in addition to those listed above, where the Department determines that either groundwater is contaminated or there is potential for groundwater contamination. Characterization shall be conducted in a manner that satisfies the requirements of Section 5.1 of this Part (5) and those of Part 6 of this Permit.

5.1.3.1. *Tijeras Arroyo Groundwater (TAG) Area*

The Tijeras Arroyo Groundwater (TAG) area is a rectangular area of approximately 8.0 square miles (3.25 miles x 2.5 miles) located in the north central area of the Facility. Groundwater occurs in a perched aquifer system in addition to the regional aquifer system. The perched aquifer groundwater is contaminated with TCE and nitrate at maximum concentrations of 7.5 micrograms per liter (μg/L) and 30 milligrams per liter (mg/L), respectively. Nitrate has been detected in the regional aquifer at concentrations ranging as high as 18 mg/L. The Maximum Contaminant Level (MCL) for TCE and nitrate are 5.0 μg/L (40 C.F.R. 141.61(a)) and 10 mg/L (40 C.F.R. 141.23(a)(4)(i)), respectively.

The Permittee shall cooperate with Sandia National Laboratories and the Department in the completion of the TAG Investigation. Cooperation includes, but is not limited to, attending and participating in meetings with the Department and other stakeholders to implement the work plan to complete characterization of the groundwater contamination, drilling and installing groundwater monitoring wells, collecting and analyzing groundwater samples, characterizing subsurface geology and hydrology of the regional and perched groundwater systems, and assisting Sandia National Laboratories with preparing and submitting draft and final reports

describing the results and conclusions of the TAG investigation. The Permittee must complete a CMS Report for that portion of the TAG area for which the Permittee is found to be responsible based on the TAG investigation.

5.1.3.2. *Landfills #4, #5, and #6, LF-008 (SWMU 6-4)*

On September 13, 2002 the Permittee reported that selenium exceeded the New Mexico Water Quality Commission (WQCC) human health standard of 0.05 mg/L (20.6.2.3103.A(10) NMAC) in groundwater from two wells located at Landfill #4, #5, and #6, LF-008 (SWMU 6-4). Concentrations of selenium were measured at 53.4 and 65.6 µg/L in wells KAFB-0310 and KAFB-0314, respectively. The Permittee shall investigate whether selenium levels measured in the groundwater are naturally occurring or are representative of anthropogenic contamination. If groundwater is contaminated, the Permittee shall characterize the nature, extent, and concentration of the contamination. The Permittee should also determine whether groundwater is contaminated with any volatile organic compounds, including TCE. If contamination is confirmed, the Permittee shall characterize the nature, extent, rate of migration, and concentration of the contamination.

5.1.3.3. *Manzano Landfill Area, LF-20 (SWMU 6-29)*

TCE has been detected in groundwater samples collected from wells located upgradient from the Manzano Landfill LF-20 (SWMU 6-29) at 5.5 µg/L. The MCL for TCE is 5.0 µg/L (40 C.F.R. 141.61(a)). In 2000, TCE was found in two wells at this site at concentrations up to 3.6 µg/L - just below the MCL.

Within 180 days of the effective date of this Permit, the Permittee shall submit to the Department for approval a RFI Work Plan designed to identify the source of groundwater contamination located upgradient from SWMU 6-29. The RFI Work Plan shall also include plans to characterize the nature, extent, and concentration of the contamination.

5.1.3.4. *Sewage Lagoons and Golf Course Pond, WP-026 (SWMU WP-026)*

The Sewage Lagoons, located in the northwestern region of the base, were constructed in 1962 and are approximately 7 acres each. They were abandoned in 1987. While active, from April to October each year, the lagoons received from 40% to 100 % of the raw sewage generated by the Facility. TCE has been detected in groundwater samples collected from wells located at the Sewage Lagoons at 5.5 µg /L, just above the MCL of 5.0 µg/L (40 C.F.R. 141.61(a)). In 2000, TCE was detected in two wells at this site at concentrations up to 5.7 µg /L. During the Stage 2A RFI, nitrate was detected in the groundwater above the WQCC human health standard.

The Permittee shall submit to the Department for approval an RFI Report summarizing the results of all previous investigations done on these sites in accordance with the schedule in Table 4-2 of Part 4 of this Permit. The Department may require corrective measures at these sites depending on the results of the previous investigations.

5.1.3.5. *Manzano Sewage Treatment Facility, WP-16 (SWMU 6-24)*

The Manzano Sewage Treatment Facility is a 22-acre site located adjacent and west of the former Manzano Weapons Storage Area. The treatment facility was constructed in 1955 and

consists of an Imhoff tank, drying beds, and four sewage lagoons. In 1984 raw sewage from the Manzano Base was reportedly dumped into the drying beds without receiving primary treatment. According to personnel interviews, shop personnel from Manzano Base disposed of industrial wastes containing hazardous constituents into the sewage system in November 1987. In 1990, the system became inactive when a pipeline was constructed to transport wastes to the City of Albuquerque publicly owned treatment works. In 1996, the Imhoff tank and sludge drying beds were demolished and abandoned in place. Surface and near-surface soil data has been collected at WP-16, but no information exists regarding groundwater quality.

Within 180 days of the effective date of this Permit, the Permittee shall submit to the Department for approval an RFI Work Plan to determine whether groundwater contamination has occurred at this SWMU. The RFI Work Plan shall provide for the installation of at least one up gradient and three down gradient groundwater-monitoring wells. If groundwater contamination exists at the site, the Permittee shall submit to the Department for approval another RFI Work Plan that describes a plan to fully characterize the nature, extent, and concentration of groundwater contamination.

5.1.3.6. *Monitoring Well WYO-4 area*

Monitoring well WYO-4 was completed within the perched system aquifer in 2001. This monitoring well is paired with regional aquifer monitoring well WYO-3 that, together, replaced a similar monitoring well pair which had exhibited hydrochemistry indicative of cross-communication. Since the date of installation, groundwater samples collected from WYO-4 have shown concentrations of TCE that consistently exceed the MCL of 5µg/L. No source of this contamination has been identified.

Within 180 days of the effective date of this Permit, the Permittee shall submit to the Department for approval an RFI Work Plan designed to characterize the nature, extent, and concentration of the TCE contamination that has been observed in monitoring well WYO-4.

5.1.3.7. *McCormick Ranch/Range Nitrate Plume*

Groundwater in the SWMU OT-28, McCormick Ranch area has nitrate levels in four monitoring wells hovering near the 10 mg/L MCL with occasional exceedances of the MCL. Gross alpha and gross beta radiation also slightly exceed the groundwater MCLs. OT-28 was used as an artillery range during World War II and, from 1963 to 1992, for explosives testing mainly with ammonium nitrate, pentaerythritol, and trinitrotoluene. McCormick Ranch is also the site of a Broken Arrow incident on May 27, 1957, wherein a nuclear weapon fell from an Air Force B-36 bomber and impacted the ground creating a 25 ft wide by 16 ft deep crater. Although a nuclear explosion was not triggered, radioactive material and metal debris was dispersed within and outside the crater.

The source of the nitrate in groundwater beneath OT-28 is uncertain but, with elevated levels of nitrate in upgradient wells on the southern KAFB boundary, it seems likely that the source is off base to the south. SWMU OT-28 was subsequently determined to be suitable for no further action status when investigations showed no residual soil contamination by explosives.

The Permittee shall incorporate the McCormick Ranch/Range nitrate plume into its Nitrate Abatement Plan administered by the Department Ground Water Quality Bureau. The Permittee

shall submit a SWMU Assessment Report to the Department within 90 days of the effective date of this Permit concerning the debris field surrounding the Broken Arrow site.

5.1.4. Perchlorate Screening in Groundwater

The Permittee shall evaluate the nature and extent of perchlorate contamination in groundwater beneath the Facility based on a screening concentration of 4µg/L. The detection limit shall not exceed 4µg/L. If the concentration of perchlorate is below this screening level for eight consecutive quarters in a given monitoring well, additional monitoring for perchlorate in that well will not be required. In a given monitoring well, detection of perchlorate at or above this screening concentration will initiate the requirement of subsequent perchlorate monitoring until eight consecutive quarterly results below this screening level are obtained for that well. If perchlorate contamination is detected, the Permittee shall also determine the nature, extent, and rate of migration of the perchlorate contamination and determine the source of contamination. The Permittee shall report all monitoring results on a quarterly basis to the Department, unless the Department agrees in writing to a longer reporting period.

Monitoring for perchlorate as described above is required in groundwater monitoring wells installed at the Facility after the effective date of this Permit and in the following existing wells: KAFB-1001 through KAFB-1007 (McCormick Ranch/Range wells), KAFB-1901 through KAFB-1904 (Lake Christian wells), and EOD Hill well. The Department reserves the right to include additional wells for perchlorate monitoring.

5.2. SPECIAL REQUIREMENTS FOR CORRECTIVE MEASURES FOR SWMU 6-1, LANDFILL #1 (LF-001); SWMU 6-2, LANDFILL #2 (LF-002); AND SWMU 6-4, LANDFILLS #4, 5, AND 6 (LF-008)

The remedy for SWMU 6-1, Landfill #1 (LF-001); SWMU 6-2, Landfill #2 (LF-002); and SWMU 6-4, Landfills #4, 5, and 6 (LF-008) shall be the evapotranspiration (ET) cover for each landfill presented as Alternative 4 in the Permittee's report "*Final Corrective Measure Study Report for SWMU 6-1, Landfill 1 (LF-001); SWMU 6-2, Landfill 2 (LF-002); and SWMU 6-4, Landfills 4, 5, and 6 (LF-008)*," dated November 2003.

5.2.1. Corrective Measures Implementation Report

The Permittee shall submit to the Department for approval a Corrective Measures Implementation (CMI) Report for each landfill within 180 days after implementation of the remedy is complete. Each CMI Report shall, at a minimum, include:

1. A summary of the work completed.

2. A statement, signed by a registered professional engineer, that the remedy has been completed in full satisfaction of the specifications in the CMI Work Plan.

3. As-built drawings and specifications signed and stamped by a registered professional engineer.

4. Copies of the results of all monitoring data, including sampling and analysis, and other data generated during the remedy implementation, if not already submitted in a progress report.

5. A certification, signed by a Permittee's official designee 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."

Additionally, the CMI Report for Landfill #2 shall include a report on the removal of the sewer line.

5.2.2. Progress Reports

For each landfill, the Permittee shall submit to the Department quarterly progress reports during implementation of the remedy in accordance with a schedule approved in the CMI Work Plan for that landfill. Each of the progress reports shall, at a minimum, include:

1. A description of the work completed during the reporting period.

2. A summary of all problems, potential problems, or delays encountered during the reporting period.

3. A description of all actions taken to eliminate or mitigate problems, potential problems, or delays.

4. A discussion of the work projected for the next reporting period, including all sampling events.

5. Copies of the results of all groundwater monitoring data, including sampling and analysis, and other data generated (excluding geotechnical data) during the reporting period.

5.2.3. Long-Term Monitoring and Maintenance Plan

For each landfill, the Permittee shall submit to the Department for approval within 180 days of the Department's approval of the CMI Report, a Long-Term Monitoring and Maintenance Plan, which details all necessary physical and institutional controls to be implemented in the future. The Department may require monitoring, maintenance, and physical and institutional controls different from those specified in the CMS Report. Each of the plans shall also include contingency procedures that must be implemented by the Permittee if the approved corrective measure fails to be protective of human health and the environment, as determined by the Department. Each Plan shall include the process to be followed by the Permittee (i.e., when and

how) to notify the Department in the event the implemented corrective measure fails to meet the remediation implementation objectives.

5.2.4. Sanitary Sewer Line

The sanitary sewer line that passes through LF-002 shall be removed in accordance with the Department's instructions (letters from NMED to Carl Lanz: July 16, 2004; September 13, 2004; and March 10, 2005).

PERMIT PART 6: TECHNICAL REQUIREMENTS

6.0 INTRODUCTION: TECHNICAL REQUIREMENTS FOR INVESTIGATION AND SAMPLING

The methods used to conduct investigation, remediation, and monitoring activities shall be sufficient to fulfill the requirements of this Permit, and to provide accurate and representative data for the evaluation of site conditions, the nature, concentration, rate of migration, and extent of contamination and contaminant migration, and for remedy selection and implementation, where necessary. The methods presented in this Permit 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. 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 SWMU or AOC.

The Permittee shall provide a description of investigation, sampling or analytical methods and procedures in documents submitted to the Department that includes sufficient detail to evaluate the quality of the acquired data. The Department must approve any proposed combinations of SWMUs and AOCs that are grouped for the purpose of site investigation, remediation, and/or monitoring activities.

6.1. STANDARD OPERATING PROCEDURES

The Permittee may reference relevant Facility Standard Operating Procedures, provided that copies of these procedures are also submitted to the Department for review and approval.

6.2. DOCUMENTATION OF FIELD ACTIVITIES

Daily field activities, including observations and field procedures, shall be recorded on appropriate forms. The original field forms shall be retained at the Facility. Copies of the completed forms shall be maintained in a bound and sequentially numbered field file for reference. 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, at minimum:

1. SWMU or AOC designation.
2. Date.
3. Time of personnel arrival and departure.
4. Field investigation team members who are present, including subcontractors and visitors.
5. Weather conditions.
6. Daily activities conducted and times of performance.
7. Observations.
8. Record of samples collected with sample designations and locations specified.
9. Photographic log.

10. Field monitoring data, including health and safety monitoring if conditions arise that threaten worker or public safety, or the environment.
11. Equipment used and calibration records, if appropriate.
12. List of additional data sheets and maps completed.
13. An inventory of the waste generated and the method of storage and/or disposal.
14. Signature of personnel completing the field record.

6.2.1. Decontamination Procedures

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

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

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 non phosphate detergent or other detergent approved by the Department (e.g., Fantastik™ and Liqui-Nox®) followed by a tap water rinse.
4. Rinse with 0.1 M nitric acid to remove trace metals, if necessary, followed by a tap water rinse.
5. Rinse with methanol to remove organic compounds, if necessary.
6. Rinse with potable tap water.
7. Double rinse with deionized water.

All decontamination solutions shall be collected and stored temporarily as Investigation Derived Waste (IDW) as described in Section 6.2.5 of this Part (6). Decontamination procedures and the cleaning agents used shall be documented in the daily field log.

6.2.2. 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.

6.2.3. Sample Handling, Shipping, and Custody Requirements

The Permittee shall follow all procedures for sampling activities that are detailed in this Section.

6.2.3.1. *Sample Handling*

At a minimum, the following procedures shall be used at all times when collecting samples during investigation, corrective action, and monitoring activities.

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 shall be transferred into clean containers supplied by an analytical laboratory, with the exception of soil, rock, and sediment samples obtained in brass sleeves or in Encore™ samplers. Upon recovery of a 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 covered 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. 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.
3. Sample labels and documentation shall be completed for each sample following procedures included in the site-specific work plans that are to be approved by the Department. Immediately after the samples are collected, they shall be stored either in a cooler with ice or by other appropriate storage method until they are delivered to the analytical laboratory. Standard chain-of-custody procedures, as described in Section 6.1.3.3 of Attachment 6 and Section 10.4.4 of Attachment 10, shall be followed for all samples collected. All samples shall be submitted to the laboratory in an appropriate timeframe that will allow the laboratory to conduct the specified analyses within the method holding times.

6.2.3.2. *Sample Shipment Procedures*

Shipment procedures shall include:

1. Individual sample containers shall be packed to prevent breakage, and transported in a sealed cooler with ice or other suitable coolant or by other Department or industry-accepted method. Any 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 analytical 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 individual sample containers and the sample-shipping container in conformance with EPA guidance.
7. Signed and dated chain-of-custody seals shall be applied to each cooler prior to transport of samples from the Facility.

6.2.3.3. *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. Signed and dated custody seals shall be affixed to individual sample containers, and to the lid of the shipping container. Upon receipt of the samples at the laboratory, the custody seals will be broken by laboratory personnel, 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 Permittee 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 any draft and all final reports submitted to the Department.

6.2.4. In-Situ Testing

In-situ permeability tests, remediation system pilot tests, stream flow tests, and other tests conducted to evaluate site, surface, and subsurface conditions shall be designed to accommodate specific site conditions and to achieve test objectives. The testing methods must be approved, in writing, by the Department prior to implementation. The tests shall be conducted in accordance with Department, EPA, USGS, ASTM or other methods generally accepted by industry that will allow information representative of site conditions to be obtained. Detailed logs of all relevant site conditions and measurements shall be made during the testing events. 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. The summary shall be presented in a format acceptable to the Department and in general accordance with the report formats outlined in Section 4.5 of Part 4 of this Permit.

6.2.5. Collection and Management of Investigation Derived Waste

Investigation derived waste (IDW) includes general refuse, drill cuttings, excess sample material, water (e.g., decontamination, development and purge), spent materials, and used disposable equipment generated during the course of investigation, corrective action, or monitoring activities. All IDW shall be properly characterized and disposed of in accordance with all federal, State, and local rules and regulations for storage, labeling, handling, transport, and disposal of waste. The Permittee shall include a description of the anticipated IDW management process as part of any work plan submitted to the Department for approval.

All water generated during sampling and decontamination activities shall be temporarily stored

in labeled 55-gallon drums or other containers appropriate for the waste.

6.2.6. Surveying Sample, Well, and Site Feature Locations

The horizontal and vertical coordinates of the top of each monitoring well casing and the ground surface elevation at each monitoring well location shall be determined by a registered New Mexico professional land surveyor in accordance with the State Plane Coordinate System (NMSA 1978, 47-1-49-56 [Repl. Pamp. 1993]). 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-foot, and vertical elevations shall be measured to the nearest 0.01-foot. The Permittee 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 all associated 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 the global positioning system (GPS), an electronic total station with prism reflectors, transit with stadia rod or tape, or a combination of these surveying systems, or by a registered New Mexico Registered Land Surveyor using the methods described in the paragraph above. Horizontal locations of site attributes shall be measured to the nearest 1.0-foot. The Permittee shall provide the Department with a statement of accuracy for survey data upon request.

6.2.7. Requirements for Exploratory and Well Installation Borings and Exploratory Excavations

Borings shall be completed at locations specified in this Permit or as approved by the Department in RFI Work Plans. The Department may require additional exploratory or well borings as needed to ensure protection of human health and the environment. Any additional boring locations, if required, will be determined, or approved, by the Department. The depths and locations of exploratory and well borings shall be specified in work plans submitted to the Department for approval prior to the start of the field activities.

Borings that are not completed as permanent groundwater or soil-vapor monitoring wells shall be properly abandoned. Borings completed as either groundwater monitoring or soil-vapor wells shall be constructed in accordance with the requirements described in Section 5.4.6 of this Permit.

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 drilling method selected must be approved by the Department prior to the start of field activities. Based on the drilling conditions, the borings shall be completed using one of the following methods.

1. Hollow-stem auger
2. Air rotary
3. Mud rotary (generally will not be approved by the Department)
4. Percussion hammer

5. Dual wall air rotary
6. Direct Push Technology (DPT)
7. Cable tool
8. Sonic

Hollow-stem auger or DPT drilling methods are preferred if vapor-phase or volatile organic compound (VOC) contamination is known or suspected to be present. Air rotary drilling is preferred for borings intersecting the saturated zone of any aquifer. The type of drilling fluids or additives used, if necessary, must be approved by the Department prior to the start of drilling activities. The use of drilling fluids, other than air and water, is discouraged.

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 Permittee is responsible for ensuring that contaminants from another site or facility are not introduced into the SWMU or AOC under investigation due to equipment malfunction or poor equipment decontamination. Drilling equipment shall be properly decontaminated before initiation of drilling for each boring.

Exploratory borings shall be advanced to the depths specified or approved by the Department. The Permittee shall propose drilling depths in the site-specific work plans submitted for each subject area where subsurface investigations are needed. Unless otherwise specified in this Permit or approved by the Department in work plans, the borings shall be advanced to the following minimum depths (see also Section 6.2.9 of this Part [6]).

1. In all borings, twenty-five (25) ft below the deepest detected contamination based on field screening, laboratory analyses, and/or previous investigations at the site.
2. Twenty-five (25) ft below the base of disposal units if contamination is not detected at shallower depths beneath the base of disposal units.
3. Five (5) ft below the base of shallow structures such as piping or building sumps, or other building structures.
4. Depths specified by the Department based on regional, or on SWMU or AOC specific data needs.

The Permittee 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 or approved by the Department so that alternative actions may be approved. 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 conducted 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. The boring locations shall be located to the nearest foot of their planned location, 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. Methods proposed by the Permittee for exploratory excavation and sampling at any SWMU or AOC shall be included in a site-specific RFI Work Plan submitted to the Department. The Department will indicate any changes or additional requirements for conducting exploratory excavation and sampling activities in its response to the Permittee after review of the RFI Work Plan.

6.2.8. Requirements for Geophysical Surveys

Where necessary, the Permittee shall conduct geophysical surveys to locate underground utilities, pipelines, drums, debris, and other buried features, including buried waste, in the shallow subsurface. 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 features. Results of the surveys shall be included in RFI Reports submitted to the Department.

The Department may require the Permittee to excavate test pits or trenches to identify targets located by geophysical surveys.

6.2.9. Requirements for Deep Subsurface Soil, Rock, and Sediment 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 five (5)-foot intervals, ten (10)-foot 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 with geologic units of different lithology, structural or textural characteristics, or of relatively higher or lower permeability that are observed during drilling.
5. At depths where soil or rock types are more likely to sorb or retain contaminants as compared to surrounding lithologic units.
6. At the depth of the first encounter of any saturated zones.
7. At intervals suspected of being source or contaminated zones.
8. At other intervals approved or required by the Department.

Additional samples may be obtained from any depth based on field observations. A 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.

A split barrel sampler lined with brass sleeves is the preferred sampling method for borehole soil and sediment; a coring device is the preferred sampling method for rock sampling. The

following procedures should be followed if a split barrel sampler is used. Upon recovery of the sample, the 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 an 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 field screening and logging, as described in Sections 6.2.9.1 and 6.2.9.4 of this Part (6), respectively.

Discrete samples shall be collected for field screening and laboratory analyses. For analyses other than that for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), the Permittee 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 upon: 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) the stratigraphy encountered in the boring; and 5) the specific objectives and requirements of this Permit and the approved work plan for the SWMU or AOC under investigation. 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.

6.2.9.1. *Surface and Shallow Subsurface Soil and Sediment Sampling Procedures*

Surface and shallow subsurface soil and sediment samples shall be collected in accordance with the following procedures.

Samples that are collected for analyses other than for VOCs shall obtained using a hand-held stainless steel coring device, Shelby tube, thin-wall sampler, or other device approved by the Department. The samples shall be transferred to pre-cleaned laboratory prepared containers for submittal to the laboratory.

Samples obtained for VOC analyses 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.

6.2.9.2. *Field screening of Soil, Rock, and Sediment Samples*

Samples shall be screened in the field for the presence of contaminants. Field screening results shall be recorded on the exploratory boring and excavation logs or other field 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 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 characteristics such as pH, high explosives, 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, sediment, or rock sample in a plastic sample bag or a foil-sealed container, allowing head space for ambient air. The container shall be sealed and then shaken gently to expose the sample to the air trapped in the container. The sealed container shall be allowed to rest for a minimum of five (5) minutes while vapor concentrations equilibrate. Vapor concentrations present within the headspace will then be measured by inserting the probe of the monitoring instrument into a small opening in the bag or through the foil. The maximum value and the ambient air temperature shall be recorded on the 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 monitoring instrument to be used for VOC field screening shall be included in the RFI Work Plan prepared for each SWMU or AOC.

XRF shall be used to screen soil, rock, or sediment samples for the presence of metals. XRF screening requires proper sample preparation and 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.

The Permittee shall record on the field logs all conditions capable of influencing the results of field screening. The Permittee shall submit to the Department a report detailing any conditions potentially influencing field screening results. This report shall be included in any report where the field screening results are presented.

At a minimum, the Permittee shall submit the samples with the greatest apparent degree of contamination, based on field observations and field screening, for laboratory analysis. The Permittee shall also use the location of the sample relative to groundwater, stratigraphic units or contacts, and the proximity to significant site or subsurface features as a guideline for sample selection. In addition, the Permittee 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.

6.2.9.3. *Field Quality Control for Soil, Rock, and Sediment Sampling*

The Permittee shall collect Quality Control (QC) samples to monitor the validity of the soil, rock, or sediment sample collection and laboratory analysis procedures.

Field duplicates shall consist of two (2) samples either split from the same sample device or collected sequentially. Field duplicates shall be collected at a rate of at least ten (10) percent of the total number of environmental samples submitted for analysis. At a minimum, one (1) duplicate sample shall always be collected and analyzed for the appropriate potential contaminants.

The Permittee shall prepare and analyze equipment blanks from all sampling apparatus at a frequency of at least ten (10) percent of the total number of samples submitted for analysis. Equipment blanks shall be prepared at a frequency of one (1) per day if disposable sampling equipment is used. Equipment blanks shall be generated by rinsing unused or decontaminated sampling equipment with deionized water, and capturing the rinsate water in an appropriate

laboratory-supplied sample container.

In the case of VOC analyses, the Permittee shall prepare and analyze field blanks at a frequency of at least one (1) per day for each medium sampled at each SWMU, AOC, or other site.

Reagent blanks shall be prepared and analyzed if chemical analytical procedures requiring reagents are employed in the field as part of the investigation or monitoring program.

Duplicates and each type of QC blank shall be submitted for laboratory analyses, which are to be correlated with project-specific contaminants, data quality concerns, and the media that are sampled.

6.2.9.4. *Logging of Soil, Rock, and Sediment Samples*

The physical characteristics of soil, rock, and sediment samples, such as mineralogy, American Society for Testing and Materials (ASTM) soil classification, American Geological Institute (AGI) rock classification, moisture content, texture, color, presence of stains or odors, field screening results, depth, location, method of sample collection, and other observations shall be recorded in a field log. Samples shall be visually inspected and the soil, sediment, or rock type classified in general accordance with ASTM D2487 (Unified Soil Classification System) and ASTM D2488 (Standard Practice for Description and Identification of Soils), or AGI Methods for soil and rock classification or in other ways approved by the Department. Detailed logs shall be completed in the field by a qualified geologist. Additional information, such as the presence of water-bearing zones and any unusual or notable 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 a format acceptable for use in final reports submitted to the Department.

6.2.10. Requirements for Soil-Vapor Monitoring

Samples of subsurface vapors shall be collected from vapor monitoring points where required by the Department. The Permittee shall, at a minimum, collect soil-vapor samples for field measurement of the following.

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

The Permittee also shall collect soil-vapor samples for laboratory analysis of the following as required.

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

When either retrieving a soil-vapor sample for laboratory analysis or recording soil-vapor contaminant concentrations by field measurement, the Permittee shall continually monitor soil-vapor contaminant concentrations with an appropriate field instrument (e.g., photoionization detector) until the maximum concentrations are observed, after which such concentrations should either remain constant or begin to decline, before either capturing a soil-vapor sample for analysis or recording the concentration as a field measurement, as appropriate. Soil-vapor samples for laboratory analysis 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-15, as it may be updated or equivalent VOC analytical method approved by the Department.

Field soil-vapor measurements, the date and time of each measurement, and the type and serial number of field instrument used shall be recorded on a soil-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 Section 6.3.4.1.2 of this Part (6). The method used to obtain soil-vapor field measurements and samples must be approved by the Department in writing prior to the start of monitoring.

6.3. TECHNICAL REQUIREMENTS FOR GROUNDWATER INVESTIGATIONS

The Permittee shall conduct investigations of groundwater in accordance with Department approved work plans to fully characterize the nature, vertical and lateral extent, concentration, rate of migration, fate, and transport of groundwater contamination originating from the Facility to determine the need for, and scope of, corrective action. The investigation shall include an evaluation of the physical, biological, and chemical factors influencing the transport of hazardous constituents in groundwater. The Permittee shall implement the groundwater investigation requirements in accordance with the requirements set forth in Section 5.1.3 of Part 5 and in the approved work plans. All data shall be collected according to Department, EPA and industry accepted methods and procedures, and in accordance with Section 6.3 of this Part (6) and any other requirements of this Permit.

6.3.1. Objectives

The Permittee shall implement groundwater investigations to determine the following.

1. Nature, extent, rate of migration, and concentration of historical and current releases of contaminants to groundwater.
2. Fate and transport, including boundary conditions, of contaminants releases within groundwater.
3. The depth to groundwater, water table elevations, potentiometric surfaces, and any seasonal variations.
4. Groundwater flow directions and velocities.
5. Migration of groundwater across hydrostratigraphic and structural boundaries.
6. Watershed and regional water balance information for evaluating contaminant fate and transport including:

- recharge and discharge locations, rates, and volumes,
- evapotranspiration data,
- stream-flow data.

7. Water supply well pumping influences, including data for wells not owned by the Permittee, if available.
8. Saturated and unsaturated hydraulic-conductivity ($K_{x,y,z}$), porosity, effective porosity, permeability, transmissivity, particle-size, storage coefficients, and estimated fracture/secondary porosity.
9. Contaminant concentrations in soil, rock, sediment, air, and vapor; and absorption coefficients (K_{ds}).
10. Changes in groundwater chemistry and the causes.
11. Regional and perched aquifer boundaries.
12. Geologic, hydrostratigraphic, and structural relationships.
13. General water chemistry.

In selecting a site for a new well, the Permittee shall consider paleotopography, fracture density and orientation, source areas, contaminant characteristics, geologic structures, groundwater flow direction, and the known occurrences of groundwater. All existing and newly installed wells and piezometers shall be surveyed in accordance with the requirements described in Section 6.2.6 of this Part (6).

6.3.1.1. *Groundwater Levels*

Groundwater levels shall be measured in monitoring wells at frequencies required by the Department. Groundwater levels also shall be obtained prior to purging for any 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 foot. 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 specified in a Department approved RFI Work Plan within a 24 hour timeframe. The Permittee shall conduct periodic measuring events, the schedule for which shall be provided in the RFI Work Plans.

6.3.1.2. *Groundwater Sampling*

Initial groundwater samples shall be obtained from newly-installed monitoring wells between ten (10) and thirty (30) days after completion of well development. Subsequent groundwater monitoring and sampling shall be conducted at frequencies approved by the Department. All monitoring wells specified in a Department approved RFI Work Plan shall be sampled within twenty one (21) calendar days from the start of the groundwater sampling event. The Permittee shall sample all groundwater in all wells as specified in a Department-approved RFI Work Plan. Any requests for variances from the approved groundwater sampling plan or schedule shall be submitted to the Department in writing, ninety (90) days prior to the start of scheduled

monitoring and sampling events.

Groundwater samples shall be collected from all saturated zones, where possible, including from exploratory borings that are not intended to be completed as monitoring wells prior to abandonment of the borings.

In addition to other required analyses, water samples shall be analyzed in accordance with approved work plans for one or more of the following general chemistry parameters in Table 5-1 below as required by the Department.

Table 5-1. Groundwater General Chemistry Parameters			
nitrate/nitrite	sulfate	chloride	sodium
dissolved CO_2	alkalinity	carbonate/bicarbonate	boron
fluoride	manganese	calcium	silicon
ferric/ferrous iron	ammonia	potassium	phosphorus/phosphate
strontium	lithium	magnesium	molybdenum
Total Kjeldahl Nitrogen (TKN)	total organic carbon	suspended sediment concentration*	
total dissolved solids	bromide	stable isotopes (as required by the Department)	
Other parameters indicating oxidation/reduction conditions			
Eh	pH	dissolved oxygen	specific conductivity
dissolved manganese		dissolved iron	
sulfide		alkalinity	
temperature			

*ASTM Method D3977-97 standard test for determining sediment concentration in water samples

6.3.1.3. *Well Purging*

All screened zones in each monitoring well shall be purged by removing groundwater prior to sampling in order to ensure that fresh formation water is 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 and at measurement intervals approved by the Department. The groundwater quality parameters shall be measured with a flow-through cell and measuring instruments approved by the Department. The volume of groundwater purged, the readings obtained at each interval, and the instruments used shall be recorded on the field monitoring log. Water samples shall be obtained from a well only after the measured values of purge water field parameters have stabilized to within ten (10) percent for three (3) consecutive measurements and after purging seventy-five (75) per cent of one (1) well-bore volume. A well-bore volume is herein defined as the volume of water in the

saturated filter pack plus the volume of all standing water within the well screen and casing. The Permittee may submit to the Department for approval, a written request for a variance from the described method of well purging for individual wells no later than ninety (90) days prior to scheduled sampling activities.

6.3.1.4. *Groundwater Sample Collection*

Groundwater samples shall be obtained using methods approved by the Department within eight (8) hours of the completion of well purging. Sample collection methods shall be documented in field monitoring logs. The samples shall be transferred to appropriate, clean, laboratory-prepared containers provided by the analytical laboratory. Sample handling and chain-of-custody procedures are described in Sections 6.2.3 and 10.4.4 of Attachments 6 and 10, respectively, of this Permit. Decontamination procedures shall be established and, implemented, for non-dedicated water sampling equipment as described in Section 6.2.1 of this Part (6).

All purged groundwater and decontamination water shall be temporarily stored in labeled 55-gallon drums, or other containers approved by the Department. The methods for disposal of purge/decontamination water shall be approved by the Department prior to disposal. Disposable equipment and personal protective equipment shall be handled as described in Section 6.2.5 of this Permit Part (6).

Groundwater samples intended for metals analysis shall be submitted to the laboratory for analyses of total metals; the samples shall not be filtered in the field or laboratory, unless the Department requires analyses for dissolved metals concentrations. If dissolved metals concentrations are required by the Department, the Permittee shall obtain groundwater samples for dissolved metals analysis; said samples shall be filtered using disposable in-line filters with a 0.45 micron or other mesh size approved by the Department.

Field QC for Groundwater Sampling

Groundwater samples shall be collected from each monitoring well in accordance with the requirements of Section 6.3.1.2 of this Part (6) and the approved work plans. Field duplicates, field blanks, equipment rinsate blanks, reagent blanks, and trip blanks shall be collected or prepared and analyzed for quality control purposes. The samples shall be managed as described in Section 6.2.3 of this Part (6).

Field duplicates shall consist of two (2) samples collected sequentially. Field duplicate samples shall be collected and analyzed at a frequency of at least ten (10) percent of the total number of environmental samples submitted for analysis. At a minimum, one (1) duplicate sample per sampling event shall always be collected and analyzed.

In the case of VOC analyses, field blanks shall be prepared and analyzed at a frequency of no less than one (1) per day per SWMU or AOC. Field blanks shall be generated by filling sample containers in the field with deionized water and submitting the field blank, along with the groundwater samples, to an analytical laboratory.

Equipment blanks shall be prepared and analyzed at a rate of at least five (5) percent of the total number of environmental samples submitted for analysis, but no fewer than one (1) equipment blank per sampling day. Equipment blanks shall be collected and analyzed at a rate of one (1) per sampling day if disposable sampling apparatus is used. Equipment blanks shall be generated

by rinsing unused or decontaminated sampling equipment with deionized water, and capturing the rinsate water in an appropriate laboratory-supplied sample container. The equipment blank then shall be submitted with the groundwater samples to the analytical laboratory for the same analyses as the environmental samples.

Reagent blanks may be required by the Department if chemical analyses requiring the use of chemical reagents are conducted in the field during water sampling activities. Reagent blanks shall be prepared and analyzed at a frequency of at least ten (10) percent of the total number of media samples, but no fewer than one (1) per day per SWMU or AOC.

Trip blanks shall be prepared using deionized water. Trip blanks shall be managed exactly the same as environmental samples. Trip blanks shall accompany sampling personnel into the field throughout sampling activities, and then shall be placed into a shipping container with environmental samples for shipment to the analytical laboratory. Trip blanks shall be analyzed at a frequency of one (1) for each shipping container holding samples for contaminant analysis.

6.3.1.5. *Periodic Monitoring Report*

The Permittee shall submit to the Department periodic monitoring reports providing the results of the monitoring and sampling of groundwater, surface water, and springs over the previous reporting period. The reports shall be prepared in accordance with Section 4.5 of Part 4 of this Permit. The reports shall be submitted within 90 days after completion of the monitoring fieldwork or in accordance with the schedule set forth in the approved monitoring work plans.

6.3.2. Springs

As required by the Department, the Permittee shall submit to the Department work plans for monitoring of springs that meet the following requirements:

1. Springs used to monitor groundwater shall be sampled as close to the point of discharge as possible and shall be sampled at the same locations during each sampling event. If field conditions change, the spring shall be sampled as close to the original location as possible, and the Permittee shall notify the Department in the periodic monitoring report that the sampling location for the spring has changed.
2. The sampling point for each spring shall be located in accordance with the survey methods described in Section 6.2.6 of this Part (6)or by other survey methods approved by the Department.
3. Spring water flow rates shall be measured, if feasible. In addition, pH, specific conductance, dissolved oxygen, turbidity, temperature, and oxidation-reduction potential of the spring water shall be measured at the sample location during each sampling event. The Permittee shall measure field water quality parameters to determine the stability of the groundwater chemistry prior to sample collection.
4. Spring samples shall be submitted to an analytical laboratory for analyses of the general chemistry parameters listed in Section 6.3.1.2 of this Part (6), and in accordance with approved work plans.

5. The Permittee shall perform the same field QC procedures as are described in Section 6.3.1.4. of this Part (6) and Section 6.3 of Attachment 6 of this Permit for groundwater

6.3.3. Surface Water

Surface water samples shall be collected using methods approved by the Department. Samples shall be collected and placed into 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 field monitoring logs. Stream flow rates shall be measured in conjunction with surface water sampling events.

The Permittee shall perform the same field QC procedures as are detailed in Section 6.3.1.4 of this Part (6) and Section 6.3 of Attachment 6 of this Permit for groundwater.

6.3.4. Laboratory Analyses Requirements for all Environmental Media

The Permittee shall submit all samples for laboratory analysis to laboratories within the EPA Contract Laboratory Program. The laboratories shall use the most recent EPA and industry-accepted extraction and analytical methods as the testing methods for each medium sampled.

The Permittee 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 analyte detection limit for each analytical method shall be less than applicable background, screening, and regulatory cleanup level as applicable; 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 use of the elevated detection limits shall be reported to the Department; results based on these data quality exceptions may not be accepted by the Department. All analytical data (including non-detects, estimated values, and detects) shall be included in the electronic copy of the RFI Report or other report in Microsoft™ Excel format with any qualifiers as attached from the analytical laboratory. The Permittee shall not censor data based on detection limits, quantitation limits, or measurement uncertainty. The Permittee shall also report whether any dilution of the sample was needed prior to laboratory analysis, and the amount of dilution, if any. The Department will not accept J-coded (estimated) results for samples requiring dilution prior to laboratory analysis.

6.3.4.1. *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 Permittee. The Permittee shall provide the names of the contract analytical laboratories and copies of their laboratory quality assurance manuals to the Department within forty-five (45) days of awarding a contract for analytical services to any contract laboratory.

6.3.4.1.1. Quality Assurance

The Permittee shall ensure that contract analytical laboratories maintain internal quality assurance programs in accordance with EPA and industry-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), and laboratory control samples to assess data quality. 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 procedures that meet EPA's laboratory certification requirements. Specific procedures to be completed are identified in the following sections. If a laboratory is unable or unwilling to meet the requirements of this Permit, the Permittee shall select a different laboratory that can and will meet the requirements.

6.3.4.1.2. Equipment Calibration Procedures and Frequency

The laboratories' equipment calibration procedures, calibration frequency, and calibration standards shall be in accordance with the EPA test method requirements and documented in quality assurance and standard operating procedures manuals. All instruments and equipment used by laboratories 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 laboratories.

6.3.4.1.3. Laboratory QC Samples

Analytical procedures shall be evaluated for quality by analyzing reagent or method blanks, surrogates, matrix spike/matrix spike duplicate (MS/MSDs, and laboratory duplicates, as appropriate for each method. Laboratory QC samples and frequency of analysis are documented in EPA test methods. At a minimum, laboratories shall analyze laboratory blanks, MS/MSDs, and laboratory duplicates at a frequency of at least one (1) in twenty (20) for all batch runs requiring EPA test methods and at a frequency of at least one (1) in ten (10) for non-EPA test methods. Laboratory batch QC samples shall be specific to the project.

6.3.4.2. *Laboratory Deliverables*

Laboratory analytical data packages shall be prepared in accordance with EPA-established Level III or IV analytical support protocols. The following shall be provided in the analytical laboratory reports submitted to the Permittee either electronically or in hard (paper) copy.

1. Transmittal letter, including information about the receipt of samples, the testing methods performed, any deviations from the required procedures, any problems encountered in the analysis of samples, any data quality exceptions and qualifiers, and any corrective actions taken by the laboratory relative to the quality of the data contained in the report.
2. Holding times and conditions.
3. 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 (such as mg/kg in dry-weight basis); water sample results in consistent units (such as milligrams/liter); soil-vapor sample results in consistent units (such as $\mu g/m^3$); and detection limits. Results shall be reported for all samples, including field duplicates, blanks, and other QC samples.

4. Method blank results, including detection limits.
5. Surrogate recovery results and corresponding control limits for samples and method blanks (organic analyses only).
6. MS/MSD concentrations, percent recoveries, relative percent differences (RPDs), and corresponding control limits.
7. Laboratory duplicate results, including relative percent differences and corresponding control limits.
8. Sample chain-of-custody documentation.
9. Instrument calibration.
10. Recoveries of surrogates
11. Completeness.

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

1. A cover letter referencing the analytical 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. Data qualification in conformance with EPA protocol, and definition of data descriptor codes.
3. Reconstructed ion chromatograms for gas chromatograph/mass spectrometry (GC/MS) analyses for each sample and standard calibration.
4. Selected ion chromatograms and mass spectra of detected target analytes (GC/MS) for each sample and calibration with associated library/reference spectra.
5. Gas chromatograph/electron-capture device (GC/ECD) and/or gas chromatograph/flame ionization detector (GC/FID) chromatograms for each sample and standard calibration.
6. Raw data quantification reports for each sample and calibrations, including areas and retention times for analytes, surrogates, and internal standards.
7. 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].
8. Final extract volumes (and dilutions required), sample size, wet-to-dry weight ratios, and instrument practical detection/quantitation limit for each analyte.
9. Analyte concentrations with reporting units identified, including data qualification in conformance with the CLP Statement of Work (SOW), including definition of data descriptor codes.
10. Report of tentatively identified compounds with comparison of mass spectra to library/reference spectra.

The following data deliverables for inorganic compounds shall also 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. Results of all method QA/QC checks, including inductively coupled plasma (ICP) Interference Check Sample and ICP serial dilution results.
3. Raw data quantification report for each sample.
4. A calibration data summary reporting calibration range used and a measure of linearity, where appropriate.
5. Final digestate volumes (and dilutions required), sample size, and wet-to-dry weight ratios.

The Permittee shall present summary tables of these data and Level II QC results to the Department in reports or other documents prepared in accordance with in Section 4.4 of this Permit. Raw analytical data, including calibration curves, instrument calibration data, data calculation work sheets, and other laboratory supporting data for samples from this project, shall be compiled and kept on file at the Facility for reference. The Permittee shall make all data available to the Department upon request.

6.3.5. Review of Field and Laboratory QC Data for all Media

6.3.5.1. *General QC Review Process*

The Permittee shall require the laboratory to notify the Permittee of data quality exceptions within one (1) working day of discovery in order to allow for sample re-analysis, if possible. The Permittee shall contact the Department within one (1) working day of receipt of the laboratory notification of data quality exceptions to discuss the implications to the sampling data, and to determine whether the data will still be considered acceptable or if sample re-analysis or resampling is necessary. The Permittee shall summarize the results of this discussion with Department personnel in a letter. The Permittee shall submit the letter to the Department by fax or electronic mail within three (3) working days of the conclusion of the data quality discussion and shall mail the original signed copy of the letter to the Department within ten (10) days of the conclusion of the data quality discussion.

The Permittee shall evaluate all sample data, and all field and laboratory QC results for acceptability with respect to the data quality objectives (DQOs) in approved work plans. 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 methods and procedures. Additionally, the Permittee shall evaluate all data for compliance with the following parameters.

1. Representativeness -- the Permittee 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 Permittee shall note any procedures or variations that may affect the collection or analysis of representative samples and shall qualify the data accordingly.

2. Comparability -- to assure comparability of data, the Permittee shall implement standard collection and analytical procedures, and shall report analytical results in appropriate units for comparison with other data (e.g., past studies, comparable sites, screening levels, and cleanup standards). Any procedure or variation that may affect comparability shall be noted, and the data shall be qualified appropriately.
3. Completeness -- the Permittee shall evaluate all laboratory data for completeness with respect to data quality objectives. The degree of completeness shall be reported with the data in any reports in which the data are referenced.
4. Accuracy -- the Permittee shall evaluate all data for accuracy with respect to percent recovered of spiked samples. Results shall be reported for each analyte in any report in which the data are cited.
5. Precision -- the Permittee shall evaluate all data for precision with respect to relative percent differences of duplicate samples. Results shall be reported for each analyte in any report in which the data are cited.

6.3.5.2. *Review of Laboratory Reporting, Documentation, Data Reduction, and Corrective Action Process*

Upon receipt of each laboratory data package, the Permittee shall evaluate the data against the criteria outlined in this Permit. Any deviation from the established criteria shall be noted and the data will be qualified appropriately. A full review and discussion of QC data and all data qualifiers shall be submitted with RFI Reports or other reports prepared in accordance with Section 4.4 of this Permit. Data validation procedures for all samples shall include review of the following, as 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. Surrogate recoveries.
13. Representativeness, comparability, completeness, accuracy, and precision as required in Section 5.4.5.1 above.

If quality control problems are encountered, appropriate corrective action shall be implemented.

All corrective action shall be defensible and the corrected data shall be qualified as appropriate or rejected.

6.3.5.2.1. Blanks

The analytical results of field blanks and equipment blanks shall be reviewed to evaluate ambient site conditions and the adequacy of equipment decontamination, respectively. The analytical results of trip blanks shall be reviewed to evaluate the possibility for contamination of samples resulting from improperly cleaned sample containers or transport containers. The analytical results of laboratory blanks shall be reviewed to evaluate the possibility of contamination of a sample caused by analytical procedures. If reagent blanks are required, the analytical results of reagent blanks shall be reviewed to evaluate whether the reagents were contaminated prior to use. If contaminants are detected in any blanks, the sample data shall be qualified, as appropriate.

6.3.5.2.2. Field and Laboratory Duplicates

Relative Percentage Differences (RPDs) for field and laboratory duplicates shall be calculated and reported.

6.3.5.2.3. Laboratory Spikes

Percent recovered for laboratory spikes shall be calculated and reported

6.3.5.2.4. Method Detection Limits

Method detection 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 soil-vapor background levels, cleanup standards, and screening levels as appropriate. The preferred method detection limits are a maximum of twenty (20) percent of the background, screening, or cleanup levels. Detection limits that exceed cleanup standards, screening levels, or background levels and that are associated with results that are reported as “not detected” shall be considered as data quality exceptions (see Section 6.3.4 of this Part [6]).

6.3.5.2.5. Holding Times

The Permittee 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.

6.3.6. Groundwater Monitoring Well Construction Requirements

6.3.6.1. *Drilling Methods*

Groundwater monitoring wells shall be designed and constructed in a manner that will yield high quality samples, ensure that the well will last the duration of the project or other specified time period, 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 RCRA guidance, including, but not

limited to:

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

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

1. Drilling shall be performed in a manner that minimizes impacts to the natural properties of the subsurface materials.
2. Drilling shall be performed in a manner that contamination and cross-contamination of groundwater and aquifer materials is avoided.
3. The drilling method shall allow for the collection of representative samples of rock, unconsolidated sediment, and soil.
4. The drilling method shall allow the Permittee to determine when the appropriate location for the screened interval(s) has been encountered.
5. The drilling method shall allow for the proper placement of a filter pack and annular sealant for each monitored zone. The borehole diameter shall be at least four (4) inches larger in diameter than the nominal diameter of the well casing and screen to allow adequate space for emplacement of the filter pack and annular sealants.
6. The drilling method shall also allow for the collection of representative groundwater samples. Drilling fluids, including air, shall be used only when minimal impact to the surrounding formation and groundwater can be ensured. In general the Department discourages the use of drilling mud and drilling additives for groundwater monitoring well installations.
7. Requirements Specified in Section 6.2.7 of this Part (6)

Justification for the drilling method used must be provided in writing to the Department for approval prior to well installations.

6.3.6.2. *Monitoring Wells and Piezometers*

The Permittee shall comply with the requirements of Part 4, Section 4.6 for the installation of all monitoring wells and piezometers.

All well construction and installation shall be conducted in accordance with Part 6, Section 6.3.6 of this Permit, and according to the schedule set forth in Part 4, Section 4.6 of this Permit and in accordance with approved work plans. All monitoring and sampling shall be conducted in accordance with Part 6, Section 6.3 of this Permit, and according to the schedule set forth in Part 4, Section 4.6 of this Permit and in accordance with approved work plans.

The Department must approve in writing all drilling locations, monitoring well and piezometer

construction and installation details, sampling depths, and abandonment activities prior to the start of these activities.

6.3.6.2.1. Alluvial Wells and Piezometers

Alluvial wells and piezometers are wells that are screened partially or wholly in alluvial sediments. The Permittee shall submit to the Department for approval work plans for construction of alluvial wells and piezometers that meet the following requirements:

1. If required by the Department, alluvial well and piezometer borings shall be advanced to minimum depths of five feet below the alluvium-bedrock interface.
2. Samples of alluvial sediments and underlying bedrock, and soil and soil vapor shall be collected as appropriate for hydraulic and soil property testing and for analysis to determine the presence of contaminants at depths or intervals approved by the Department and in accordance with the methods described in Part 6, Section 6.3 of this Permit.
3. Alluvial wells and piezometers shall be constructed and developed in accordance with Part 6, Section 6.3.6 of this Permit. Wells and piezometers shall be abandoned in accordance with the procedures for abandonment in Part 6, Section 6.3.6.9 of this Permit.
4. Samples shall at a minimum be obtained from each boring between the ground surface and one foot below the ground surface (0.0-1.0 foot interval), at subsequent five-foot intervals, at the alluvium-bedrock contact, and at the maximum depth of each boring in accordance with the methods described in Section 6.2.9 of Part 5.
5. Field screening and chemical analyses of collected samples shall be conducted in accordance with Section 6.2.9.2 of Part 5 and in accordance with approved work plans.
6. Soil, soil vapor, rock, and sediment samples collected during drilling activities shall be delivered to an analytical laboratory for the required analyses.
7. Work plans shall be prepared in accordance with Section 4.5 of Part 4 and Section 5.1 of Part 5 of this Permit.
8. Groundwater samples shall be delivered to an analytical laboratory for the analyses required in the approved work plans and Section 6.3.1.2 of this Part (6).
9. Groundwater monitoring data and groundwater samples shall be collected from each well at the frequencies specified in approved work plans.

6.3.6.2.2. Perched Aquifer Wells

Perched aquifer wells are those screened in any perched aquifer encountered at the Facility. The Permittee shall submit to the Department for approval work plans for construction of perched aquifer wells that meet the following requirements.

1. Based on site-specific conditions, geophysical measurements and soil, sediment, rock, soil-vapor, and groundwater samples shall be collected from each boring prior to well construction in accordance with Section 6.3 of this Part (6), as appropriate.

2. No borehole shall be left open or cased with temporary casing for longer than five (5) days.
3. The Department may impose specific conditions for well construction, require borings to be extended to the regional aquifer, or require the drilling of additional borings that intersect perched saturated zones or the regional aquifer based on investigation results.
4. Field screening and collection of soil, sediment, rock, soil-vapor, and groundwater samples shall be conducted in accordance with Section 6.2.9.2 of this Part (6).
5. Soil, soil vapor, rock, and sediment samples shall be delivered to an analytical laboratory for the required analyses.
6. Work plans shall be prepared in accordance with Sections Section 4.3 of Part 4 and Section 5.1 of Part 5 of this Permit.
7. Groundwater samples shall be delivered to an analytical laboratory for the analyses required in the approved work plans and Section 6.3.1.2 of this Part (6).
8. Groundwater samples shall be collected from each well and analyzed at the frequencies specified in approved work plans.

6.3.6.2.3. Regional Aquifer Wells

Regional aquifer wells are those screened in the regional aquifer beneath the Facility. The Permittee shall submit to the Department for approval work plans for construction of regional aquifer wells that meet the following requirements.

1. The proposed locations, depths and details of drilling, sampling, and well construction shall be described in work plans prepared in accordance with Section 4.5 of Part 4 and Section 5.1 of Part 5 of this Permit or other document approved by the Department prior to well installation.
2. No borehole shall be left open or cased with temporary casing for longer than five (5) days.
3. Geophysical measurements and soil, sediment, rock, soil vapor, and groundwater samples shall be collected from the borings prior to well construction in accordance with Section 6.3.6.2.3 of this Part (6) and as required by the Department.
4. Where appropriate, the borings shall be monitored for the presence of vapor-phase contaminants prior to well construction.
5. Based on the results of subsurface soil-vapor monitoring, the Department may require that the Permittee construct the wells to accommodate subsurface soil-vapor monitoring in addition to groundwater monitoring and sampling.
6. Field screening and sample collection of soil, sediment, rock, soil-vapor, and groundwater samples shall be conducted in accordance with Section 5.3.11.2 of this Permit.
7. Soil, soil vapor, rock, and sediment samples shall be delivered to an analytical laboratory for the required analyses.

8. Work plans shall be prepared in accordance with Section 4.5 of Part 4 and Section 5.1 of Part 5 of this Permit.
9. Groundwater samples shall be delivered to an analytical laboratory for the analyses required in the approved work plans and Section 6.3.1.2 of this Part (6).
10. Groundwater samples shall be collected from each well and analyzed at the frequencies specified in the approved work plans.

6.3.6.3. *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 to or remove contaminants from the groundwater. Other factors to be considered include the tensile strength, compressive strength, and collapse strength of the materials; the length of time the monitoring well will be in service; and the material's resistance to chemical and microbiological corrosion.

6.3.6.4. *Design and Construction of Well Screens and Filter Packs*

Well screens and filter packs shall be designed to allow accurate sampling of the saturated 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 filter pack shall be installed in a manner that prevents bridging and particle-size segregation. Filter packs shall be installed by the tremie pipe method. At least two inches of filter pack material shall be installed between the well screen and the borehole wall, and two feet of filter pack material shall extend above the top of the well screen. A minimum of six inches and a maximum of two feet of filter pack material shall also be placed under the bottom of the well screen to provide a firm footing. 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-foot layer of chemically inert fine sand shall be placed over the filter pack to prevent the intrusion of annular sealants into the filter pack. The use of pre-fabricated well screens and filter packs shall be approved in advance of well installation by the Department.

6.3.6.5. *Design and Construction of Annular Seals*

The annular space between the well casing and the borehole shall be properly sealed to prevent cross-contamination. 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. The precise volume of annular sealant 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 normally consist of a high solids (10 to 30 percent) bentonite material in the form of bentonite pellets, granular bentonite, or bentonite chips. The seal shall be placed in the annulus through a

tremie pipe. A tamping device shall be used to ensure that the seal is emplaced at the proper depth. The bentonite seal shall be placed above the filter pack with a minimum of two feet 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.

A grout seal shall be installed on top of the filter pack seal. 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; however, the grout shall be installed at intervals necessary to allow it time to cure and not damage the filter pack or filter pack annular seal. The tremie pipe shall be equipped with a side discharge port (or bottom discharge for grouting at depths greater than 100 ft) to minimize damage to the filter pack or filter pack annular 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 ten (10) pounds per gallon (as measured by a mud balance) to ensure proper setup. Cement grouts shall be mixed using six and one-half (6.5) to seven (7) gallons of water per 94-pound bag of Type I Portand cement. Bentonite (five [5] to ten [10] percent) may be added to delay the setting time and reduce the shrinkage of the grout.

6.3.6.6. *Well Development Methods*

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 residual drilling mud or other drilling additives, if present, and fine particles from the formation near the borehole, and assist in restoring the original water quality of the aquifer in the vicinity of the well. 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 conductance have stabilized.

If a well is pumped dry, the water level shall be allowed to sufficiently recover before the next development period is initiated.

Approval shall be obtained from the Department prior to introducing air, water, or other fluids into a well for the purpose of well development. If water is introduced to a borehole during well drilling and completion, then at minimum the same volume of water shall be removed from the well during development. In addition, the volume of water withdrawn from or introduced into a well during development shall be recorded.

6.3.6.7. *Surface Completion Methods*

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 one (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 (3)-foot square by four (4)-inch thick concrete surface pad shall be installed around the well immediately after the protective casing is installed. The surface pad shall be sloped so that drainage will be off the pad and away from the protective casing. In addition, a minimum of one (1) inch of the finished pad shall be below grade or ground elevation to prevent washing and undermining by

soil erosion.

Protective casing with a locking cover shall be installed around the well casing (stickup) to prevent damage or unauthorized entry. The protective casing shall be anchored in the concrete surface pad below the frost line and extend at least several inches above the well casing stickup. A weep hole shall 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. A cap shall be placed on the well riser to prevent tampering or the entry of foreign materials into the well, and a lock shall be installed on the cover of the protective casing to provide security. If the wells are located in an area that receives vehicular traffic, a minimum of three (3) bumper guards consisting of steel pipes three (3) to four (4) inches in diameter and a minimum of five (5)-ft in length shall be installed next to the concrete surface pad. The bumper guards shall be installed to a minimum depth of two (2) ft below the ground surface in a concrete footing and extend a minimum of three (3) ft above ground surface. The pipes that form the bumper guards shall be filled with concrete to provide additional strength, and shall be painted a bright color to make them readily visible.

If flush-mounted completions are required (e.g., in active roadway areas), a protective structure such as a traffic-rated utility vault or meter box shall 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 shall 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. A lock shall be installed on the lid or cover of the protective structure to prevent unauthorized access to the well.

6.3.6.8. *Well Completion Report*

For each monitoring well, the Permittee shall submit to the Department a well completion summary within 30 days of completing installation which shall include a well construction log and diagram, a well boring log, and a well development log. The well construction log and diagram and the well boring log shall contain at a minimum the information required under Section 5.4.6.10 of this Permit. Well development must be completed within 30 days of installing the well casing.

6.3.6.9. *Well Abandonment*

Wells shall be abandoned when they are no longer required to address environmental corrective action requirements or when they are damaged beyond repair; however, no well shall be abandoned without prior approval by the Department. Well abandonment must comply with current EPA well abandonment guidance.

For wells with small diameter casing (i.e., 2-inch or less), abandonment shall be accomplished by over drilling the well with a large diameter hollow-stem auger. After the well has been over drilled, the well casing and grout shall be removed from the ground with a drill rig, and the remaining filter pack shall be drilled out. The open borehole shall 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 (2) ft of the borehole shall be filled with concrete to insure a secure surface seal.

For larger-diameter wells (i.e., greater than 2-inch), the Permittee may attempt to remove the well casing. However, if the casing breaks or cannot be pulled from the ground, the well shall be grouted in place. To abandon a well in place, a tremie pipe shall be placed at the lowest point in the well (i.e., at the bottom of the well screen or in the well sump). The entire well shall then be pressure grouted from the bottom of the well upward to force grout 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 shall be cut off even with the ground surface and covered with concrete.

6.3.6.10. *Well Construction Diagrams and Logs and Well Boring Logs*

Information on the design, construction, and development of each monitoring well shall be recorded. Well construction logs and diagrams shall include the following information.

1. Well name/number.
2. Date/time of well construction.
3. Borehole diameter and well casing diameter.
4. Surveyed location coordinates.
5. Well total depth, expressed both as depth below ground surface and elevation above sea level.
6. Name of drilling contractor.
7. Casing length.
8. Casing materials.
9. Casing and screen joint type.
10. Screened intervals, expressed both as depth(s) below ground surface and elevation(s) above sea level.
11. Screen materials.
12. Screen slot size and design.
13. Filter pack material and size.
14. Filter pack volume (calculated and actual).
15. Filter pack placement method.
16. Filter pack interval(s), expressed both as depth(s) below ground surface and elevation(s) above sea level.
17. Annular sealant composition.
18. Annular sealant placement method.
19. Annular sealant volume (calculated and actual).
20. Annular sealant interval, expressed both as depth below ground surface and elevation above sea level.

21. Surface sealant composition.
22. Surface seal placement method.
23. Surface sealant volume (calculated and actual).
24. Surface sealant interval, expressed both as depth below ground surface and elevation above sea level.
25. Surface seal and well apron design and construction.
26. Well development procedure and turbidity measurements.
27. Well development purge volume(s) and stabilization parameter measurements.
28. Type, design, and construction of protective casing.
29. Affirmation of well cap and lock.
30. Ground surface elevation above sea level.
31. Survey reference point elevation above sea level on well casing;
32. Top of monitoring well casing elevation above sea level.
33. Top of protective steel casing elevation above sea level.
34. Drilling method(s).
35. Types, quantities, and dates/times that drilling muds or additives were introduced, if any.

Well boring logs shall include the following information.

1. Boring name/number.
2. Drilling date(s).
3. Surveyed location coordinates.
4. Total depth, expressed both as depth below ground surface and elevation above sea level.
5. Name of drilling contractor.
6. Description of lithologies encountered, with top and base expressed both as depth below ground surface and elevation above sea level.
7. Depth below ground surface of, and elevation above sea level to, groundwater, if applicable and the date of measurement.
8. Depth and date and time of measurement that water was first encountered.
9. Geophysical logs obtained from boring, if applicable.
10. Locations (i.e., depths below ground surface and elevation above sea level) of samples collected and sample types (e.g., environmental, geotechnical, groundwater, geologic).

6.3.6.11. *Soil Vapor Wells*

Soil vapor wells shall not be installed with the use of any fluids, such as water or drilling mud, because subsequent well development is not possible. Soil vapor wells may be completed by backfilling with native materials. If a soil vapor well is installed as a permanent monitoring point, the Permittee shall not sample the well before the expiration of a 24-hour equilibration period after installation is complete. Information on the design and construction of soil-vapor monitoring wells shall be recorded as for groundwater monitoring wells (Section 6.3.6.10 of this Part [6]) as applicable.

Soil-vapor monitoring wells shall be designed and constructed in a manner that will yield high-quality samples. The design and depth of installation must be approved by the Department.