Permit

NEW MEXICO ENVIRONMENT DEPARTMENT

ENTERED

Hazardous Waste Bureau

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RON CURRY
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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

November 30, 2010

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Los Alamos Site Office
Department of Energy
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J. Chris Cantwell, Associate Director
Environment, Safety, Health & Quality
Los Alamos National Security, L.L.C.
P.O. Box 1663, MS K491
Los Alamos, NM 87545

RE: FINAL DECISION AND RESPONSE TO COMMENTS
HAZARDOUS WASTE FACILITY PERMIT
LOS ALAMOS NATIONAL LABORATORY, EPA ID# NM0890010515

Dear Messrs. Smith and Cantwell:

On November 30, 2010, New Mexico Environment Department (**Department**) Secretary Ron Curry signed a Final Order issuing a final Hazardous Waste Facility Permit (**Permit**) to the U.S. Department of Energy/National Nuclear Security Agency and Los Alamos National Security, LLC (the **Permittees**) for management of hazardous waste at Los Alamos National Laboratory (LANL).

A public comment period was held on the draft Permit from August 27, 2007 through January 15, 2008. A revised draft Permit was released for public comment on July 6, 2009. A public hearing on the revised draft Permit was held from April 5 through May 7, 2010. The final Permit incorporates changes made by the Secretary in the Final Order.

The Permit becomes effective 30 days after the issuance date and may be appealed under the provisions of the New Mexico Hazardous Waste Regulations, 20.4.1.901(H) NMAC, and § 74-4-14 of the New Mexico Hazardous Waste Act.

34162

Enclosed are the Final Order and an electronic copy of the final Permit on CD-ROM. The response to comments include explanations for changes made to the draft permit in preparing the final Permit pursuant to 20.4.1.901.A(9) NMAC. The response to comments, the Final Order, and Permit can be viewed on the Department's website at: http://www.nmenv.state.nm.us/hwb/lanlperm.html.

Sincerely,

John E. Kieling
Manager
Permits Management Program
Hazardous Waste Bureau

Attachment

STATE OF NEW MEXICO
BEFORE THE SECRETARY OF ENVIRONMENT

NOV 2010
DOCKETED BY THE
HEARING CLERK BEFORE THE
SECRETARY OF ENVIRONMENT

IN THE MATTERS OF THE APPLICATION OF THE UNITED STATES DEPARTMENT OF ENERGY AND LOS ALAMOS NATIONAL SECURITY, LLC FOR A HAZARDOUS WASTE FACILITY PERMIT FOR LOS ALAMOS NATIONAL LABORATORY AND THE NOTICE OF INTENT TO DENY A PERMIT FOR OPEN BURN UNITS TA-16-388 AND TA-16-399 FOR LOS ALAMOS NATIONAL LABORATORY

No. HWB 09-37(P)
HWB 10-04(P)

FINAL ORDER

This matter comes before the Secretary of the Environment following a hearing before the Hearing Officer over a period of fifteen days between April 6, 2010 and May 7, 2010 in Santa Fe, Pojoaque, Ohkay Owingeh, Los Alamos, and Albuquerque, New Mexico.

Applicants the United States Department of Energy and Los Alamos National Security, LLC (Applicants) seek a Hazardous Waste Facility Permit for Los Alamos National Laboratory. The New Mexico Environment Department (Department) Hazardous Waste Bureau (Bureau) supports the issuance of the permit with conditions necessary to protect the public health and welfare and the environment, and proposes to deny a permit for open burn units TA-16-388 and TA-16-399 for Los Alamos National Laboratory.

Having considered the administrative record in its entirety, including the Proposed Finding of Fact and Conclusions of Law, Closing Arguments, and all post hearing submittals submitted by Applicants, the Department and other parties to these proceedings, and the Hearing Officer's Report; and being otherwise fully advised regarding this matter;

THE SECRETARY HEREBY ADOPTS THE HEARING OFFICER'S REPORT, PROPOSED FINDING OF FACT AND CONCLUSIONS OF LAW AND RECOMMENDED CONIDITIONS, EXCEPT AS NOTED BELOW.

IT IS THEREFORE ORDERED:

1. Pursuant to 20 NMAC 1.4.403, written comments were accepted and considered, but no oral argument will be accepted on the Hearing Officer's Report.
2. In place of the July 19, 2010 revised Proposed Permit, the Bureau submitted a Corrected Revised Proposed Permit dated September 10, 2010. Applicants agree that the September 10, 2010 Permit includes agreed upon changes to the Proposed Permit. Notwithstanding other references in the Hearing Officer's Report, it is the Corrected Revised Proposed Permit dated September 10, 2010 that shall, as modified below, be issued as the final Permit in this matter.
3. The Corrected Revised Proposed Permit dated September 10, 2010 includes changes to Permit Sections 1.17, 1.17.3, 2.4.9, 2.10.1, 2.10.5, 3.7.1(2), 3.7.1(4) and 3.11.3 agreed to by the Parties during the hearing. Additional findings of fact (FOF) and conclusions of law (COL) are appropriate to support the final Permit:
    a. For changes to Permit Sections 1.17 and 1.17.3, Applicants' FOF 96-99 and COL 16-19 are adopted.
    b. For changes to Permit Section 2.4.9, Applicants' 149-153 and COL 31-33 are adopted.
    c. For changes to Permit Section 2.10.1, Applicants' FOF 154-160 and COL 34-36 are adopted.
    d. For changes to Permit Section 2.10.5, Applicants' FOF 161-164 and COL 37-39 are adopted.
    e. For changes to Permit Section 3.7.1(2), Applicants' FOF 189-196 and COL 42-44 are adopted.

f. For changes to Permit Section 3.7.1(4), Applicants' FOF 197-201 and COL 45-47 are adopted.

g. For changes to Permit Section 3.11.3, Applicants' FOF 202-207 and COL 48-51 are adopted.

4. Although the Secretary adopts the Hearing Officer's recommendation that financial assurance conditions be deleted from the final permit, proposed Findings of Fact 386 through 395 are not adopted, nor is proposed Conclusion of Law 127. The Secretary's decision is based on the other grounds given by the Hearing Officer.

5. Proposed Finding of Fact 268 is not adopted; the Applicants initially objected to Condition 2.4.9 of the Proposed Permit, but subsequently dropped their objection.

6. Proposed Finding of Fact 418 is not adopted, as it conflicts with proposed Conclusions of Law 205 and 206.

7. Additional findings of fact and conclusions of law supporting the closure plan limitation on disposal of low-level radioactive waste in areas undergoing closure are hereby adopted:

   a. It is not practical to close a hazardous waste management unit properly if that unit is continuing to receive waste, even "non-hazardous" waste. Bearzi Testimony, Transcript Volume 15, page 4105.

   b. Continued disposal of low-level radioactive waste would change the physical characteristics of the disposal area and the potential for migration of contamination. Id. at 4106.

c. Continued disposal of low-level radioactive waste could reduce the effectiveness of a final cover, or interfere with the excavation of interred wastes. Id. at 4106.

d. Environmental Protection Agency regulations provide that closure of a hazardous waste management unit must begin following the final receipt of hazardous waste, or non-hazardous waste, at the unit. *See* Department Response Brief at 19-20; 40 C.F.R. Section 264.113(a)(2009), incorporated by 20.4.1.500 NMAC.

e. A closure plan limitation on disposal of low-level radioactive waste in areas undergoing closure is not a substantive regulation of radioactive waste; such waste is largely exempt from the Resource Conservation and Recovery Act (RCRA). This limitation is a tool for the Department to implement proper closure of hazardous waste management units at the Laboratory. Department Response Brief at p. 19.

f. Applicants had adequate notice and opportunity to respond to the closure plan limitation on the disposal of waste in areas undergoing closure. Department Response Brief at pp. 20-21, Transcript at page 4107.

8. The Secretary adopts the Hearing Officer's recommendation to deny the open burning permit for TA-16-388 and TA-16-399, but due to winter field conditions will grant additional time to perform closure of those units.

   a. Section 4.2 of the closure plans shall be modified to allow closure activities to commence April 1, 2011.

b. The extension of time for closure does not authorize continued operation of those units beyond December 31, 2010.

c. Section 5.2.1 of the closure plans shall also be revised to allow metal to be recycled at the units, based on the testimony of Ms. Vigil-Holterman at Transcript Volume 5, page 1268.

9. The Secretary adopts the Hearing Officer's recommendation to establish both an electronic and physical information repository. The changes to Permit Section 1.10 proposed by the Bureau in NMED Exhibit 229 shall be incorporated into the final Permit.

10. The Secretary adopts the Hearing Officer's recommendation to include Section 4.6 in the final Permit, relating to the Radioactive Liquid Waste Treatment Facility. Based on the Bureau's agreement during hearing testimony, the second sentence of the Section shall include the phrase "or as otherwise authorized," to read "If the Permittees intentionally discharge through a location other than the permitted outfall or as otherwise authorized, they will fail to comply with this requirement."

11. The Hearing Officer's Report defined the Department of Energy, an agency of the federal government, and Los Alamos National Security, a contractor to the federal government, and they are the Applicants and Permittees. The Report did not define or address the National Nuclear Security Administration (NNSA), which is a separately organized agency.

12. The permit shall be further revised to include the following:

a. No delegation or assignment of the Applicants' responsibilities under this permit can be made to any person or entity, including a separately organized

agency, without the express permission of the Department; this prohibition does not preclude the Applicants' use of contractors for remediation.

b. The Applicants shall not allow any person or entity which currently exists or may be created, including a separately organized agency, to interfere with the performance of their obligations or responsibilities under this permit.

13. In all other respects, the Application of the United States Department of Energy and Los Alamos National Security LLC for a Hazardous Waste Facility Permit for Los Alamos National Laboratory is granted subject to the conditions set out in the Hearing Officer's Report.

RON CURRY
Secretary of Environment

Notice of Opportunity for Judicial Review

Pursuant to NMSA 1978, Section 74-4-14, any person who is or may be affected by any final administrative action of the Secretary may appeal to the Court of Appeals for further relief within thirty days after the action.

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PART 1: GENERAL PERMIT CONDITIONS

1.1 AUTHORITY

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

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

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

1.2 PERMITTEES AND PERMITTED ACTIVITY

The Secretary of the New Mexico Environment Department issues this Permit for hazardous waste management at the Los Alamos National Laboratory (LANL) to the United States Department of Energy (DOE), the owner and co-operator of LANL (EPA ID Number NM 0890010515-1), and Los Alamos National Security, LLC (LANS), co-operator of LANL.

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

1.3 CITATIONS

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

Hazardous waste management regulations are cited throughout this Permit. The federal Hazardous Waste Management Regulations, 40 CFR Parts 260 through 273, are generally cited rather than the New Mexico Hazardous Waste Management Regulations, 20.4.1 NMAC. The federal regulations are cited because only the federal regulations set forth the detailed regulatory requirements; the State regulations incorporate by reference, with certain exceptions, the federal regulations in their entirety. Citing only the federal regulations also serves to avoid encumbering each citation with references to two sets of

regulations. However, it is the State regulations that are legally applicable and enforceable. Therefore, for the purpose of this Permit, and enforcement of its terms and conditions, all references to provisions of federal regulations that have been incorporated into the State regulations shall be deemed to include the State incorporation of those provisions.

1.4 EFFECT OF PERMIT

As to those activities specifically authorized or otherwise specifically addressed under this Permit, compliance with this Permit during its term shall constitute compliance, for purposes of enforcement, with Subtitle C of RCRA and the HWA, and the implementing regulations at 40 CFR Parts 264, 266, and 268 except for those requirements that become effective by statute after the Permit has been issued (*see* 40 CFR § 270.4).

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

This Permit does not convey any property rights of any sort or any exclusive privilege, nor authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations. Compliance with this Permit does not relieve Permittees from the responsibility of complying with all applicable state or federal laws and regulations (*see* 40 CFR §§ 270.4, 270.30(g) and 270.32(b)(1)).

1.4.1 Effect of this Permit on Interim Status Units

For the interim status units listed in Table J-1 that the Permittees do not choose to operate, the Permittees shall submit to the Department within 180 days of the effective date of this Permit either a notice of intent to close in accordance with a current closure plan, or a revised closure plan. These documents shall indicate that the closure of these interim status units shall be initiated in accordance with 40 CFR § 265.113(a) no later than 270 days of the effective date of this Permit.

For the interim status units listed in Table J-1 that the Permittees propose to permit, the Permittees shall submit to the Department 180 days of the effective date of this Permit a permit modification request in accordance with 40 CFR § 270.42 that includes all applicable information required at 40 CFR §§ 270.10, 270.11, 270.14, and 270.23 for each unit.

1.5 EFFECT OF INACCURACIES IN PERMIT APPLICATION

This Permit is based on information submitted in the Permittees' Application. The Application has numerous iterations; however this Permit is based on:

(1) the Part A Application dated June 2009;

(2) the General Part B Permit Application dated August 2003;

(3) the TA-3-29 CMR Part B Application dated September 1999;

(4) the TA-16 Part B Permit Application dated June 2003;

(5) the TA-50 Part B Permit Application dated August 2002;

(6) the TA-54 Part B Permit Application dated June 2003; and

(7) the TA-55 Part B Permit Application dated September 2003.

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

The Permittees shall inform the Department of any deviation from, or changes in, the information contained in the Application that would affect the Permittees' ability to comply with this Permit. Upon knowledge of such deviations, the Permittees shall, within 30 days, provide this information in writing to the Department in accordance with Permit Sections 1.9.14 and 1.9.15 and 40 CFR §§ 270.30(l)(11) and 270.43(a)(2), which are incorporated herein by reference.

1.6 PERMIT ACTIONS

1.6.1 Duration of Permit

This Permit shall be effective for a fixed term of ten years from its effective date. The effective date of this Permit shall be 30 days after notice of the Department's decision has been served on the Permittees or such later time as the Department may specify (*see* 40 CFR § 270.50(a)).

1.6.2 Permit Modification

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

1.6.3 Reserved

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

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

1.6.5 Permit Re-Application

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

1.6.6 Continuation of Expiring Permit

If the Permittees have submitted a timely and complete application for renewal of this Permit, in compliance with 40 CFR §§ 270.10 and 270.13 through 270.28 and Permit Section 1.6.5, this Permit shall remain in effect until the effective date of the new permit if, through no fault of the Permittees, the Department has not issued a new permit on or before the expiration date of this Permit (*see* 40 CFR § 270.51).

1.6.7 Permit Review by the Department

The Department will review the closure and post-closure requirements associated with the land disposal units addressed in this Permit five years after the effective date of Permit issuance and may modify this Permit as necessary pursuant to § 74-4-4.2 of the HWA and 40 CFR §§ 270.41 and 270.50(d). Such modification shall not extend the effective term of this Permit. Nothing shall preclude the Department from reviewing and modifying any portion of this Permit, in accordance with applicable requirements, at any time during its term.

1.7 PERMIT CONSTRUCTION

1.7.1 Severability

The provisions of this Permit are severable. 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.

1.8 DEFINITIONS

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

Acceptable Knowledge is defined at Permit Attachment C (*Waste Analysis Plan*), Section C.3.1.1.

Active Portion means that portion of a facility where treatment, storage, or disposal operations are being or have been conducted after the effective date of 40 CFR Part 261 and which is not a closed portion as defined in 40 CFR § 260.10.

Aquifer means a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs.

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

Consent Order means the March 1, 2005 Compliance Order on Consent issued to the Permittees pursuant to the HWA and the New Mexico Solid Waste Act requiring the Permittees to conduct Facility-wide investigations and cleanups of contaminants released to the environment.

Day means a calendar day unless otherwise specified. Business day means Monday through Friday, other than a federal or State legal holiday.

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

Discharge means the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water.

Disposal means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters.

Disposal Unit means any unit at the Facility at which hazardous waste is intentionally placed into or on any land or water and at which waste will remain after closure. The term disposal unit does not include corrective action management units into which remediation wastes are placed.

Facility means the Los Alamos National Laboratory site comprised of approximately 40 square miles, located on the Pajarito Plateau in Los Alamos County in north central New Mexico, approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe, and owned by the United States Department of Energy.

Federal Facility Compliance Act (FFCA) means the law passed by Congress (Pub. L. 102-386 (1992), codified at 42 U.S.C. §§ 6903, 6924, 6927, 6939c, 6961, and 6965) that specifies that federal facilities, like the Facility, are subject to all civil and administrative penalties and fines, regardless of whether such penalties or fines are punitive or coercive in nature. These penalties and fines may be levied by the EPA, an authorized state such as New Mexico, or a court of competent jurisdiction. Further, it is the FFCA that requires federal facilities that generate or store mixed waste to submit a Site Treatment Plan (STP) for developing treatment capacities and technologies to treat all the facility's mixed waste to the standards required for waste subject to the land disposal prohibitions set forth in § 3004 of RCRA, regardless of the time the waste was generated.

Federal Facility Compliance Order (FFCO) means the Order dated October 4, 1995 issued by the Department to the Permittees requiring compliance with a Site Treatment Plan (STP) to provide for the treatment and off-site disposal of mixed wastes. It also exempts such wastes from the mandated regulatory one-year storage limitation.

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

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

Hazardous Constituent or **Hazardous Waste Constituent** means: 1) any constituent identified in 40 CFR Part 261 Appendix VII that caused EPA to list a hazardous waste in 40 CFR Part 261 Subpart D; or 2) any constituent identified in 40 CFR Part 261, Appendix VIII. For purposes of closure, post-closure, or corrective action, "hazardous constituent" and "hazardous waste constituent" also means any constituent identified in 40 CFR Part 264 Appendix IX, perchlorate, and nitrates.

Hazardous Waste means a solid waste that is: 1) not excluded from regulation under 40 CFR § 261.4(b); and 2) is either listed in 40 CFR Part 261, Subpart D, exhibits any of the characteristics identified in 40 CFR Part 261, Subpart C, or is a mixture of solid waste and one or more hazardous wastes listed in 40 CFR Part 261, Subpart D.

For purposes of corrective action, **"hazardous waste"** shall have the meaning set forth in the HWA, Section 74-4-3(K).

Hazardous waste may be a "**mixed waste**," which means it is waste that contains hazardous waste subject to the HWA and RCRA, and source, special nuclear, or byproduct material subject to the Atomic Energy Act, 42 USC § 2011, *et seq.* (AEA).

Hazardous Waste Management Unit means a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of

mixing hazardous waste constituents in the same area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed. At the Facility, hazardous waste management units include both permitted units and interim status units.

Interim Status Unit means any hazardous waste management unit that was in operation before the effective date of the statutory or regulatory amendments that caused the unit to become subject to permitting requirements, that meets the requirements for interim status under § 3005(e) of RCRA, 42 U.S.C. § 6925(e), for which interim status has not been terminated pursuant to section 3005(e)(2) of RCRA, 42 U.S.C. § 6925(e)(2), and that has not been issued a permit by EPA or the Department.

Land Disposal means placement of waste in or on the land, except in a corrective action management unit or staging pile, and includes without limitation, placement in a landfill such as a pit or a trench, surface impoundment, waste pile, or land treatment facility, or placement in a concrete vault or a shaft intended for disposal purposes.

Off-Site Waste means any hazardous waste transported to the Facility from off-site but does not include intra-Facility waste.

Partial Closure means the closure of a portion of a permitted hazardous waste management unit, in accordance with the applicable closure requirements of 40 CFR Part 264 at a facility that contains other active hazardous waste management units.

Permit means this document including all attachments hereto and all modifications to the Permit.

Permitted Unit means a hazardous waste management unit: 1) that is not an interim status unit; and 2) that is authorized by this Permit and listed in Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*), or Table J-2 (*Permitted Units Undergoing Post-Closure Care*).

Release means any accidental or intentional spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, or dumping of any hazardous waste or hazardous constituents inside a permitted unit or from a permitted unit to the environment, including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous waste or hazardous constituents.

Representative Sample means a sample of a universe or whole (*e.g.*, waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole.

Secretary means the Secretary of the New Mexico Environment Department or his or her designee.

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

Storage means the holding of hazardous waste for a temporary period, at the end of which the waste is treated, disposed of, or stored elsewhere.

Transuranic (TRU) Waste means waste of more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for: 1) high-level radioactive waste; 2) waste that the DOE Secretary has determined, with the concurrence of the EPA Administrator, does not need the degree of isolation required by the disposal regulations; or 3) waste that the Nuclear Regulatory Commission (NRC) has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61 (*see* Pub. L. 102-579, § 2(18) (1992)).

Waste Stream means each waste material generated from a single process or from an activity that is similar in the materials from which it was generated, similar in its physical form and hazardous constituents, and distinguishable from other wastes by EPA Hazardous Waste Numbers and Land Disposal Restriction (LDR) status.

1.9 DUTIES AND REQUIREMENTS

1.9.1 Duty to Comply

The Permittees shall comply with all conditions in this Permit, except to the extent and for the duration such noncompliance is authorized in a temporary emergency permit pursuant to 40 CFR § 270.61. Any Permit noncompliance, except under the terms of an emergency permit, constitutes a violation of the HWA and RCRA and is grounds for enforcement or other Department action and may subject the Permittees to an administrative or civil enforcement action, including civil penalties and injunctive relief, as provided in Permit Section 1.9.2, or permit modification, suspension, termination, or revocation, or denial of a permit application or modification request under § 74-4-4.2 of the HWA and 40 CFR §§ 270.41 and 270.43.

No delegation or assignment of the Permittees' responsibilities under this permit can be made to any person or entity, including a separately organized agency, without the expressed permission of the Department; this prohibition does not preclude the Permittees' use of contractors for remediation.

The Permittees shall not allow any person or entity which currently exists or may be created, including a separately organized agency, to interfere with the performance of their obligations or responsibilities under this Permit.

1.9.2 Enforcement

Any violation of a condition in this Permit may subject the Permittees or their officers, employees, successors, and assigns to:

1) a compliance order under § 74-4-10 of the HWA or § 3008(a) of RCRA (42 U.S.C. § 6928(a));
2) an injunction under § 74-4-10 of the HWA or § 3008(a) of RCRA (42 U.S.C. § 6928(a)), or § 7002(a) of RCRA (42 U.S.C. § 6972(a));
3) civil penalties under § 74-4-10 of the HWA or §§ 3008(a) and (g) of RCRA (42 U.S.C. §§ 6928(a) and (g)), or § 7002(a) of RCRA (42 U.S.C. § 6972(a));
4) criminal penalties under § 74-4-11 of the HWA or §§ 3008(d), (e), and (f) of RCRA (42 U.S.C. §§ 6928(d), (e), and (f)); or
5) some combination of the foregoing.

The list of authorities in this paragraph is not exhaustive and the Department reserves the right to take any action authorized by law to enforce the requirements of this Permit.

1.9.3 Transfer of Permit

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

Before transferring ownership or operation of the Facility, the Permittees shall notify the new owner and operator in writing of all applicable requirements of this Permit and 40 CFR §§ 264.12(c) and 270.30(l)(3), which are incorporated herein by reference.

1.9.4 Need to Halt or Reduce Activity Not a Defense

The Permittees shall not use as a defense to an enforcement action that the Permittees must reduce permitted activities in order to maintain compliance with the conditions of this Permit (*see* 40 CFR § 270.30(c)).

1.9.5 Duty to Mitigate

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

1.9.6 Proper Operation and Maintenance

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

1.9.7 Duty to Provide Information

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

The Permittees shall also furnish to the Department, upon request, copies of records that are required to be kept by this Permit. Information and records requested by the Department pursuant to this condition shall be provided in a paper or an electronic format acceptable to the Department. In the event the requested information is not immediately available due to security restrictions, the Permittees shall provide the information as soon as reasonably possible (*see* 40 CFR § 270.30(h)).

This Permit condition shall not be construed to limit in any manner the Department's authority under § 74-4-4.3 of the HWA, § 3007(a) of RCRA, or other applicable law (*see* 40 CFR §§ 264.74(a) and 270.30(h)).

1.9.8 Inspection and Entry

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

(1) enter upon the Permittees' premises where the permitted unit or activity is located or conducted or where records must be kept;

(2) have access to and photograph any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required;

(3) inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required;

(4) have access to, and copy, any records that must be kept; and

(5) sample or monitor, for the purposes of ensuring Permit compliance or as otherwise authorized by the HWA or RCRA, any substances or parameters at any location.

(*see* 40 CFR § 270.30(i))

In the event that entry, access, or the ability to photograph or sample is not immediately available due to security or safety restrictions, the Permittees shall provide needed entry, photographs, or samples as soon as reasonably possible.

1.9.9 Sampling and Records

1.9.9.1 Representative Sampling

All samples and measurements taken by the Permittees under any condition in this Permit shall be representative of the medium, waste, or other material being sampled. To obtain a representative waste sample, the Permittees shall use an appropriate method from 40 CFR Part 261, Appendix I or an equivalent method approved by the Department. Laboratory methods must be those specified in the most current edition of *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, or an equivalent method, as specified in Attachment C (*Waste Analysis Plan*) and Permit Section 2.4.

1.9.10 Reporting Planned Changes

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

1.9.11 Reporting Anticipated Noncompliance

The Permittees shall give advance written notice to the Department of any planned changes to any permitted unit at the Facility or activity which may result in noncompliance with Permit requirements (*see* 40 CFR § 270.30(l)(2)).

1.9.12 24 Hour and Subsequent Reporting

The Permittees shall report to the Department, both orally and in writing, any noncompliance that may endanger human health or the environment and any incident that requires implementation of Attachment D (*Contingency Plan*) (*see* 40 CFR § 270.30(l)(6)). This report shall be submitted in accordance with Permit Sections 1.9.12.1 and 1.9.12.2.

1.9.12.1 24 Hour Oral Report

The Permittees shall make an initial oral report within 24 hours after the time the Permittees become aware of the noncompliance or the incident specified in Permit Section 1.9.12. The oral report shall include, at a minimum, the following information:

(1) a description of the occurrence and its cause including:

a. name, address, and telephone number of the owner and operator;

b. name, address, and telephone number of the Facility;

c. date, time, and type of incident;

d. name and quantity of materials involved;

e. the extent of injuries, if any;

f. an assessment of actual or potential hazards to the environment and human health outside the Facility, where this is applicable; and

g. the estimated quantity and disposition of recovered material that resulted from the incident (*see* 40 CFR § 270.30(l)(6)(ii));

(2) information concerning the release of any hazardous waste or hazardous waste constituent which may endanger public drinking water supplies (*see* 40 CFR § 270.30(l)(6)(i)(a)); and

(3) any information of a release or discharge of hazardous waste or hazardous waste constituents, or of a fire or explosion at a permitted unit, which may threaten the environment or human health inside or outside the permitted unit (*see* 40 CFR § 270.30(l)(6)(i)(b)).

The oral report shall be made by calling the Department's Hazardous Waste Bureau's main telephone number during regular business hours, or by calling the New Mexico Department of Public Safety dispatch telephone number during non-business hours, and requesting that the report be forwarded to the Department spill number.

1.9.12.2 Five Day Written Report

The Permittees shall submit a written report within five days after the time the Permittees become aware of the noncompliance or incident under Permit Section 1.9.12. The Permittees must include in the written report the information required in Permit Section 1.9.12.1(1)(a-g) and the following information:

(1) the period of the noncompliance or incident including exact dates and times, and, if the noncompliance or incident has not been corrected, the anticipated time it is expected to be corrected; and

(2) steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance, incident or imminent hazard (*see* 40 CFR §§ 270.30(l)(6)(iii) and 270.32(b)(2)).

The Permittees shall include in the report a description of the spill response activities as required in Permit Section 2.10.4.

The Department may allow submittal of the written report within 15 calendar days in lieu of the five day requirement above if justifiable cause is provided in advance.

The Permittees shall give notice by e-mail to persons on the e-mail notification list of the report of non-compliance or incident in accordance with Permit Section 1.13.

1.9.13 Written Reporting of a Non-threatening Release

The Permittees shall report to the Department in the submittal referenced in Permit Section 1.9.14 any release from or at a permitted unit that the Permittees do not deem a threat to human health or the environment. The written report shall include a description of the occurrence and its cause including the following information:

(1) name, address, and telephone number of the owner and operator;

(2) name, address, and telephone number of the Facility;

(3) date, time, and type of incident;

(4) name and quantity of materials involved; and

(5) the estimated quantity and disposition of recovered material that resulted from the incident.

The Permittees shall include in the report a description of the spill response activities as required in Permit Section 2.10.4 (*see* 40 CFR § 270.32(b)(2)).

1.9.14 Other Noncompliance

The Permittees shall report all instances of noncompliance not reported under Permit Section 1.9.11. This report shall be submitted to the Department annually by December 1 for the year ending the previous September 30. These reports shall contain the information listed in Permit Section 1.9.12.2 and 40 CFR § 270.30(1)(10), which is incorporated herein by reference. The Permittees shall notify the Department in writing if there were no instances of noncompliance during the reporting period. This notice shall be submitted to the Department by December 1 for the year ending the previous September 30.

1.9.15 Omissions or Misstatements in Applications or Other Reports

Whenever the Permittees become aware that they have failed to submit any relevant facts in a permit application, or have submitted incorrect information in a permit application or a report to the Department, the Permittees shall promptly report such facts or information in compliance with 40 CFR § 270.30(1)(11), which is incorporated herein by reference.

1.9.16 Signatory requirement

The Permittees shall sign and certify all applications, reports, or information submitted to the Department and required by this Permit in compliance with 40 CFR §§ 270.11 and 270.30(k), which are incorporated herein by reference.

1.9.17 Submissions to the New Mexico Environment Department

The Permittees shall submit all written reports, notifications, or other submissions required by this Permit to be submitted to the Department by certified mail or hand-delivery to:

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

The Permittees shall ensure that any notice, deliverable, or other requirement that under the terms of this Permit would be due on a Saturday, Sunday, or a state or federal holiday shall be due the first business day following the Saturday, Sunday, or state or federal holiday.

1.9.18 Approval of Submittals

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

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

1.9.19 Extensions of Time

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

The Permittees shall give notice by e-mail to persons on the e-mail notification list of all Department approved extensions of time in accordance with Permit Section 1.13.

1.9.20 Confidential Information

The Permittees may claim that any information required by this Permit or otherwise submitted to the Department is confidential pursuant to the provisions of §§ 74-4-4.3(D) and (F) of the HWA and 40 CFR §§ 260.2 and 270.12.

1.9.21 New or Modified Permitted Units

The Permittees may not treat or store hazardous waste at a new permitted unit or in a modified portion of an existing permitted unit except as provided in 40 CFR § 270.42 until the Permittees have complied with the requirements of 40 CFR §§ 270.30(l)(2)(i) and (ii).

1.10 INFORMATION REPOSITORY

The Permittees shall establish both an electronic Information Repository (IR) accessible through the internet on the Permittees' environmental web site and a physical IR containing paper documents. (S*ee* 40 CFR § 124.33(d))

The Permittees shall ensure that the electronic and physical IRs contain, unless specified otherwise, the following documents:

(1) The Permittees' Part A and Part B Permit Applications associated with the permit renewal;

(2) A link to this Permit as it appears on the Department's website (electronic IR only);

(3) Permit modification requests associated with this Permit submitted pursuant to 40 CFR § 270.42 and any associated Department responses;

(4) The Waste Minimization Report submitted pursuant to Permit Section 2.9;

(5) The Biennial Report submitted pursuant to Permit Section 2.12.5;

(6) Corrective action documents submitted pursuant to Permit Part 11;

(7) Notices of deficiency or disapproval (NODs), NOD responses, final approval letters, and Department directions associated with the documents identified in Paragraphs 1, 3 and 6, above; and

(8) Notices of violation (NOV), administrative compliance orders, responses required by the Department, and Department directions associated with this Permit.

(*See* 40 CFR § 124.33(c))

Within 180 days of the effective date of this Permit, the Permittees shall establish the electronic IR, and inform the Department of the location, nature, and normal business hours of the physical IR. (*See* 40 CFR §§124.33 and 270.30(m))

The Permittees shall add new documents to the IR within ten days after the documents are submitted to, or received from, the Department. (*See* 40 CFR § 124.33(f))

The Permittees shall inform the public of the existence of each IR by the following methods:

(9) written notice to all individuals on the facility mailing list 30 days after the IR becomes operational;

(10) public notice in area newspapers, including the *Santa Fe New Mexican*, the *Albuquerque Journal*, the *Rio Grande Sun*, the *Taos News*, and the *Los Alamos Monitor* when the IR becomes operational;

(11) continuous notice on the Permittees' environmental home page of the existence of the IRs; and

(12) in the public notice for any of the Permittees' requested permit modifications.

(*See* 40 CFR § 124.33(e))

The Permittees shall ensure that the electronic IR includes an electronic index of the documents contained in the IR that identifies each document by title, publication date, author, and any identification number, such as a Los Alamos Unrestricted Release (LAUR) number. The Permittees shall ensure that all-documents maintained in the electronic IR are searchable by title, date, author, identification number, and individual words and phrases, and that all such documents are printable.

The Permittees shall conduct annual training to inform inexperienced computer users of how they can access and utilize the electronic IR. The Permittees shall inform the public of this training 30 days prior to the training by methods specified in Permit Section 1.10(9) through (11). The Permittees shall document the training content and all efforts to inform the public in the Facility Operating Record. The Permittees shall establish an

electronic Information Repository (IR) accessible through the internet on the Permittees' environmental web site. (S*ee* 40 CFR § 124.33(d))

1.10.1 RACER

The Permittees shall provide data from environmental media (*i.e.*, soil, sediment, surface water, groundwater, air and biota) collected under this Permit and incorporated into LANL databases to the Risk Analysis Communication Evaluation Reduction (RACER) database through updates on a no less than monthly basis.

1.11 GENERAL DOCUMENTS AND INFORMATION TO BE MAINTAINED AT THE FACILITY

The Permittees shall maintain at the Facility the following documents and all amendments, revisions, and modifications to these documents:

(1) this Permit, including all attachments;

(2) a topographic map as required by 40 CFR § 270.13(l) and this Permit;

(3) the Waste Analysis Plan as required by 40 CFR § 264.13(b) and this Permit;

(4) the Inspection Plan (*see* 40 CFR § 264.15(b)); and

(5) a copy of emergency response agreements including all Memorandums of Agreement, Memorandums of Understanding, and Mutual Aid Agreements.

The above-mentioned list is not intended to be exhaustive.

The Permittees shall maintain the documents referenced in this Permit Section in a paper or an electronic format acceptable to the Department.

1.12 COMMUNITY RELATIONS PLAN

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

The CRP must describe how the Permittees will:

(1) establish an open working relationship with communities and interested members of the public;

(2) establish a productive government to government relationship with local tribes and pueblos (including the Pueblos of San Ildefonso, Santa Clara, Jemez, and Cochiti);

(3) keep communities and interested members of the public informed of permit actions of interest (*e.g.*, clean-up activities, implementation of the Contingency Plan, Permit modification requests);

(4) minimize disputes and resolve differences with communities and interested members of the public;

(5) provide a mechanism for the timely dissemination of information in response to individual requests; and

(6) provide a mechanism for communities and interested members of the public to provide feedback and input to the Permittees.

The DOE shall consult on a government-to-government basis with the tribes and pueblos and both Permittees shall communicate with and solicit comments from communities and interested members of the public when developing the CRP in an effort to ensure the program is responsive to their needs. The Permittees shall document in the Facility Operating Record all consultations, communications, agreements, and disagreements between the Permittees and all participating entities, with the approval of those entities, regarding the development of the CRP. The CRP shall specify how the DOE will consult on a government-to-government basis with the tribes and pueblos, and how the Permittees will solicit comments from communities and interested members of the public annually concerning how they may be made better informed of the issues related to this Permit. The CRP shall specify that the Permittees will, on or before September 1 of each year, post on the Permittees' web site a compilation of all such comments, including any statements of disagreement, with the approval of those entities in a manner set forth in the CRP.

The Permittees shall not document in the Facility Operating Record or post on the Permittees' web site consultations, communications, agreements, and disagreements between the DOE and tribes and pueblos unless those tribes and pueblos specifically request that the information be included in the Facility Operating Record or be posted on the Permittees' web site.

The Permittees shall implement and post the CRP on the Permittees' web site within 180 days of the effective date of this Permit (*see* Permit Attachment I (*Compliance Schedule*)). The Permittees shall maintain the CRP until the termination of this Permit.

1.13 PUBLIC NOTIFICATION VIA ELECTRONIC MAIL (E-MAIL)

The Permittees shall notify individuals by e-mail of submittals as specified in this Permit. The Permittees shall maintain a list of individuals who have requested e-mail notification

and send such notices to persons on that list. The notice shall be sent within seven days of the submittal date and shall include a direct link to the specific document to which it relates.

The Permittees shall provide a link on the internet on the Permittees' environmental home page (http://www.lanl.gov/environment) whereby members of the public may submit a request to be placed on the e-mail notification list. In the event that the environmental home page stops operation, the Permittees shall use their best efforts to fully restore the page and its operation as soon as possible.

1.14 DISPUTE RESOLUTION

In the event the Permittees disagree, in whole or in part, with a condition or disapproval of any submittal, the Permittees may seek dispute resolution.

1.14.1 Notice to the Department

To invoke dispute resolution, the Permittees shall notify the Department in writing within 30 days of receipt of the Department's approval with conditions or disapproval of a submittal. Such notice shall set forth the specific matters in dispute, the position the Permittees assert should be adopted, the basis for the Permittees' position, and any matters considered necessary for the Department's determination.

The Permittees shall give notice by e-mail to persons on the e-mail notification list of invocation of dispute resolution in accordance with Permit Section 1.13.

1.14.2 Agreement or Disagreement between Parties

The Department and the Permittees shall have 30 days from the Department's receipt of notification provided under Permit Section 1.14.1 to meet or confer to resolve any disagreement. In the event an agreement is reached, the Permittees shall comply with the terms of such agreement or, if appropriate, submit a revised submittal and implement the submittal in accordance with the agreement, including the schedule specified in the agreement.

1.14.3 Final Decision of the Department

If an agreement is not reached within the 30 day period, the Department will notify the Permittees in writing of its decision on the dispute, and the Permittees shall comply with the terms and conditions of the decision. Such a decision shall be the final decision of the Department Secretary resolving the dispute and shall be incorporated as an enforceable part of this Permit. The Permittees shall comply with the terms of such decision including any schedule specified in the decision.

1.14.4 Actions Not Affected by Dispute

With the exception of those conditions under dispute, the Permittees shall proceed to take any action required by those portions of the submission and of this Permit that the Department determines not to be affected by the dispute.

1.14.5 Available Remedies Reserved

If an agreement is not reached within the 30 day period, the Permittees may seek any available legal remedy, including judicial review of the matter. Whether a disputed decision is final for purposes of judicial review shall be determined according to established principles of administrative law.

1.15 COMPLIANCE SCHEDULE

The Permittees shall submit documents to the Department for its approval, or perform other actions required by this Permit, in accordance with the schedule provided in Attachment I (*Compliance Schedule*) (*see* 40 CFR § 270.33(a)). If the action is not itself the submittal of a written document, the Permittees shall submit to the Department a written notification of their compliance with the schedule no later than 14 days following the scheduled date.

The Permittees shall give notice by e-mail to persons on the e-mail notification list in accordance with Permit Section 1.13 of any such submittal or notification under this Permit Section (1.15) and Attachment I as established on the effective date of this Permit.

Schedules required to be submitted by the conditions of this Permit are, upon approval of the Department, incorporated into this Compliance Schedule by reference and become an enforceable condition of this Permit. Such schedules are not subject to e-mail notification requirements under Permit Section 1.13.

1.16 TRANSFER OF LAND OWNERSHIP

The provisions of this Permit Section shall apply to any transfer in fee of Facility property subject to the requirements of this Permit to another entity. This Section does not apply to Facility property subject to requirements of Section III.Y of the Consent Order.

DOE shall not transfer any land without submitting a notice to the Department. DOE shall submit the notice at least 120 days prior to the proposed effective date of transfer. At a minimum, the notice shall include an update of the Facility boundaries, as indicated in Figures 1, 2, and 3 in Attachment N (*Figures)*, at an appropriate scale to fully illustrate the boundaries of the transferred property and the modified Facility boundary.

The notice for transfer of land ownership for part of the Facility shall:

(1) identify the boundaries of the land proposed for transfer by providing the Department with a boundary survey certified by a registered professional surveyor;

(2) provide the new owner's name, address, telephone number, and status as a federal, state, private, public, or other entity;

(3) describe the location and identity of any unit subject to this permit including existing solid waste management units and areas of concern or permitted units, on the land proposed for transfer;

(4) describe any known or suspected presence of hazardous waste, hazardous constituents, or radioactive waste in soil, sediment, surface water, or groundwater at any depth within the boundaries of the land proposed for transfer;

(5) describe the status of any past, present, or planned investigations or remediation of contamination of soil or groundwater at any depth within the boundaries of the land proposed for transfer;

(6) comply with the requirements of § 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9620(h); and

(7) state any applicable restriction (*e.g.*, "the property shall not be used for any purpose other than [specify and define the use scenario on which DOE has based its cleanup of the property]. That means that the property shall not be used for [specify and define less restrictive uses].").

The Permittees shall give notice by e-mail to persons on the e-mail notification list of the notice for transfer of land ownership in accordance with Permit Section 1.13.

1.16.1 Determination of Need for Further Action

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

1.16.2 Restricted Use

When DOE transfers property that has been remediated to a level less protective than that deemed by the Department appropriate for a residential use scenario, DOE shall include in the deed a restriction that limits future use of the property to the particular use scenario on which the Permittees have based their cleanup of the property (*e.g.,* if the property was cleaned based on an industrial use scenario, future use of the property would be limited to industrial use). The language of the deed restriction governing future land use necessarily will differ for each deed, depending upon the facts and circumstances of the property being transferred. Such restriction shall, at a minimum, be consistent with the following language:

The property shall not be used for any purpose other than [specify and define the use scenario on which DOE has based its cleanup of the property]. That means that the property shall not be used for [specify and define less restrictive uses].

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

1.16.3 Enforceability against Transferee

The covenant required by CERCLA § 120(h)(3)(A)(ii), and the deed restriction described in Permit Section 1.16.2 (to the extent the property is not remediated for unrestricted use), are requirements within the meaning of CERCLA § 310(a)(1), 42 U.S.C. § 9659(a)(1). The contract of sale between the DOE and the transferee will state that the parties to the contract agree that the deed restriction to be set forth in the deed is a requirement within the meaning of CERCLA § 310(a)(1), 42 U.S.C. § 9659(a)(1). DOE shall ensure such statement within the Contract of Sale will survive the transfer of the deed. The deed transferring title from DOE to the transferee shall state that the restriction on land use set forth in the deed is intended to be an equitable servitude, that both the Department and the transferor are beneficiaries of the equitable servitude, that the parties intend for the restriction on land use to run with the land and to bind subsequent transferees, and that such restriction is enforceable by the Department and the transferor against any subsequent transferee that fails to comply with its terms. The deed shall be recorded in the appropriate recording office in the chain of title of the property to give notice of the use restriction to subsequent transferees of the property.

1.16.4 EPA Institutional Controls Tracking System

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

1.16.5 Transfer of Facility Property to another Federal Agency

If the operational control of any portion of the Facility, subject to the requirements of this Permit, will be transferred from DOE to another agency, department, or instrumentality of the United States, the Permittees shall provide written notice of such operational transfer to the Department at least 120 days prior to the transfer. If, however, the Permittees learn of such decision fewer than 120 days prior to the transfer, the Permittees shall provide written notice under Permit Section 1.16 to the Department as soon thereafter as is reasonably practicable.

1.17 NOTICE OF DEMOLITION ACTIVITIES

On or before September 30 of each year, the Permittees shall provide notice to the Department of buildings and other fixed structures that may contain hazardous material scheduled to be demolished in the following federal fiscal year (October 1 through September 30). This notice shall be provided at least 30 days prior to demolition of any such building or structure.

1.17.1 Content and Format of Notice

The Notice under this Permit Section shall include a list in the form of a table that contains the following general information for each building or fixed structure that may contain hazardous material to be demolished, to the extent it is available at the time it is submitted:

(1) The Technical Area (TA) and building number;

(2) A brief statement of current and historic uses of the building or fixed structure;

(3) The approximate dates of operations of the building or fixed structure;

(4) A list of any solid waste management units (SWMU) or Areas of Concern (AOC) within 50 feet of the footprint of the building or fixed structure;

(5) The categories (*e.g.,* chemical residues, RCRA metals, asbestos, high explosives residues, mixed waste) of potential wastes expected to be present in the building or fixed structure;

(6) The date or the quarter in which the demolition is scheduled to begin or anticipated to begin; and

(7) Any buildings or fixed structures identified in the previous fiscal year that were not demolished.

The list shall be accompanied by an attachment that shall describe the processes or conditions that may result in the presence of hazardous material in each building or fixed structure.

1.17.2 Demolition Activities Update

On or before the last day of each quarter (December 31, March 30, June 30, and September 30), the Permittees shall update the list to include any additional buildings and fixed structures that may contain hazardous material scheduled for demolition, or shall notify the Department in writing that no such additional demolitions have been scheduled.

1.17.3 Actions

Based on the list, the Department may identify in writing those buildings or fixed structures for which it requires notice.

If a demolition completion report is prepared for any building or fixed structure identified by the Department, the Permittees shall provide to the Department a copy of the report within 30 days after such final report is written.

PART 2: GENERAL FACILITY CONDITIONS

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

The Permittees shall design, construct, maintain, and operate the Facility to minimize the possibility of fire, explosion, or any unplanned, sudden, or non-sudden release of hazardous waste or hazardous constituents to air, soil, groundwater, or surface water that could threaten human health or the environment (*see* 40 CFR § 264.31).

2.2 AUTHORIZED WASTES

The Permittees shall accept, store, treat, or otherwise manage at permitted units at the Facility only those hazardous wastes the Permittees proposed to manage at the units in the Permit Application, which are those wastes bearing the EPA Hazardous Waste Numbers (*i.e.*, waste codes) listed in Attachment B (*Part A Application*), unless otherwise prohibited by this Permit.

2.2.1 Hazardous Waste from Off-Site Sources

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

(1) Treatment-derived waste or residues from wastes generated at the Facility, sent off site for treatment at a facility referenced in Attachment L (*Listing of Off-Site Facilities*), and subsequently returned to the Facility prior to final disposition off-site. Such wastes or waste residues may be managed at the Facility only subject to the following conditions:

a. for wastes with no available site for final disposal, the Permittees shall provide written notice to the Department that there is no available site for final disposal within five days of receipt of treatment-derived waste or waste residues at the Facility; or

b. for wastes with an available final disposal path, the Permittees shall store the wastes for no more than 60 days and shall ship the wastes off site.

Requests to modify of the list of Attachment L (*Listing of Off-Site Facilities*) shall be Class 1 permit modification requests.

The Permittees shall provide e-mail notification pursuant to Permit Section 1.13 of written notice under Permit Section 2.2.1(1)a.

(2) Hazardous waste generated by the Permittees at TA-57 (the Fenton Hill site);

(3) Hazardous waste generated by the Permittees as a result of investigation or remediation of a solid waste management unit (SWMU) or area of concern (AOC) listed in Attachment K (*Listing of SWMUs and AOCs*); and

(4) Mixed waste sealed sources sent to the Facility. Such waste may be managed at the Facility only subject to the following conditions:

a. The Permittees shall only accept mixed waste sealed sources that have a defense determination and meet Waste Acceptance Criteria that will allow the waste to be sent to the Waste Isolation Pilot Plant (WIPP) for final disposal, as provided in Conditions II.C-1 (WAP) and II.C-3 (TSDF-WAC) of the Hazardous Waste Facility Permit for WIPP (No. NM4890139088);

b. The Permittees may accept an annual volume of no more than one 55-gallon drum of mixed waste sealed sources per year during the term of this Permit, except that during one of the first three years of the term of this Permit, the Permittees may accept no more than two 55-gallon drums of mixed waste sealed sources, and that the Permittees may request an increase in the maximum annual volume through a Class 2 permit modification pursuant to 40 CFR § 270.42(b), which is incorporated herein by reference; and

c. All mixed waste sealed sources described in this Permit Section shall not be stored at the Facility for longer than one year.

2.2.2 Hazardous Waste from Foreign Sources

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

2.2.3 PCB -Contaminated Waste

The Permittees shall not store liquid hazardous wastes containing polychlorinated biphenyls (PCBs) at concentrations greater than or equal to 50 parts per million (ppm) unless such storage is in compliance with 40 CFR § 268.50(f).

2.3 LAND DISPOSAL RESTRICTIONS

2.3.1 Hazardous Waste Storage

The Permittees shall not store hazardous wastes beyond one year from the date that the wastes were first placed into storage at a permitted unit unless the Permittees are able to demonstrate to the Department that one of the following conditions exists:

(1) storage is solely for the purpose of accumulating such quantities of hazardous waste restricted from land disposal as necessary to facilitate proper recovery, treatment, or disposal (*see* 40 CFR § 268.50(a)(2));

(2) the waste meets all of the applicable treatment standards under the Land Disposal Restrictions in 40 CFR Part 268, Subpart D, which are incorporated herein by reference; or

(3) that a mixed waste is documented on the Site Treatment Plan (STP) database under the Federal Facility Compliance Order (FFCO) and such storage is otherwise in compliance with all requirements of the STP and FFCO.

(*see* 40 CFR §§ 268.50(b) and (e))

Except as provided in items 1 through 3 above, waste shall not be stored at a permitted unit for more than one year (*see* 40 CFR § 270.32(b)(2)).

The Permittees shall ensure that each container of hazardous waste that is placed in storage at a permitted unit is clearly marked to identify the date the period of storage began (*see* 40 CFR § 268.50(a)(2)(i)).

The Permittees shall ensure that each tank at a permitted unit into which hazardous waste is placed is clearly marked to identify the date the period of accumulation began, or ensure such information for each tank is recorded and maintained in the Facility Operating Record at the permitted unit (*see* 40 CFR § 268.50(a)(2)(ii)).

2.3.2 Prohibition on Dilution

The Permittees shall not dilute a waste that is prohibited from land disposal or the residue from treatment of a prohibited waste as a substitute for treatment as specified at 40 CFR § 268.3, which is incorporated herein by reference. 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 or ineffective treatment that does not destroy, remove, or permanently immobilize hazardous constituents. Aggregating or mixing wastes as part of a legitimate treatment process is not prohibited dilution for purposes of this Permit.

2.3.3 Documentation of Exclusion or Exemption

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

herein by reference. The Facility's on-site files shall include in this documentation a description of the process that generated the waste, the justification for its exemption or exclusion, and a description of the final disposition of the waste.

2.4 WASTE ANALYSIS

2.4.1 General Waste Characterization Requirements

The Permittees shall accept, store, treat, or otherwise manage at permitted units at the Facility only those hazardous waste streams that have been fully characterized in accordance with the requirements of 40 CFR § 264.13, which is incorporated herein by reference, the conditions in this Permit Part, and Attachment C (*Waste Analysis Plan*).

At a minimum, the Permittees shall obtain and document all of the information that must be known to treat, store, or otherwise manage a hazardous waste stream in accordance with 40 CFR Parts 264 and 268 including, but not limited to:

(1) all applicable EPA hazardous waste numbers;

(2) waste characterization necessary to determine whether the waste stream is prohibited from land disposal;

(3) waste characterization necessary to prevent the mixing or placing of incompatible wastes in the same container (*see* 40 CFR §§ 264.17 and 264.177) or tank system (*see* 40 CFR § 264.199), and to prevent the impairment of containers (*see* 40 CFR § 264.172), tanks, and secondary containment systems for tanks by incompatible wastes (*see* 40 CFR § 264.193(c)(1));

(4) waste characterization necessary to prevent accidental or spontaneous ignition or reaction of ignitable or reactive wastes, including, but not limited to, ignition or reaction in containers (*see* 40 CFR § 264.17) and tank systems (*see* 40 CFR § 264.198);

(5) whether the waste is a mixed waste (*see* 40 CFR § 270.32(b)(2));

(6) whether the waste contains free liquids;

(7) the waste stream name;

(8) the unique waste stream identifier;

(9) the waste stream generation location (*e.g.* building and room number); and

(10) a detailed description of the waste stream generation process that includes all relevant material inputs or other information that identifies the chemical content and physical form of the waste.

The Permittees shall characterize waste streams by using current Department-approved sampling and analysis methods, acceptable knowledge, or a combination of the two. When acceptable knowledge is insufficient to fully characterize a waste stream, the Permittees shall utilize sampling and analysis to complete that characterization.

The Permittees shall maintain all waste characterization information in the Facility Operating Record. For records that contain waste characterization information concerning any hazardous or mixed wastes managed under this Permit, which are required to be archived elsewhere at the Facility (*e.g.,* laboratory record books), the Permittees shall maintain a traceable identifier to this documentation to facilitate access by the Permittees and the Department (*see* 40 CFR § 270.32(b)(2)). The Permittees shall maintain waste characterization documentation in accordance with the record retention requirements in Permit Section 2.12.2.

2.4.2 Sampling and Analysis for Hazardous Wastes

The Permittees shall perform all sampling and analytical procedures used for waste characterization in accordance with Department-approved laboratory analytical methods, including the most recent version of *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (U.S. EPA Publication *SW-846*) and Tables C-16, C-17, and C-18 in Attachment C (*Waste Analysis Plan*). The Permittees shall ensure that samples collected and analyzed for waste characterization are representative of the chemical composition of the entire volume of the waste stream.

The Permittees shall ensure that procedures used to collect a representative sample of a waste stream preserve its original physical form and composition and ensure prevention of contamination or changes in concentration of the constituents to be analyzed.

The Permittees shall implement a quality assurance and quality control (QA/QC) program to ensure that sample collection and analytical procedures used to support waste characterization required under this Permit are technically accurate and statistically valid. This QA/QC program must comply with the requirements in *SW-846*. The Permittees shall identify and perform the appropriate number of control samples associated with each sample collected (*e.g.,* trip and field blanks, field duplicates, field spikes). The Permittees shall maintain a record in the Facility Operating Record of all QA/QC procedures utilized in the sampling and analysis of a waste stream.

When performing laboratory analysis, the Permittees, or a laboratory under contract to the Permittees, shall analyze the appropriate number of method blanks, laboratory duplicates, and laboratory control samples to assess the quality of the data resulting from laboratory analytical programs.

If the Permittees use an independent contract laboratory to conduct waste analyses, the Permittees shall require the analytical laboratory to conduct such analysis in accordance with the waste analysis conditions set forth in Permit Part 2.4 and Attachment C (*Waste*

Analysis Plan), Section C.3 (*Characterization Procedures*). Copies of contracts or other documentation identifying the independent laboratory and showing that the analytical laboratory is required to operate in accordance with the waste analysis conditions shall be kept in the Facility Operating Record (*see* 40 CFR § 270.32(b)(2)).

The Permittees may propose to the Department an analytical method that deviates from Department-approved methods. The Permittees must submit a written request to the Department for review and approval 90 days prior to using the proposed sampling or analytical procedure. This request must include the following information:

(1) a statement of the need and justification for the proposed action;

(2) a full description of the alternative method (*i.e.,* a standard operating procedure) including all procedural steps and equipment used in the method;

(3) a description of the types of wastes, or waste matrices, for which the proposed method may be used;

(4) comparative analytical data obtained from using the proposed method with those obtained from using the Department-approved relevant or corresponding methods in Attachment C (*Waste Analysis Plan*);

(5) a demonstration that the proposed analytical procedure is equal to, or superior to, the corresponding methods in Attachment C (*Waste Analysis Plan*) in terms of its sensitivity, accuracy, and precision (*i.e.*, reproducibility);

(6) an assessment of any factors which may interfere with or limit the use of the proposed method; and

(7) a description of the QA/QC procedures necessary to ensure the sensitivity, accuracy, and precision of the proposed method.

The Permittees shall obtain written approval from the Department of the alternative method before substituting it for an approved method under this Permit, except that a change requested to conform with agency guidance or regulations shall be a Class 1 permit modification (*see* 40 CFR § 270.42 Appendix 1).

2.4.3 Acceptable Knowledge

The Permittees may use acceptable knowledge to characterize waste in lieu of, or to supplement, sampling and analysis. The Permittees shall document all uses of acceptable knowledge, and include in the acceptable knowledge documentation all of the background information assembled and used in the characterization process relevant to the decision to use acceptable knowledge (*see* 40 CFR § 270.32(b)(2)). The record must document the resolution of any data discrepancies between different sources of acceptable knowledge. Acceptable knowledge documentation must be maintained in an

auditable form in the Facility Operating Record. The Permittees shall assign a traceable identifier to this documentation to facilitate both access to this information and its verification by the Permittees and the Department.

2.4.4 Waste Received from Off-Site

If a hazardous waste stream is received at the Facility from an off-site facility identified at Permit Section 2.2.1, the Permittees shall obtain from the facility a detailed characterization of a representative sample of the waste. If acceptable knowledge is used for the waste characterization, the Permittees shall require the facility to provide all acceptable knowledge documentation used to characterize the waste stream (*see* 40 CFR § 270.32(b)(2)). In addition, the Permittees shall ensure that all applicable waste characterization requirements specified in Permit Section 2.4 have been met and documented.

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

2.4.5 Treatment-Derived Waste

The Permittees shall characterize treatment-derived wastes generated both on-site and off-site by determining whether the treatment residues meet the applicable treatment standard in accordance with 40 CFR § 268.7(b), which is incorporated herein by reference, unless the Permittees have documented that the purpose of the treatment process is not to attain the applicable treatment standard. The Permittees shall ensure adherence to notification and recordkeeping requirements specified at 40 CFR § 268.7(b)(3)(ii). If the waste remains a hazardous waste, the Permittees shall further characterize it in compliance with the applicable requirements of Permit Section 2.4.1.

2.4.6 Reserved

2.4.7 Waste Characterization Review

The Permittees shall ensure that the initial characterization of any hazardous waste stream managed under this Permit is reviewed or repeated to verify that the characterization is accurate and up to date (*see* 40 CFR § 264.13(b)(4)). The Permittees shall document this review in the Facility Operating Record.

The Permittees shall perform the following:

(1) Annually reëvaluate all hazardous waste streams generated to verify the accuracy of initial and subsequent characterization results. The annual reëvaluation shall

be required no later than one year from the date of initial characterization of the hazardous waste stream or one year from the last annual reëvaluation;

(2) Recharacterize hazardous wastes whenever there is a change in the waste-generating processes which includes a change in the status of the waste for purposes of Land Disposal Restrictions or when analytical results indicate a change in the waste stream;

(3) Annually verify the waste characterization of one percent of hazardous waste streams characterized solely by acceptable knowledge (*see* 40 CFR §§ 264.13(b)(4) and 270.32(b)(2)). Such waste characterization verification shall be performed by quantitative chemical analyses appropriate for the waste as specified in Attachment C (*Waste Analysis Plan*). The one percent of wastes whose characterization is to be verified shall be determined in relation to the total number of unique waste streams characterized solely by acceptable knowledge and managed at TA-54 in the previous calendar year. The waste streams whose characterization is to be verified shall be chosen without further bias and the selection procedure shall be documented in the Facility Operating Record. Wastes not required to undergo this annual verification and not to be counted toward the total number of wastes managed in the previous year include mixed transuranic wastes, hazardous debris, and hazardous wastes that are hazardous only because they are listed at 40 CFR Part 261, Subpart D; and

(4) Recharacterize a hazardous waste stream whenever the Permittees are notified by a receiving off-site facility that the characterization of a hazardous waste they obtained from the Permittees' Facility does not match a pre-approved waste analysis certification or accompanying waste manifest or shipping paper. The Permittees shall notify the Department in writing within three days of their receipt of the notice of the discrepancy from a receiving facility.

2.4.8 Waste Characterization for Compliance with RCRA Air Emission Requirements

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

The Permittees shall not be required to control air pollutant emissions from a container or tank and thus shall not be required to characterize the waste for its average VOC concentration in the following circumstances:

(1) if the container or tank stores mixed waste (*see* 40 CFR § 264.1080(b)(6));

(2) if the container storing the wastes has a total capacity of less than 0.1 cubic meter (approximately 26 gallons)(*see* 40 CFR § 264.1080(b)(2)); or

(3) if a tank has stopped receiving hazardous waste and is undergoing closure (*see* 40 CFR § 264.1080(b)(3)).

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

2.4.9 Waste Characterization for Compliance with Land Disposal Restrictions

The Permittees shall ensure that before any hazardous waste is managed at a permitted unit a determination has been made as to whether the waste has to be treated before it can be land disposed (*see* 40 CFR § 268.7(a)). The Permittees must characterize waste designated to be disposed of at the Waste Isolation Pilot Plant (WIPP) to determine whether it is subject to the land disposal prohibitions, except that such waste is not required to be characterized to determine all applicable underlying hazardous constituents listed in 40 CFR § 268.48.

When using laboratory analysis as part of a hazardous waste characterization pursuant to Attachment C (Waste Analysis Plan), Section C.3.1.2, the Permittees shall require the laboratory to report concentrations of all hazardous constituents listed at 40 CFR § 268.48, *Table UTS* that the analytical test method used is capable of measuring, as specified at the most recent version of the U.S. EPA's *Test Methods for Evaluating Solid Wastes* (*SW-846*). When performing this laboratory analysis the Permittees will not be required to perform sample preparation or determinative procedures other than those performed routinely for the target analytes.

When performing or obtaining laboratory analysis to demonstrate that a waste meets its applicable treatment standard concentrations specified in 40 CFR § 268.40, *Treatment Standards for Hazardous Wastes*, in compliance with 40 CFR §§ 268.7(a) and (b), which are incorporated herein by reference, the Permittees shall ensure that analytical method practical quantification limits are not higher than the applicable treatment standard (*see* 40 CFR § 270.32(b)).

The Permittees shall characterize treatment-derived wastes by determining whether the waste is a hazardous or mixed waste in compliance with the requirements in Permit Section 2.4.1 and in compliance with the notification and recordkeeping requirements

specified in 40 CFR § 268.7(b)(3)(ii), *Treatment Facility Paperwork Requirements Table*, which is incorporated herein by reference.

The Permittees shall characterize treatment-derived wastes, including those wastes that are formerly characteristic and no longer hazardous or mixed waste, to determine whether the waste meets the applicable treatment standard specified at 40 CFR §§ 268.40, 268.45, 268.48, and 268.49, in compliance with 40 CFR § 268.7(b), which is incorporated herein by reference. Pursuant to 40 CFR § 268.7(b)(3)(ii), the Permittees shall characterize treatment-derived wastes to determine the presence of any constituents of concern for hazardous waste codes F001 through F005, F039, and the presence of underlying hazardous constituents in characteristic wastes as defined at 40 CFR § 268.2(i), which is incorporated herein by reference.

2.5 SECURITY

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

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

(1) 24-hour surveillance system continuously monitoring and controlling entry into the permitted units at the Facility; or

(2) controlled entry into the permitted units at all times via gates, stations, or other means (*e.g.,* attendants, locks, prohibited or controlled roadway access).

The Permittees shall maintain and ensure the effectiveness of all security fences, entry gates, and entry stations surrounding the permitted units as specified in Figures 4 through 10 in Attachment N (*Figures)*.

2.5.1 Warning Signs

The Permittees shall post bilingual warning signs (in English and Spanish) at all gates and perimeter fences, where present, around the permitted units (*see* 40 CFR § 264.14(c)). Signs shall be posted in sufficient numbers to be visible at all angles of approach as well as from a distance of at least 25 feet. The Permittees shall include on the signs the following or an equivalent warning:

DANGER – UNAUTHORIZED PERSONNEL KEEP OUT (PELIGRO – SE PROHIBE LA ENTRADA A PERSONAS NO AUTORIZADAS)

The Permittees shall post warning signs in the appropriate dialect of Tewa in a manner equivalent to the bilingual warning signs in English and Spanish along shared boundaries with the Facility's permitted units and the Pueblo of San Ildefonso (PO WHO GEH).

The Permittees shall post signs requested by Santa Clara Pueblo (Kha-'Po). The Permittees shall include on the signs the following warning:

Wi-i ts'uni pi' – (DO NOT ENTER)

2.6 GENERAL INSPECTION REQUIREMENTS

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

(1) a release of hazardous constituents to the environment; or

(2) a threat to human health.

(*see* 40 CFR § 264.15(a))

Inspections shall be conducted of all waste management structures, base materials, containers, monitoring equipment, safety and emergency equipment, security devices, and operating equipment that are important in preventing, detecting, and responding to environmental or human health hazards associated with hazardous wastes (*see* 40 CFR § 264.15(b)(i)).

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

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

2.6.1 Inspection Schedule

The Permittees shall conduct inspections to identify problems in time to correct them before they harm human health or the environment (*see* 40 CFR § 264.15(a)). The Permittees shall inspect the permitted units and all associated structures and equipment, in compliance with the inspection schedules contained in Attachment E (*Inspection Plan*).

The Permittees shall inspect areas subject to spills, such as loading and unloading areas, daily when in use (see 40 CFR § 264.15(b)(4)).

2.6.2 Repair of Equipment and Structures

The Permittees shall remedy any deterioration or malfunction of equipment or structures discovered during an inspection which may lead to an environmental or human health hazard. The Permittees shall mitigate such deterioration or malfunction within 24 hours

of discovery of the problem. The Permittees shall immediately implement remedial action where a hazard is imminent or has already occurred (*see* 40 CFR § 264.15(c)).

2.6.3 Inspection Logs and Records

The Permittees shall record the results of inspections on the *Hazardous and Mixed Waste Facility Inspection Record Form* in Attachment E (*Inspection Plan*) for each inspection conducted in accordance with Permit Section 2.6 and Attachment E. At a minimum, the Permittees shall produce a handwritten record of the date and time of the inspection, an identification of the permitted unit and associated structures or equipment, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions taken (*see* 40 CFR § 264.15(d)). The Permittees shall ensure that these records are clearly legible, all handwritten information is in ink, and errors are crossed out with a single line, initialed, and dated by the individual making the correction. The Permittees shall maintain the inspection logs and records in a paper format. The Permittees may transfer the inspection logs and records into an electronic format acceptable to the Department. The paper format shall be retained for the period of time specified in Permit Section 2.12.2.

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

(1) the results of any preventive maintenance activities including, but not limited to, maintenance on floors, secondary containment structures, unit drainage structures, and fire protection equipment at a permitted unit;

(2) any malfunctions and deterioration of such structures or equipment;

(3) any errors affecting waste containment or compliance with this Permit;

(4) the locations, dimensions, and repairs of all identified cracks or gaps in floors or base materials;

(5) any discharges of hazardous waste, hazardous constituents, or fire suppression systems at a permitted unit; and

(6) any occurrences that might cause or exacerbate contamination of a permitted unit.

The Permittees shall maintain inspection logs in the Facility Operating Record as specified in Permit Section 2.12.2.

2.7 PERSONNEL TRAINING

The Permittees shall ensure that all Facility personnel who are involved in hazardous waste management activities regulated under this Permit successfully complete all training programs in compliance with the training requirements of 40 CFR § 264.16, which is

incorporated herein by reference, as well as the training requirements in Attachment F (*Personnel Training Plan*).

2.8 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittees shall manage ignitable, reactive, and incompatible hazardous wastes in containers and tanks in compliance with the requirements of 40 CFR §§ 264.17, 264.176, 264.177, 264.198, and 264.199, which are incorporated herein by reference, and Permit Parts 3 and 4. The Permittees shall ensure that containers holding ignitable or reactive wastes are located at least 15 meters from the facility boundary defined as the technical area (TA) specific boundary identified in Figures 11, 16, 22, 24, and 38 in Permit Attachment N (*Figures*) (*see* 40 CFR §§ 264.176 and 270.32(b)(2)).

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

(1) generation of extreme heat, pressure, fire, explosions, or violent reactions;

(2) production of uncontrolled toxic mist, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;

(3) production of uncontrolled inflammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(4) damage to the structural integrity of the container, tank, permitted unit, or other structure associated with the permitted unit; and

(5) a threat to human health or the environment.

(*see* 40 CFR § 264.17(b))

2.8.1 Ignitable and Reactive Waste Precautions

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

(1) ensure there are no sources of open flames in, on, or around the container or tank;

(2) segregate and separate ignitable or reactive wastes and protect them from sources of ignition or reaction such as cutting and welding, frictional heat, sparks (*e.g.*, static, electrical, mechanical), spontaneous ignition, and radiant heat;

(3) maintain adequate clearance around fire hydrants at permitted units;

(4) use only non-sparking tools when managing hazardous waste containers that contain ignitable or reactive wastes;

(5) ensure appropriate lightning protection is provided for all storage and treatment units;

(6) perform ongoing inspection, testing, and maintenance of fire protection equipment to determine appropriate test criteria and preventative maintenance activities;

(7) confine smoking and open flames to designated areas that are a minimum of 50 feet from areas where ignitable or reactive wastes are handled;

(8) stack containers of ignitable and reactive wastes no more than 2 drums high to comply with the National Fire Protection Association's (NFPA) *Flammable and Combustible Liquids Code*; and

(9) ensure that each permitted unit's fire suppression system is compatible with the hazardous waste being stored or treated at the permitted unit.

The Permittees shall assume that all drums with volume capacities between 55 and 110 gallons that hold mixed transuranic wastes and that are not vented, and standard waste boxes that hold mixed transuranic waste and are not vented, contain hydrogen gas and the associated wastes are subject to the conditions of this Permit Section (2.8.1).

2.8.2 Incompatible Waste Precautions

The Permittees shall ensure that a storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers must be separated from the other materials (or waste) or is protected from them by means of a dike, berm, wall, or other device not to include the container, in order to, in the event of leakage from containers under conditions normally incident to storage, prevent the commingling of the incompatible wastes or materials (*see* 40 CFR § 264.177(c)).

The Permittees shall ensure that incompatible wastes or materials are not stored within or on the same secondary containment structure.

The Permittees shall ensure that incompatible wastes or materials are not stored so that a release or spill of these wastes might commingle in a fire suppression water holding area or tank.

The Permittees shall ensure that all waste and materials are segregated and stored in accordance with the Department of Transportation's (DOT) compatibility groupings or classes contained in 49 CFR § 177.848 (*see* 40 CFR § 270.32(b)(2)).

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

The Permittees shall ensure that hazardous wastes are not placed in an unwashed container (*see* 40 CFR § 264.177(b)) or tank (*see* 40 CFR § 264.199(b)) that previously held an incompatible waste or material.

2.9 WASTE MINIMIZATION PROGRAM

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

(1) written policies or statements that outline goals, objectives, and methods for source reduction and recycling of hazardous waste at the Facility;

(2) employee training or incentive programs designed to identify and implement source reduction and recycling opportunities for all hazardous wastes;

(3) source reduction or recycling measures implemented in the last five years or planned for the next federal fiscal year;

(4) estimated dollar amounts of capital expenditures and operating costs devoted to source reduction and recycling of hazardous waste;

(5) factors which have prevented implementation of source reduction or recycling;

(6) summary of additional waste minimization efforts that could be implemented at the Facility that analyzes the potential for reducing the quantity and toxicity of each waste stream through production process changes, production reformulations, recycling, and all other appropriate means including an assessment of the technical feasibility, cost, and potential waste reduction for each option;

(7) flow charts and/or tables summarizing all hazardous waste streams produced by the Facility by quantity, type, building or area, and program; and

(8) 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 alternative processes that would produce less volume or less toxic waste.

The Permittees shall submit to the Department a report regarding progress made in the waste minimization program in the previous year. The report shall address items (1)-(8) above, shall show changes from the previous report, and shall be submitted annually by December 1 for the year ending the previous September 30.

2.10 PREPAREDNESS AND PREVENTION

The Permittees shall maintain and operate each permitted unit in a manner that minimizes the possibility of fire, explosion or any unplanned sudden or non-sudden release of hazardous waste or hazardous constituent to the air, soil, or surface water that could threaten human health or the environment (*see* 40 CFR § 264.31). In addition to the general preparedness and prevention requirements identified here, the Permittees shall comply with the TA-specific preparedness and prevention requirements and shall maintain the equipment identified in Attachment A (*Technical Area Unit Descriptions*) and Attachment D (*Contingency Plan).*

2.10.1 Required Equipment

At a minimum, the Permittees shall maintain at the Facility and at each permitted unit the internal communication and alarm system devices, fire control equipment, spill control equipment, and decontamination equipment listed in the tables in Attachment A (*Technical Area Unit Descriptions*) and Attachment D (*Contingency Plan*) (*see* 40 CFR § 264.32(b)(2)). The Permittees shall ensure that any changes to the emergency equipment lists adhere to the permit modification requirements at 40 CFR §§ 270.41 through 270.43.

The Permittees shall maintain spill kits at each permitted container storage and tank unit as specified in Attachment D (*Contingency Plan*). These spill kits shall be capable of mitigating small containable spills of acidic, caustic, inflammable, and otherwise hazardous waste present at the unit. For larger spills, the Permittees shall have plugging and diking equipment, siphon pumps, and loaders readily available at the Facility.

The Permittees shall ensure that there is adequate water pressure and volume available to each permitted unit to provide for fire suppression (*see* 40 CFR § 264.32(d)).

The Permittees shall operate and maintain the area-wide environmental monitoring network as specified in Section D.7.3 of Attachment D (*Contingency Plan*).

At permitted units where equipment is necessary to mitigate the effects of a power outage, the Permittees shall maintain batteries, generators, or some other form of backup power supply capable of operating equipment including evacuation alarms, emergency communication equipment, automatic fire suppression systems, and emergency lights. (*See* 40 CFR §§ 270.14(b)(8)(iv) and 270.32(b)(2))

The Permittees shall ensure that it is possible to provide fuel to backup generators under adverse conditions.

2.10.2 Testing and Maintenance of Equipment

The Permittees shall test the equipment listed in Section E.1.1 of Attachment E (*Inspection Plan*) in accordance with the schedule identified in Attachment E to ensure its functionality in the event of an emergency. The Permittees shall maintain the equipment specified in Permit Section 2.10.1 to ensure its proper operation in the event of an emergency (*see* 40 CFR § 264.33). This equipment shall undergo inspection in accordance with Attachment E (*Inspection Plan*). The Permittees shall document such inspections in the Facility Operating Record in accordance with this Permit Part.

If testing or inspections identify any missing or nonfunctioning communication equipment, alarm system, fire protection component, spill control, or decontamination equipment, the Permittees shall ensure it is promptly repaired or provide substitute equipment. The Permittees shall ensure that employees and contractors working in the area are notified of the presence of substitute equipment and, if necessary, provide them with training in its use (*see* 40 CFR § 270.32(b)(2)). The Permittees shall document in the Facility Operating Record instances of such notifications and trainings. The Permittees shall ensure that malfunctioning equipment is clearly marked as out of use and that the location of the substitute equipment is clearly posted on or adjacent to the faulty equipment (*see* 40 CFR §§ 264.31 and 270.32(b)(2)).

2.10.3 Access to Communications or Alarm System

Whenever an employee is present at a permitted unit and the unit contains hazardous waste, the Permittees shall ensure that all personnel at the unit have immediate access to an internal alarm or emergency communication device either directly or through visual or voice contact with another employee (*see* 40 CFR § 264.34(a)). The Permittees shall ensure that communication devices are easily accessible without personnel having to enter another building (*see* 40 CFR § 270.32(b)(2)).

The Permittees shall ensure that any employee working alone at a permitted unit is capable of summoning external emergency assistance and shall have immediate access to a device, such as a hand-held two-way radio, a cell phone, or a landline telephone (*see* 40 CFR § 264.34(b)). The Permittees shall ensure that communication devices are easily accessible without personnel having to enter another building (*see* 40 CFR § 270.32(b)(2)).

2.10.4 Spill Response

The Permittees shall ensure that spills of hazardous wastes, including small localized spills that can be managed without the assistance of emergency management personnel, are managed utilizing, at a minimum, the following procedures:

(1) isolate the immediate area and deny entry to all unauthorized personnel;

(2) contain the spill (*e.g.,* spreading sorbents, forming temporary dikes);

(3) define the nature and extent of the spilled waste;

(4) package the spilled waste and contaminated materials in containers; and

(5) decontaminate the area, all clean-up equipment, and personnel.

2.10.5 Arrangements with Local Authorities

The Permittees shall maintain its preparedness and prevention agreement with the Los Alamos County Emergency Management and Response Office and support agreements with the Los Alamos Fire Department, the Los Alamos County Police Department, and the Los Alamos Medical Center (*see* 40 CFR § 264.37).

The Permittees shall provide the Chief of the Los Alamos Fire Department (LAFD) with information that would ensure that emergency response personnel are at all times familiar with the potential hazards in performing their duties associated with the hazardous wastes at LANL's permitted hazardous waste management units. This information shall be specific to each permitted unit and at a minimum include:

(1) Waste types, *e.g.*, ignitable, reactive, corrosive;

(2) Waste names that identify principle hazardous chemical constituents;

(3) Approximate quantities of each waste type; and

(4) General location of waste types.

The Permittees' Primary Emergency Manager identified in Attachment D (*Contingency Plan*) shall annually sign a certification stating that the LAFD has been provided with this information to the satisfaction of the Chief of the LAFD. These certification statements shall be maintained in the Facility Operating Record.

2.11 CONTINGENCY PLAN

2.11.1 Implementation of Contingency Plan

The Permittees shall immediately implement Attachment D (*Contingency Plan*) whenever there is an incident (such as a fire, an explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous constituents) at a permitted unit that threatens human health or the environment (*see* 40 CFR § 264.51(b)).

The Contingency Plan shall be implemented immediately and without consideration to potential threat to human health and the environment if any of the following hazards occur at a permitted unit:

(1) release of a hazardous waste:

a. that cannot be contained with secondary containment or application of sorbents;

b. of inflammable material creating a fire or explosion hazard; or

c. that results in toxic fumes;

(2) explosion:

a. if an unplanned explosion involving hazardous waste occurs; or

b. if an imminent danger of an explosion involving hazardous waste exists;

(3) fire:

a. if a fire involving hazardous waste occurs; or

b. if any building, grass, forest, or non-hazardous waste fire exists that threatens to volatilize, react, or ignite hazardous waste.

The Permittees shall ensure that an adequate number of trained emergency response personnel are available at all times, including but not limited to, holidays, nights, and weekends.

2.11.2 Content of the Contingency Plan

The Permittees shall maintain the Contingency Plan to ensure that it at all times includes the following for each permitted unit:

(1) a description of the actions Facility personnel shall take to respond to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous constituents to air, soil, and surface water at a permitted unit;

(2) a description of all arrangements agreed upon by local police and fire departments, hospitals, federal, state, and local emergency response teams, and tribal governments to coordinate emergency services;

(3) a description of all contracts with emergency response contractors and equipment suppliers;

(4) the names and phone numbers (*i.e.,* office, home, cell, pager) of a primary and alternate individual assigned to act as Emergency Manager;

(5) a list of all on-site emergency equipment associated with each permitted unit including fire control, spill control, communication, decontamination, and personal protective equipment including a description of where this equipment is located, and a physical description of each item; and

(6) an evacuation plan, including a description of the signal(s) to be used to begin evacuation as well as primary and alternate evacuation routes, for personnel at a permitted unit where there is a possibility that evacuation may be necessary.

2.11.3 Distribution

The Permittees shall maintain copies of the Contingency Plan, including all revisions and amendments, at or in the following locations:

(1) each permitted unit;

(2) the Emergency Management and Response Office; and

(3) the Facility Operating Record.

The Permittees shall distribute copies of the current Contingency Plan to all entities with which the Permittees have emergency Memorandums of Understanding or Mutual Assistance Agreements, including:

(4) the Los Alamos County Emergency Management Coordinator;

(5) the Los Alamos Fire Department;

(6) the Los Alamos County Police Department; and

(7) the Los Alamos Medical Center.

The Permittees shall also distribute copies of the current Contingency Plan to the State of New Mexico's Department of Homeland Security and Emergency Management (DHSEM) Area 3 Emergency Coordinator.

The Permittees shall distribute the Contingency Plan within ten days of the effective date of this Permit and within ten days of receipt of any Department approval to a modification of the Contingency Plan. The Permittees shall ensure that all copies of the Contingency Plan distributed outside the Facility are sent by certified mail with a return receipt, or by an equivalent method, to ensure distribution. A record of compliance with this requirement shall be maintained in the Facility Operating Record (*see* 40 CFR § 270.32(b)(2)).

The Permittees shall ensure that evacuation routes for a permitted unit are prominently posted at each permitted unit (*see* 40 CFR § 270.32(b)(2)).

2.11.4 Amendments to Plan

Pursuant to 40 CFR § 264.54, which is incorporated herein by reference, the Permittees shall review the Contingency Plan and amend the Plan, if necessary, whenever:

(1) this Permit is revised;

(2) the Permittees' Emergency Management Plan is revised;

(3) a Building Emergency Plan for a building which houses a permitted unit is changed and that change is contrary to a requirement in the Contingency Plan;

(4) the Contingency Plan fails during a drill or an emergency;

(5) the Permittees modify a permitted unit in either its design, construction, operation, maintenance, or other circumstances in a manner that increases the potential for fires, explosions, or releases of hazardous wastes or hazardous waste constituents;

(6) the permitted unit design or operation affects the emergency response;

(7) the Permittees modify the list of Emergency Managers;

(8) the Permittees modify the list of emergency response equipment; or

(9) the Permittees review and evaluate their emergency response resources and capabilities with respect to hazardous waste management and find deficiencies.

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

The Permittees shall ensure that all primary and alternate Emergency Managers listed in Attachment D (*Contingency Plan*), Section D.1.1, review the Contingency Plan at a minimum annually and log each review in the Facility Operating Record (*see* 40 CFR § 270.32(b)(2)).

2.11.5 Emergency Manager

The Permittees shall designate an Emergency Manager or Incident Commander equivalent to the Emergency Coordinator required at 40 CFR § 264.55, which is incorporated herein by reference, who shall be responsible for coordinating all emergency response measures related to the management of hazardous wastes. An Emergency Manager shall be on call at all times, be familiar with the Contingency Plan, and shall have the authority to commit promptly the personnel and financial resources needed to implement the Contingency Plan (*see* 40 CFR § 264.55).

The Permittees shall notify the Department in writing of changes to the personnel designated as Emergency Managers and referenced in Attachment D (*Contingency Plan*), Section D.1.1, and their telephone numbers. This notification shall be a Class 1 permit modification.

2.11.6 Required Emergency Procedures

2.11.6.1 Immediate Actions

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

all potentially affected facility personnel. The Emergency Manager shall ensure that the appropriate federal, tribal, state, and local agencies with designated response roles are notified and shall implement the other requirements specified in 40 CFR § 264.56, which is incorporated herein by reference, and the Contingency Plan. The Permittees shall ensure that one individual shall be named Incident Commander and others shall be identified in the order that they will assume that responsibility as alternates to the Incident Commander.

2.11.6.2 Release, Fire, or Explosion

The Emergency Manager shall, in the event of a fire, explosion, or release of hazardous waste or constituents:

(1) as soon as practicable, identify the character source, amount, and areal extent of any released materials by observation, review of facility records, or by chemical analysis (*see* 40 CFR § 264.56(b)); and

(2) assess possible hazards to human health or the environment that may result from the release, fire, or explosion including both direct and indirect effects of the release, fire, or explosion (*e.g.*, the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat induced explosions) (*see* 40 CFR § 264.56(c)).

2.11.6.3 Reporting Findings

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

(1) if an assessment indicates that evacuation of local areas may be advisable, he or she shall immediately notify the appropriate local and tribal authorities and shall be available to assist appropriate officials in deciding whether local areas should be evacuated (*see* 40 CFR § 264.56(d)(1)); and

(2) immediately notify either the government official designated as the on-scene coordinator for that geographical area, the New Mexico Department of Public Safety dispatcher (505-827-9329), or the 24-hour National Response Center (800-424-8802) (*see* 40 CFR § 264.56(d)(2)). This notification shall include:

   a. the name and telephone number of the person reporting the incident;

   b. the specific Facility location where the incident occurred;

   c. the time and type of incident;

   d. the name and quantities, to the extent known, of materials involved;

   e. the extent of any injuries, if any; and

f. the possible hazards to human health and the environment outside the Facility.

2.11.6.4 Mitigative Measures

When the Contingency Plan is implemented under Permit Section 2.11.1, the Emergency Manager shall take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous wastes at the facility. These measures shall include, where applicable, stopping processes and operations, collecting and containing released wastes, and removing or isolating containers (*see* 40 CFR § 264.56(e)).

2.11.6.5 Monitoring

When the Contingency Plan is implemented under Permit Section 2.11.1, the Emergency Manager shall utilize available air monitoring resources, as appropriate, to measure and characterize any air emissions both inside and outside the Facility boundary caused by a fire, explosion, or release to the atmosphere (*see* 40 CFR § 270.32(b)(2)).

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

2.11.7 Post-Emergency Procedures

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

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

(1) no waste that may be incompatible with the released material is treated, stored, or disposed of in the impacted area until cleanup procedures are completed; and

(2) all emergency equipment listed in the Contingency Plan is cleaned and fit for its intended use before operations are resumed.

(*see* 40 CFR § 264.56(h))

2.11.8 Need for Further Corrective Action

If, after implementation of the Contingency Plan in response to a release of a hazardous waste or hazardous constituent, the Department determines the spill has not been entirely remediated and that corrective action may be required to address the release, the

Department may require the Permittees to conduct corrective action pursuant to Permit Part 11 (*Corrective Action*) (*see* Permit Section 11.3.5).

2.11.9 Notification and Record Keeping

The Permittees shall notify the Department of implementation of the Contingency Plan in compliance with Permit Section 1.9.12 (*see* 40 CFR § 264.56(i)).

The Permittees shall notify the Department, local authorities, and tribal governments before operations resume in the Facility's affected areas that the Facility is in compliance with Permit Section 2.11.7 (*see* 40 CFR § 270.32(b)(2)).

For purposes of a permitted unit closure, the Permittees shall document in the Facility Operating Record all instances where an indoor fire suppression system has been activated resulting in fire suppressants contacting a waste storage pad regardless of whether the activation of the fire suppression system is due to an emergency, emergency testing, or the result of an accident or break in a system (*see* 40 CFR § 270.32(b)(2)).

2.12 RECORDKEEPING AND REPORTING

The Permittees shall comply with the recordkeeping and reporting requirements specified throughout this Permit and at 40 CFR § 264.73, which is incorporated herein by reference.

2.12.1 Manifest Systems

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

2.12.2 Facility Operating Record

The Permittees shall maintain a written Facility Operating Record for the operations of each permitted unit at the Facility until the Department has approved either the closure certification statement or, if the unit enters post-closure care, the post-closure certification statement with respect to such unit as specified in Permit Sections 9.5 and 10.2.3 respectively (*see* 20.4.1.500 and 501 NMAC). For documents that address the entire Facility (*e.g.*, certifications of a Facility program to reduce the volume and toxicity of hazardous waste), the Permittees shall maintain these documents throughout the active life of the Facility including the post-closure care period.

Unless specifically prohibited by this Permit, an electronic record in a format acceptable to the Department and capable of producing a paper copy shall be deemed to be a written record (*see* 40 CFR § 270.32(b)(2)). Any substantive alterations made to the electronic record shall be documented, dated, and made part of the Facility Operating Record.

The Permittees shall incorporate, as soon as it becomes available, into the Facility Operating Record the following information:

(1) a description of the hazardous waste received and the methods and dates of treatment and storage at each permitted unit in accordance with Appendix I of 40 CFR Part 264, which is incorporated herein by reference;

(2) the location of each type of hazardous waste within each permitted unit and the total quantity of all wastes and waste types at each unit (the location shall be identified as one of the permitted units listed in Attachment J (*Hazardous Waste Management Units*) and any associated structure (*e.g.,* room, dome));

(3) records and results of waste analyses and waste determinations that are performed pursuant to Permit Section 2.4, Attachment C (*Waste Analysis Plan*), and 40 CFR §§ 264.1083, 268.7, and 268.9, which are incorporated herein by reference;

(4) incident reports and details of all incidents that required the implementation of Attachment D (*Contingency Plan*), any instance of fire, explosion, spill, or release from, or at, a permitted unit regardless of whether the incident required implementation of the Contingency Plan or Permit Part 11 (*see* 40 CFR § 270.32(b)(2));

(5) records and results of inspections as required in Permit Section 2.6 and Attachment E (*Inspection Plan*) (these records and results shall be kept for the period specified in Permit Section 2.6);

(6) monitoring, testing, analytical data, and response actions when required by 40 CFR §§ 264.191, 264.193, 264.195, 264.602, 264.1063(d) through 264.1063(i), 264.1064, and 264.1082 through 264.1090, which are incorporated herein by reference;

(7) notices to off-site generators as specified in 40 CFR § 264.12(b), which is incorporated herein by reference;

(8) (reserved);

(9) an annual certification stating a Facility program is in place to reduce the volume and toxicity of hazardous waste generated;

(10) for treated wastes, the information contained in the notice and certification required under 40 CFR § 268.7(b), which is incorporated herein by reference;

(11) if applicable, for hazardous wastes left in the ground after closure (*i.e.,* disposal units), the information required of a treatment facility under 40 CFR § 268.7(b), which is incorporated herein by reference;

(12) for stored wastes, the notice (or information contained in the notice for wastes generated on-site) and certification required at 40 CFR § 268.7, which is incorporated herein by reference;

(13) all monitoring reports and records required by this Permit, including but not limited to:

a. records of all monitoring data used to complete Permit Application(s);

b. all data gathered or generated during the closure or post-closure process; and

c. all laboratory reports, drilling logs, bench-scale or pilot scale data;

(14) documentation demonstrating distribution of the Contingency Plan in accordance with Permit Section 2.11.3;

(15) documentation demonstrating the installation and maintenance of secondary containment system coatings or sealants as required at Permit Section 3.7.1(4) and 4.4(4);

(16) personnel training records including both introductory and continuing training programs used to prepare employees to safely operate and maintain a permitted unit in compliance with 40 CFR § 264.16(d), which is incorporated herein by reference, and this Permit;

(17) documentation of notifications and trainings associated with alternate emergency equipment as required at Permit Section 2.10.2; and

(18) documentation of all instances where an indoor fire suppression system has been activated resulting in fire suppressants contacting a waste storage pad.

2.12.3 Availability of Facility Operating Record

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

2.12.4 Record Retention

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

2.12.5 Biennial Report

The Permittees shall submit a biennial report, which includes all of the information specified in 40 CFR § 264.75, which is incorporated herein by reference, to the Department by March 1 of each even numbered year.

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PART 3: STORAGE IN CONTAINERS

3.1 GENERAL CONDITIONS

(1) The Permittees shall store and otherwise manage containers of hazardous waste in accordance with 40 CFR Part 264, Subpart I, which is incorporated herein by reference, and Attachment A (*Technical Area Unit Descriptions*).

(2) The Permittees shall only store hazardous waste containers at the permitted units identified as utilizing waste process code S01 and specified in Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*). The Permittees are authorized to store only those wastes identified by EPA Hazardous Waste Numbers (waste codes) listed in Attachment B (*Part A Application*) and identified as utilizing waste process code S01. The Permittees shall not store containers of hazardous waste in excess of the maximum capacities for each permitted container storage unit (CSU) identified in Attachment J, Table J-1. However, for purposes of compliance with secondary containment requirements, the holding of a hazardous waste container within a permitted unit for a period not to exceed 24 hours, for transportation, treatment, characterization, or packaging, shall not be deemed storage.

(3) The Permittees shall ensure that the figures in Attachment N (*Figures*) and in the closure plans in Attachment G accurately reflect the location of all buildings and structures, regardless of whether they manage hazardous waste, at hazardous waste management units. The Permittees may change the location of a building or structure at a hazardous waste management unit only in accordance with a Class 1 permit modification requirements at 40 CFR § 270.42(a). Any change to the location of a building or structure within which hazardous waste is managed shall be a Class 1 modification with prior approval of the Department (*see* 40 CFR § 270.42(a)(2)). Any change to the location of a building or structure within which hazardous waste has not been managed shall be a Class 1 modification without prior approval (*see* 40 CFR § 270.42(a)(1)).

3.2 CONDITION OF CONTAINERS

The Permittees shall ensure that all containers used to store hazardous wastes subject to this Permit are in good condition (*e.g.,* no severe rusting or apparent structural defects) in accordance with 40 CFR § 264.171, which is incorporated herein by reference. If a container is not in good condition or begins to leak, the Permittees shall transfer the waste from such a container into a container that is in good condition within 24 hours of discovery of the problem, and in accordance with 40 CFR § 264.171.

3.3 ACCEPTABLE STORAGE CONTAINERS

The Permittees shall only use containers that comply with 40 CFR Part 264 Subpart I *(Use and Management of Containers*) for storage of hazardous waste at permitted units. Prior to shipment of hazardous waste, containers must comply with Department of Transportation (DOT) shipping container regulations (*see* 49 CFR § 173 - *Shippers - General Requirements for Shipment and Packaging,* and 49 CFR § 178 - *Specifications for Packaging*).

Solid, oversize items (*e.g.,* glovebox, glovebox parts, vacuum pumps, tanks, duct work, piping, HEPA filters) contaminated with hazardous wastes that cannot be containerized in the waste containers referenced in the previous paragraph shall be subject to this Permit Part. These items shall be wrapped in plastic with a minimum of two layers of plastic to prevent dispersion of contaminating material.

3.4 COMPATIBILITY OF WASTE WITH CONTAINERS

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

3.5 MANAGEMENT OF CONTAINERS

(1) The Permittees shall ensure that all containers are kept closed during storage except when waste is added to or removed from the container or when a container's contents need to be repackaged (*see* 40 CFR § 264.173(a)). The Permittees shall not open, handle, or store a container holding hazardous waste in a manner that may rupture the container or cause the container to leak (*see* 40 CFR § 264.173(b)).

(2) The Permittees shall establish and maintain lines of demarcation which identify the boundaries of all permitted CSUs. The line may be identified by paint, tape, or other permanent, visible marking on the floor or base material (*see* 40 CFR § 270.32(b)(2)). Permanent fences marking the unit boundary, or rooms or buildings whose walls constitute the boundary of the permitted units, satisfy this requirement.

(3) The Permittees shall ensure that drums stored in movable buildings (*e.g.,* modular buildings, transportainers) with non-grated floors are stored on wheeled drum dollies, steel pallets, or are otherwise elevated.

(4) The Permittees shall ensure that when waste containers are moved during storage, the location of each hazardous waste and the quantity at each location is documented in accordance with Permit Section 2.12 (*see* 40 CFR § 264.73(b)(2)).

3.5.1 Storage Configuration and Minimum Aisle Space

(1) The Permittees shall maintain adequate aisle space at all times to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment within the permitted units. Additionally, emergency egress aisles with a minimum aisle space of two feet must be maintained at all personnel doors (*see* 40 CFR § 264.35).

(2) The Permittees are authorized to stack containers greater than or equal to 30 gallons of hazardous waste to no more than three containers high. Stacked containers of this volume shall be palletized, and each layer shall be bound together (*see* 40 CFR § 270.32(b)(2)).

(3) The Permittees shall ensure that hazardous waste containers stored outdoors are not stored within five feet of the perimeter (*i.e.,* permitted unit boundary) fence, within five feet of any permanent structure, or within five feet of a paved or unpaved roadway.

(4) The Permittees shall store hazardous waste gas cylinders in cylinder racks, baskets, or on specially constructed pallets that provide support and restraint.

(5) The Permittees shall ensure that hazardous waste containers that are stored outdoors and are not being actively managed are protected from contact with precipitation using weather protective equipment (*e.g.,* containment shell, secured tarp) or are protected by the design of the equipment (*e.g.,* transportainer, Transuranic Waste Package Transporter II container) (*see* 40 CFR § 270.32(b)(2)).

3.6 WASTE CONTAINER LABELING

(1) The Permittees shall ensure that all containers storing hazardous waste have a "Hazardous Waste" label (*see* 40 CFR § 262.34(a)(3)) that lists the generator's name, address, and EPA Identification number, the date the container was placed in storage at the permitted unit (*see* 40 CFR § 262.34(a)(2)), and all applicable EPA Hazardous Waste Number(s) (*see* 40 CFR § 268.50(a)(2)(i)). All containers holding mixed waste shall be labeled "Radioactive." Records for all containers will be maintained in accordance with Permit Section 2.12.

(2) The Permittees shall ensure that containers holding free liquids have a "free liquids" label. The free liquids reference may be included on a label identifying other waste characteristics (*see* 40 CFR § 270.32(b)(2)).

3.7 CONTAINMENT SYSTEMS

The Permittees shall store containers of hazardous waste in a manner that prevents contact with any accumulated liquids (*see* 40 CFR § 264.175(b)(2)).

3.7.1 Containers with Free Liquids

(1) The Permittees shall maintain secondary containment systems in all permitted units used to store wastes which contain free liquids in compliance with 40 CFR § 264.175, which is incorporated herein by reference. The Permittees shall maintain controls to prevent run-on into the permitted unit. These controls shall consist of ground features such as berms and sloping.

(2) The Permittees shall remove spilled or leaked waste and accumulated precipitation from sumps or secondary containment systems. If the sumps or secondary containment system are the sole means of secondary containment the Permittees must remove the spilled or leaked waste and/or accumulated precipitation in liquid form within 24 hours of detection or immediately if necessary to prevent overflow of the secondary containment system. Otherwise, the Permittees must remove the spilled or leaked waste and/or accumulated precipitation in any form in as timely a manner as is necessary to prevent overflow of the containment system and shall, while the system's capacity is diminished, measure the system daily to demonstrate that the system retains sufficient capacity to contain 10% of the volume of containers or the volume of the largest container holding free liquids, which ever is greater. (*see* 40 CFR §§ 264.175(b)(4) and (5)). The Permittees shall document this measurement in the Facility Operating Record. Requests for extension of time for any deadline under this subparagraph may be made by e-mail.

(3) The Permittees shall maintain the base of secondary containment systems to ensure they are impervious in order to contain leaks, spills, and/or accumulated precipitation until the collected liquids are detected and removed. The Permittees shall ensure that the secondary containment system have adequate structural strength to withstand the stresses of daily operations (*see* 40 CFR § 264.175(b)(1)).

(4) If a coating or sealant is used as a component of a secondary containment system, the Permittees shall maintain documentation in the Facility Operating Record that the coating or sealant was applied and maintained in accordance with the manufacturer's specifications. This documentation shall include a copy of the manufacturer's specifications as well as a certification stating the Permittees' installation and maintenance procedures were in accordance with the manufacturer's specifications. If the base of the containment unit has expansion or construction joints, the Permittees shall install and maintain chemically resistant water stops, which are embedded in the concrete, or equivalent external systems (*e.g.* sealant systems) (*see* 40 CFR § 270.32(b)(2)).

(5) If a flexible liner is used as a secondary containment system after July 1, 2014, the Permittees shall maintain documentation in the Facility Operating Record that the flexible liner was installed and maintained in accordance with the manufacturer's specifications. This documentation shall include a copy of the manufacturer's specifications as well as a certification stating that the Permittees' installation and

maintenance procedures have been conducted in accordance with the manufacturer's specifications (*see* 40 CFR § 270.32(b)(2)).

(6) Unless waste is removed or another form of secondary containment is provided, the Permittees shall repair any damage to a secondary containment system within 15 days of detecting the problem. The Permittees shall perform any concrete or asphalt repair using an appropriate repair method (*e.g.,* ACI standards or manufacturer's recommendations), which will prevent future damage at the location (*see* 40 CFR §§ 264.15(c), 270.32(b)(2)). The Permittees shall apply coatings or sealants, if applicable, to the repaired area before waste storage activities resume. The Permittees must record any damage or repair to containment systems in the inspection logs required by Permit Section 2.6.3.

(7) The Permittees shall ensure that the number of 55-gallon drums stored on a secondary containment pallet does not exceed the design capacity of the pallet.

(8) The Permittees shall ensure that all metal secondary containment pallets are coated with chemically-resistant urethane. The Permittees shall maintain the chemical-resistant urethane in accordance with Permit Section 3.7.1 and the manufacturer's specifications.

3.7.2 Containers without Free Liquids

(1) For container storage areas that will store only wastes without free liquids (*see* Attachment J (*Hazardous Wastes Management Units*), Table J-1 (*Active Portion of the Facility*)), the Permittees shall ensure that:

a. the storage areas are sloped or otherwise designed and operated to drain and remove liquid resulting from precipitation or other liquids (*see* 40 CFR § 264.175(c)(1)); or

b. the containers are elevated or otherwise protected from contact with accumulated liquids (*see* 40 CFR § 264.175(c)(2)).

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

(3) The Permittees shall ensure that the permitted units identified in Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*), as managing "non-liquid wastes only" only manage non-liquid wastes.

3.8 INSPECTION SCHEDULES AND PROCEDURES

(1) The Permittees shall inspect the permitted CSUs at least weekly for evidence of leaks or deterioration of the containment system by corrosion, cracking, differential settlement or other factors (*see* 40 CFR § 264.174).

(2) The Permittees shall store containers in a manner that allows the containers to be inspected for leaks, corrosion, deterioration, and for container labels to be read without moving them (*see* 40 CFR §§ 264.174 and 270.32(b)(2)).

3.9 VOLATILE ORGANIC AIR EMISSIONS

(1) The Permittees shall control air pollutant emissions from each hazardous waste container at a permitted unit in accordance with the applicable regulations in 40 CFR Part 264 Subpart CC. The Permittees shall also manage hazardous wastes subject to emission controls in accordance with Attachment E (*Inspection Plan*).

(2) The Permittees shall not be required to control air pollutant emissions from a container in accordance with the exemptions in 40 CFR §§ 264.1080(b)(1) through (8).

(3) If the Permittees claim an exemption from air pollution emission controls due to a container holding radioactive mixed waste, the Permittees shall clearly label the container in accordance with Permit Section 3.6.

(4) A suitable method to control container air pollution emissions is the utilization of the container construction specifications and operation requirements specified in 40 CFR § 264.1086(b). This emission control method is met if the containers adhere to the following requirements:

a. the containers have a capacity of greater than 0.1 cubic meters and less than 0.46 cubic meters (approximately 119 gallons);

b. the containers meet U.S. Department of Transportation (DOT) specifications under 49 CFR Part 178;

c. the containers are kept closed during storage; and

d. the containers are inspected weekly to ensure lids and openings are securely closed and there in no possibility of air emissions (*see* 40 CFR §§ 264.1086(c)(3) and (4)).

(5) All containers that are not exempted under 40 CFR 264, Subpart CC, shall be subject to Container Level 1 requirements, except that the Permittees shall identify containers subject to Container Level 2 controls on a list in the Facility Operating Record.

(6) Containers may be opened for the purpose of adding or removing waste or as otherwise allowed at 40 CFR § 264.1086(c)(3), which is incorporated herein by reference.

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

3.10 TA-3 CONTAINER STORAGE REQUIREMENTS

3.10.1 General Operating Conditions

The Permittees shall ensure that storage of hazardous or mixed waste in containers at TA-3-29 occurs only in the CSU in Rooms 9010, and portions of Rooms 9020, and 9030 identified in Attachment A (*Technical Area Unit Descriptions*) and Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*).

3.10.2 Secondary Containment

The Permittees shall paint the floors in Rooms 9010, 9020, and 9030 within the TA-3-29 permitted unit with an epoxy sealant. The sealant must be maintained in accordance with Permit Section 3.7.1 of this Part and the manufacturer's specifications.

3.11 TA-50 CONTAINER STORAGE REQUIREMENTS

3.11.1 General Operating Conditions

(1) The Permittees shall ensure that storage of hazardous or mixed waste in containers at TA-50 occurs only in two areas: 1) an indoor storage area located in Building 69 (TA-50-69), Rooms 102 and 103; and 2) an outdoor storage area (TA-50-69, Outdoor) located south/southeast of Building 69, comprised of an asphalt pad and modular transportainer units, as identified in Attachment A (*Technical Area Unit Descriptions)* and Attachment J (*Hazardous Waste Management Units*).

(2) The Permittees shall ensure that ignitable wastes will not be stored inside the glovebox located within the indoor permitted unit.

(3) The Permittees shall at all times maintain a fire access lane between the TA-50-69 Outdoor and Indoor permitted units (*see* 40 CFR § 270.32(b)(2)).

3.11.2 Preventing Hazards in Loading/Unloading

The Permittees shall not load or unload waste at TA-50 during precipitation events.

3.11.3 Preventing Run-on

The Permittees shall prevent surface water run-on from contacting stored waste containers at the TA-50 permitted units.

The Permittees shall annually inspect and when necessary maintain the drainage swales located south of the permitted unit between the permitted unit and Material Disposal Area (MDA) C, and located on the west side of the permitted unit between Pecos Drive and the TA-50 fence line, to ensure that potential run-on is directed away from the permitted units (*see* 40 CFR § 264.175(c)(1)).

3.12 TA-54 CONTAINER STORAGE REQUIREMENTS

3.12.1 General Operating Conditions

The Permittees shall ensure that storage of hazardous waste in containers at TA-54 occurs only in the permitted unit at Area L, the nine permitted units at Area G, the two permitted units at TA-54 West, and as identified in Attachment A (*Technical Area Unit Descriptions)* and Attachment J (*Hazardous Waste Management Units*).

Area G

(1) The Permittees shall remove all fluids above the HDPE liner at Area G, Dome 224 within 24 hours of discovery (*see* 40 CFR § 270.32(b)(2)). The Permittees shall include a record of the evacuation in the Facility's Operating Record including a complete chemical analysis of the fluid.

(2) The Permittees shall ensure that at Area G, all containers storing hazardous waste with free liquids are stored on secondary containment pallets, except inside the following structures: Domes 230, and Sheds 144, 145, 146, 177, 1027, 1028, 1029, and 1041.

Area L

(1) The 10,000 gallon holding tank at Area L, Dome 215 shall be inspected monthly and any detected fluids shall be characterized and removed within 3 days. The Permittees shall include a record of all holding tank inspections and evacuations in the Facility's Operating Record, including a complete chemical analysis of the tank contents (*see* 40 CFR § 270.32(b)(2)).

(2) The Permittees shall ensure that at Area L, all containers storing hazardous waste with free liquids are stored on secondary containment pallets, except when inside the following structures: Sheds 31, 68, 69, 70; concrete pad with canopy TA-54-32; concrete pads TA-54-35 and TA-54-36; building TA-54-39 (Room 101 and South Containment Pad), and modular unit TA-54-58.

TA-54 West

The Permittees may store mixed TRU wastes in sealed Nuclear Regulatory Commission (NRC) certified Type-B shipping containers at the TA-54 West Outdoor permitted unit without secondary containment and weather protection.

3.12.2 Preventing Run-on and Run-off

3.12.2.1 Domes 153 & 283

The Permittees shall repair the 6-inch-high, 8-inch-wide curb at the perimeter of Domes 153 and 283 to prevent run-on/run-off to and from the permitted unit.

3.12.2.2 Storage Shed 8

The Permittees shall repair the 6-inch high, 8-inch-wide curb at Storage Shed 8 in as timely a manner as possible to prevent run-on/run-off to and from the permitted unit. The concrete slab on the south side of the shed shall be sloped away from the shed's foundation to prevent run-on. If the concrete slab is damaged, the Permittees shall repair the slab to prevent run-on to the permitted unit.

3.12.2.3 TA-54-33

The Permittees shall repair the 6-inch-high, 8-inch-wide concrete curb at the perimeter of the dome at TA-54-33 to prevent run-on/run-off to and from the permitted unit. The concrete floors of Rooms 100, 100A, 100B, 100C, and 105 shall slope inward to prevent run-off. If the concrete floors are damaged, the Permittees shall repair the floor(s) to prevent run-off from the permitted unit.

3.12.3 Secondary Containment

3.12.3.1 TA-54-32

The Permittees shall treat the concrete sumps with chemical-resistant epoxy filler-sealer and protective coating, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The Permittees shall maintain the chemical-resistant epoxy and protective coating in accordance with Permit Section 3.7.1 and the manufacturer's specifications.

3.12.3.2 TA-54-35

The Permittees shall treat the concrete berms and the base of the concrete pad with chemical-resistant epoxy filler-sealer and protective coating, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The Permittees shall maintain the chemical-resistant epoxy and protective coating in accordance with Permit Section 3.7.1 and the manufacturer's specifications.

3.12.3.3 TA-54-36

The Permittees shall treat the concrete berms and the base of the concrete pad with chemical-resistant epoxy filler-sealer and protective coating, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The

Permittees shall maintain the chemical-resistant epoxy and protective coating in accordance with Permit Section 3.7.1 and the manufacturer's specifications.

3.12.3.4 TA-54-58

The Permittees shall treat the concrete berms and the base of the concrete pad with chemical-resistant epoxy filler-sealer and protective coating, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The Permittees shall maintain the chemical-resistant epoxy and protective coating in accordance with Permit Section 3.7.1 and the manufacturer's specifications.

3.12.3.5 TA-54-39 and Containment Pad

3.12.3.5.i Room 101

The Permittees shall treat the curb and floor of this 878 square foot room with chemical-resistant epoxy filler-sealer and protective coating, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The Permittees shall maintain the chemical-resistant epoxy and protective coating in accordance with Permit Section 3.7.1 and the manufacturer's specifications.

3.12.3.5.ii Containment Pad

The Permittees shall treat the concrete floor and curb with chemical-resistant epoxy filler-sealer and protective coating, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The Permittees shall maintain the chemical-resistant epoxy and protective coating in accordance with Permit Section 3.7.1 and the manufacturer's specifications.

3.12.3.6 Storage Sheds 144, 145, 146, and 177

The Permittees shall ensure the interior of each shed and sump is treated with chemically-resistant epoxy paint. The Permittees shall maintain the chemically-resistant epoxy paint in accordance with Permit Section 3.7.1 of this Permit Part and the manufacturer's specifications.

3.12.3.7 Dome 224

The Permittees shall not rely on the engineered high-density polyethylene (HDPE) liner in Dome 224 as a method of secondary containment and shall instead store all hazardous waste containers holding free liquids on secondary containment pallets.

3.13 TA-55 CONTAINER STORAGE REQUIREMENTS

3.13.1 General Operating Conditions

The Permittees shall ensure that storage of hazardous or mixed waste in containers at TA-55 occurs only in the permitted units B45, B40, B05, K13, the vault located at TA-55-4, TA-55-185, and the outdoor container storage pad located northwest of TA-55-4, and as identified in Attachment A (*Technical Area Unit Descriptions*) and Attachment J (*Hazardous Waste Management Units*).

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PART 4: TA-55 STORAGE IN TANKS AND TREATMENT BY STABILIZATION

4.1 GENERAL CONDITIONS

(1) The Permittees shall store mixed waste in tanks in accordance with the requirements of 40 CFR Part 264, Subpart J, which is incorporated herein by reference and this Permit Part. The Permittees shall treat mixed waste by stabilization in accordance with the requirements of 40 CFR Part 264, Subpart X, which is incorporated herein by reference and this Permit Part.

(2) The Permittees shall, in accordance with this Permit Part, maintain and operate the mixed waste storage tank unit, the stabilization unit, all ancillary equipment as defined in 40 CFR § 260.10, and the associated secondary containment system at TA-55 as described at Attachment A (*Technical Area Unit Descriptions*).

(3) The Permittees shall store mixed waste only in the tank systems associated with the permitted unit identified with process code S02 in Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*). The Permittees shall treat mixed waste by stabilization only in the permitted unit identified with process code T04 in Attachment J, Table J-1. The Permittees shall not store or treat mixed waste in quantities that exceed the operating capacities identified in Table J-1.

(4) The Permittees shall store in the tank unit and treat in the stabilization unit only those wastes with the EPA Hazardous Waste Numbers listed in association with the applicable storage tank unit and stabilization unit in Attachment B (*Part A Application*).

(5) The Permittees shall ensure that mixed wastes or treatment reagents are not placed in the storage tank or stabilization units if they could cause the units, their ancillary equipment, or the containment system to rupture, leak, corrode, or otherwise fail (*see* 40 CFR § 264.194(a)).

4.2 EXISTING TANK SYSTEM INTEGRITY

The Permittees shall maintain in the Facility Operating Record the written integrity assessments of the existing tank unit system provided with the Permittees' Permit Application.

4.3 REPLACEMENT TANK SYSTEM AND STABILIZATION UNIT COMPONENTS

(1) The Permittees shall ensure either that storage tank or stabilization system repairs are performed in accordance with 40 CFR §§ 264.196(e)(2) through (4), or that

the system be closed in accordance with the conditions of this Permit and 40 CFR § 264.197, which is incorporated herein by reference.

(2) During the replacement of tank unit systems and stabilization unit ancillary equipment the Permittees shall ensure that proper handling procedures are adhered to in order to prevent damage to the units, their components, or any ancillary equipment (*see* 40 CFR § 264.192(b)). Replacement equipment shall be made of the same or similar materials as those described in Attachment A (*Technical Area Unit Descriptions*).

(3) The Permittees shall ensure that prior to replacing a portion of the tank or stabilization unit systems, a registered engineer trained and experienced in the proper installation of tank systems or components inspects the system in accordance with the requirements of 40 CFR § 264.192(b). A record of this inspection shall be maintained in the Facility Operating Record.

(4) If the Permittees repair the storage tank unit or the stabilization unit systems, the Permittees shall certify that the system is capable of handling mixed wastes without release for the intended life of the system in accordance with the requirements of 40 CFR § 264.196(f), which is incorporated herein by reference. This certification must be submitted to the Department within seven days after returning the tank system to use.

(5) Replacement tanks, their ancillary equipment, and stabilization unit ancillary equipment shall be tested for tightness prior to being placed into use (*see* 40 CFR § 264.192(d)). If a replacement tank, tank ancillary equipment or the stabilization unit ancillary equipment is found not to be tight, all repairs necessary to remedy the leak(s) in the system shall be performed prior to the system being placed into use.

(6) The Permittees shall obtain and keep in the Facility Operating Record the written statements required at 40 CFR § 264.192, which is incorporated herein by reference.

4.4 TANK SYSTEMS AND STABILIZATION UNIT CONTAINMENT

(1) The Permittees shall ensure that the tank and stabilization units have an associated secondary containment system that conforms to the requirements specified at 40 CFR § 264.193, which is incorporated herein by reference. The Permittees shall consider the walls and floor of Room 401 as the secondary containment system for the storage tank and the stabilization units.

(2) The Permittees shall use appropriate controls and practices to prevent spills and overflows from the storage tank unit, the stabilization unit, or their associated

containment system in accordance with 40 CFR § 264.194(b), which is incorporated herein by reference.

(3) The Permittees shall ensure that spilled, leaked, or otherwise accumulated liquids are removed from the secondary containment system, including but not limited to the sumps, within 24 hours of detection of the spill, leak, or accumulation. The Permittees may seek an extension of time if the Permittees can demonstrate that removal of the released waste or accumulated liquids cannot be accomplished within 24 hours (*see* 40 CFR § 264.193(c)(4)). Such a determination must be made within 24 hours of detection of the spill, leak of the released waste. The Permittees shall notify the Department of any accumulated liquids within the secondary containment system within five days of detection of such liquids (*see* 40 CFR § 270.32(b)(2)).

(4) The Permittees shall ensure that the secondary containment system comprised in part by floor, wall, or joint sealants, is installed and maintained in accordance with the sealant manufacturer's recommendations, and shall maintain documentation of this fact in the Facility Operating Record. This documentation shall include a copy of the manufacturer's recommendations and a certification from a registered engineer stating the Permittees' installation and maintenance procedures were performed in accordance with the recommendations.

(5) Secondary containment systems utilizing sealants existing at the time of this Permit's issuance but not having associated sealant manufacturer's recommendations or an associated certification statement shall be re-sealed within 90 days of the effective date of this Permit (*see* 40 CFR § 270.32(b)(2)).

(6) The Permittees shall ensure that all tank and stabilization unit ancillary equipment have secondary containment in accordance with 40 CFR § 264.193(f), which is incorporated herein by reference. Above ground waste piping, including welded flanges, joints, and connections, shall be inspected for leaks each operating day (*i.e.,* each day that waste is present in a tank or stabilization unit).

(7) The Permittees shall ensure that a storage tank unit, stabilization unit, secondary containment system, or a portion of these units or systems, from which there has been a leak or spill, or which is unfit for use, is removed from service immediately and otherwise complies with the requirements of 40 CFR § 264.196, which is incorporated herein by reference.

(8) The Permittees shall ensure that any release of mixed waste from a storage tank or stabilization unit to the environment (*e.g.,* soil, surface water, groundwater, atmosphere) is reported to the Department by e-mail or facsimile within 24 hours of its detection (*see* 40 CFR § 264.196(d)). Within 30 days of detection of a release to the environment, the Permittees shall submit a written report to the

Department containing the information at 40 CFR § 264.196(d)(3), which is incorporated herein by reference.

(9) The Permittees shall give notice by e-mail to persons on the e-mail notification list of the written report under 40 CFR § 264.196(d)(3) in accordance with Permit Section 1.13.

4.5 IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

The Permittees shall ensure that the mixed waste storage tank and stabilization units do not manage ignitable or reactive waste.

The Permittees shall ensure that incompatible wastes, or wastes and other materials that are incompatible, are not placed in the same tank system or stabilization unit (*see* 40 CFR § 264.199).

4.6 TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY

The Permittees shall discharge all treated wastewater from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) through the outfall permitted under Section 402 of the federal Clean Water Act, or as otherwise authorized by the terms of an applicable Clean Water Act permit that regulates the treatment and use of wastewater. If the Permittees intentionally discharge through a location other than the permitted outfall or as otherwise authorized, they will fail to comply with this requirement, and as a consequence the wastewater treatment unit exemption under 40 CFR § 264.1(g)(6) will no longer apply to the RLWTF. The Permittees shall not accept listed hazardous wastes as specified at 40 CFR Part 261 Subpart D at the RLWTF.

PART 5: (RESERVED)

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PART 6: (RESERVED)

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PART 9: CLOSURE

9.1 INTRODUCTION

This Permit Part addresses the three categories of permitted units at the Facility. They are identified as follows:

(1) regulated units (*i.e.,* material disposal areas G, H, L);

(2) indoor units (structures and related equipment); and

(3) outdoor units (asphalt or concrete pads and related structures and equipment):

a. co-located with a regulated unit; and
b. not co-located with a regulated unit.

Attachment J (*Hazardous Waste Management Units*), Table J-1 (*Active Portion of the Facility*), identifies the category of each permitted unit in the column titled *Type of Unit*.

This Permit does not address the closure of interim status units.

The Permittees shall adhere to the closure performance standards in Permit Section 9.2 for all the permitted units addressed in this Permit Section.

The Permittees shall close the permitted storage and treatment units in accordance with the requirements in 40 CFR §§ 264.110 through 264.116, 264.178, and 264.197 (which are incorporated herein by reference), this Permit Part (9), and the procedures described in the permitted unit-specific closure plans in Attachment G (*Closure Plans*).

9.1.1 Regulated Units

The regulated units shall not accept hazardous or mixed waste and shall undergo closure. The Permittees shall adhere to the closure performance standards in Permit Section 9.2 and the closure requirements in Permit Sections 9.3 and 9.5 for the closure of these units.

9.1.2 Indoor Units

Indoor units are buildings (*e.g.*, TA-54-412 DVRS), structures (*e.g.,* storage sheds, domes, transportainers, canopies, trailers, and permacons), or rooms within a building (*e.g.,* TA-3 Room 9010). The Permittees shall comply with the specific closure requirements in Permit Sections 9.4 and 9.5 for these units and comply with the closure performance standards in Permit Section 9.2.

9.1.3 Outdoor Units

Outdoor units are pads which are constructed of either asphalt or concrete and include, at some units, buildings, structures, or both, situated thereon. There are two distinct types of outdoor units addressed by this Permit:

(1) asphalt or concrete storage pads co-located with a regulated unit (*i.e.,* outdoor storage unit) (*e.g.,* TA-54 Area L); and

(2) asphalt storage pads not co-located with a regulated unit (*i.e.,* outdoor storage unit) (*e.g.,* TA-50-69 Outdoor Unit).

The Permittees shall comply with the specific closure requirements in Permit Sections 9.4 and 9.5 for these units and adhere to the closure performance standards in Permit Section 9.2.

Any building or structure, or its associated equipment, situated on an outdoor unit shall meet the specific closure requirements in Permit Sections 9.4 and 9.5 and meet the closure performance standard in Permit Section 9.2.

9.2 CLOSURE PERFORMANCE STANDARDS

The Permittees shall meet the following closure performance standards for permitted units identified in Permit Section 9.1.

9.2.1 Clean Closure

To achieve clean closure, the Permittees must:

(1) remove all hazardous waste residues and hazardous constituents; and

(2) ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

9.2.2 Inability to Achieve Clean Closure Performance Standards

If the Permittees are unable to achieve any one of the clean closure standards in Permit Section 9.2.1, they must:

(1) control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

(2) minimize the need for further maintenance; and

(3) control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground, groundwater, surface waters, or atmosphere

(*see* 40 CFR § 264.111).

The Permittees may remove any structure pursuant to Permit Section 9.4.3.2 instead of attaining the closure performance standards under this Permit Part (9) for that structure.

9.2.2.1 Indoor Units

The Permittees shall notify the Department in accordance with 40 CFR § 264.112 if closure performance standard at Permit Section 9.2.1(1) or (2) is not attainable for an indoor unit (*see* Permit Section 9.1.2). The notification shall include a demonstration that justifies the Permittees' inability to achieve the standard. The Permittees shall concurrently submit a permit modification request in accordance with 40 CFR §§ 264.112 and 270.42 that describes the measures that will be taken to ensure compliance with the closure performance standards at Permit Sections 9.2.2(1) through (3), and a post-closure plan, if necessary, to maintain the measures. The Permittees shall conduct any post-closure care in accordance with Permit Part 10 (*Post-Closure Care*).

The Permittees shall give notice by e-mail to persons on the e-mail notification list, in accordance with Permit Section 1.13, of the notice to the Department provided under this Permit Section (9.2.2.1).

9.2.2.2 Outdoor Units Co-located with Regulated Units

The Permittees may petition the Department for alternative closure requirements in accordance with 40 CFR § 264.110(c) if the closure performance standards at Permit Sections 9.2.1(1) and (2) are not attainable for an outdoor unit (including associated indoor structures) co-located with a regulated unit (*see* Permit Section 9.1.3(1)).

The Permittees shall give notice by e-mail to persons on the e-mail notification list, in accordance with Permit Section 1.13, of the petition to the Department provided under this Permit Section (9.2.2.2).

9.2.2.3 Other Outdoor Units

The Permittees shall notify the Department in accordance with 40 CFR § 264.112(c) if the closure performance standards at Permit Sections 9.2.1(1) and (2) are not attainable for an outdoor unit (including associated indoor structures) *not* co-located with a regulated unit (*see* Permit Section 9.1.3(2)). The notification shall include a demonstration that justifies the Permittees' inability to achieve the standard. The Permittees shall concurrently submit a permit modification request in accordance with 40 CFR §§ 264.112 and 270.42 that describes the measures that will be taken to ensure

compliance with the closure performance standards at Permit Sections 9.2.2(1) through (3), and a post-closure plan, if necessary, to maintain the measures. The Permittees shall conduct any post-closure care in accordance with Permit Part 10 (*Post-Closure Care*).

The Permittees shall give notice by e-mail to persons on the e-mail notification list, in accordance with Permit Section 1.13, of the notice to the Department under this Permit Section (9.2.2.3).

9.3 CLOSURE REQUIREMENTS FOR REGULATED UNITS

Closure of the regulated units must meet the corrective action requirements of the March 1, 2005 Compliance Order on Consent (Consent Order). The Consent Order is an enforceable document that sets forth alternative closure requirements in accordance with 40 CFR § 264.110(c). The Permittees shall propose remedies in the Corrective Measures Evaluation Report under the Consent Order that achieve compliance with the closure performance standards at 40 CFR § 264.111. Fulfilling the requirements of the approved Corrective Measures Implementation Plan under the Consent Order shall also satisfy the requirements of 40 CFR Part 264, Subpart G.

9.4 CLOSURE REQUIREMENTS FOR INDOOR AND OUTDOOR UNITS

This section specifies the closure requirements for indoor and outdoor (asphalt and concrete pad) permitted units.

9.4.1 Closure Schedule

The Permittees shall notify the Department in writing at least 45 days prior to the date on which they expect to begin closure of a permitted unit in accordance with 40 CFR § 264.112(d)(1), which is incorporated herein by reference. The beginning of closure is marked by initiating removal of waste from a permitted unit for the purpose of closure. In accordance with 40 CFR § 264.112(d)(2), incorporated herein by reference, the date when the Permittees begin closure shall be no later than 30 days after the date on which a permitted unit receives the known final volume of hazardous wastes, or if there is a reasonable possibility that the permitted unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes. In accordance with 40 CFR § 264.113(a), within 90 days after receiving the permitted unit's final volume of hazardous waste, the Permittees shall remove or treat, as applicable, in accordance with the approved closure plan, all hazardous waste from a permitted unit.

The Permittees shall give notice by e-mail to persons on the e-mail notification list, in accordance with Permit Section 1.13, of the notice to the Department provided under this Permit Section (9.4.1).

9.4.1.1 Time Allowed for Closure

The Permittees shall complete all closure activities in compliance with this Permit Part within 180 days after receiving the final volume of hazardous waste at a permitted unit unless an extension is approved by the Department (*see* 40 CFR §§ 264.113(a)(1) and (2) or 264.113(b)(1) and (2), which are incorporated herein by reference).

9.4.2 Removal of Hazardous Waste

Within 90 days after receiving the final volume of hazardous waste at a permitted unit, the Permittees shall treat or remove from the unit all hazardous waste in accordance with 40 CFR §§ 264.112 through 114, which are incorporated herein by reference.

9.4.3 Decontamination and Removal

The Permittees shall decontaminate, remove, or both, all structures and related equipment and materials (*e.g.*, asphalt pads) in accordance with this Permit Part and the requirements for closure plans in 40 CFR §§ 264.112(b)(4) and 264.114.

9.4.3.1 Decontamination of Surfaces, Structures, and Related Equipment

The Permittees shall decontaminate by pressure-washing or steam-cleaning the floors, walls (up to 11 feet from the floor, or another height approved by the Department), and ceilings (lower than 11 feet high, or another height approved by the Department), of all surfaces and structures at permitted indoor and outdoor units as well as all related equipment (*e.g.,* railings, stairs, secondary containment pallets, piping). If such methods are not practicable, the Permittees shall propose to the Department, for its approval, an alternative decontamination method in their closure plans.

To achieve the performance standards for volatile organic compounds (VOCs), the Permittees shall decontaminate all structures and related equipment at indoor and outdoor permitted units at least twice. The Permittees shall identify and provide rationale in the sampling and analysis plan for the permitted unit and the structures and related equipment that do not undergo this type of decontamination.

The Permittees shall identify in each permitted unit's closure plan what surfaces, structures, and related equipment from the permitted unit will be decontaminated and the methods by which they will be decontaminated.

The Permittees are not required to decontaminate the outdoor permitted unit asphalt pads.

9.4.3.2 Removal of Structures, Related Equipment, and Pads

The Permittees shall ensure that structures and related equipment at permitted indoor and outdoor units that cannot be decontaminated in accordance with Permit Section 9.4.3.1

are removed (or containerized) in accordance with 40 CFR § 264.114, which is incorporated herein by reference, and managed in compliance with Permit Section 9.4.5.

The Permittees shall identify in the closure plans for each permitted unit the structures and related equipment that will be removed from the units.

After the Permittees conduct the structural assessment (in accordance with Permit Section 9.4.6) of an outdoor permitted unit constructed of asphalt, the Permittees shall remove the asphalt pad in its entirety.

9.4.4 Decontamination Verification and Soil Sampling

The Permittees shall verify that each indoor permitted unit has been decontaminated, that soils beneath each outdoor and indoor (as applicable) permitted unit are free of contamination, and that each indoor structure associated with an outdoor permitted unit has been decontaminated. Except for VOCs, the Permittees shall verify decontamination of surfaces (*e.g.,* walls, equipment, benches, pipes, doors) and that environmental media are free of contamination through sampling and analysis.

The Permittees may collect wipe samples for radionuclide analysis for use as indicators of contaminant releases in units where radionuclides were stored. The Permittees shall not, however, use these as surrogates for validation of attainment of a closure performance standard at a permitted unit (*see* 40 CFR § 270.32(b)(2)).

9.4.4.1 Decontamination Verification and Soil Sampling Activities

Wipe, chip, and liquid sampling shall be used, as appropriate, to verify the absence of hazardous constituent after decontamination of surfaces, structures, and related equipment at indoor and outdoor permitted units. Samples shall be analyzed for metals, SVOCs, and polychlorinated biphenyls (PCBs). Decontamination shall be considered verified and the clean closure performance standards in Permit Section 9.2.1 achieved when samples have hazardous constituent concentrations that are less than the detection limits for the analytical methods in the approved unit-specific closure plan.

Soils underlying pads at outdoor and indoor (as applicable) permitted units shall be sampled for total metals, VOCs, SVOCs, PCBs, and explosive compounds, as applicable.

All sampling activities shall be conducted in accordance with the Department-approved closure plans.

9.4.5 Management and Disposal Procedures for Waste Generated During Closure

By removing any hazardous wastes or hazardous waste constituents during closure, the Permittees may become a generator of hazardous waste. The Permittees shall manage and dispose of any waste generated from closure of indoor and outdoor permitted units

closed in compliance with this Permit Part and all applicable state, federal, and local requirements for wastes generated during closure activities (*see* 40 CFR § 264.114). These wastes include, but are not limited to:

(1) demolition debris;
(2) asphalt and concrete pads;
(3) containerized waste; and
(4) decontamination waste.

All decontamination waters used on structures and related equipment shall be containerized, characterized, and managed in compliance with all applicable regulations.

9.4.6 Records Review and Structural Assessment

The Permittees shall conduct a records review (review) for, and a structural assessment (assessment) of, each permitted unit prior to closure. The findings of the review and the assessment may result in a change(s) to the sampling and analysis plan (SAP) for the permitted units. If the Permittees update a SAP, they shall submit a permit modification request to the Department to amend the closure plan in accordance with Permit Section 9.4.8 and include the updated SAP in the amended closure plan.

9.4.6.1 Records Review

The Permittees shall review the permitted unit's Facility Operating Record, including but not limited to, inspection and contingency plan implementation records. The Permittees shall as a result of the review, update the list of constituents (*see* Permit Section 9.4.7.1(3), *List of Hazardous Constituents*) in the SAP, as necessary, to accurately reflect at the time of closure the hazardous wastes managed at the unit. The Review shall occur within ten days of the completed removal or treatment of all waste from the permitted unit (*see* 40 CFR 270.32(b)).

The Permittees shall determine whether any spills or releases, defects, deterioration, damage, or hazards (*e.g.,* damage to the flooring or other building materials) affecting waste containment occurred or developed during the operational life of the unit during which hazardous waste was managed. If the records indicate any such incidents, the Permittees shall include the locations of the incidents, as well as applicable sampling methods and procedures, in the updated SAP for purposes of the spill release assessment (*see* 40 CFR § 270.32(b)(2)).

9.4.6.2 Structural Assessment

The structural assessment is an assessment of a unit's physical condition and shall occur within ten days of the completed removal or treatment of all waste from the permitted unit (*see* 40 CFR 270.32(b)). The Permittees shall notify the Department at least 30 days prior to the scheduled assessment so the Department may have the opportunity to participate in the assessment. The notification shall include the date on which the

Permittees expect to conduct the assessment. If the assessment reveals any evidence of a release (*e.g.,* stains) or damage (*e.g.,* cracks, gaps, chips) to the flooring or building materials, the Permittees must incorporate these locations for sampling, and include appropriate sampling procedures, in the updated SAP (*see* 40 CFR § 270.32(b)(2)).

9.4.7 Closure Plans

The Permittees shall submit to the Department for its approval a closure plan for each permitted unit in accordance with 40 CFR § 264.112, incorporated herein by reference, and include in it all of the requirements addressed in this Permit Part, as applicable. Closure plans for indoor and outdoor permitted units (*see* Permit Sections 9.1.2 and 9.1.3) are contained in Attachment G (*Closure Plans*).

The closure plans shall, at a minimum, describe how each permitted unit will be closed to meet the closure performance standards in Permit Section 9.2.

The closure plan shall include a SAP in accordance with Permit Section 9.4.7.1.

The schedule for each closure plan (*see* 40 CFR § 264.112(b)(6)) shall meet the requirements of Permit Section 9.4.1.

9.4.7.1 Sampling and Analysis Plan

The Permittees shall develop a SAP that:

(1) verifies decontamination of surfaces, structures, and all related equipment; and

(2) determines whether a release of hazardous constituents to any environmental media has occurred.

All SAPs shall, at a minimum, include:

(3) *List of Hazardous Constituents.* A list of hazardous constituents to be sampled and analyzed shall be submitted for each permitted unit. The list shall include all hazardous constituents as defined in Permit Section 1.8. The Permittees may propose to the Department in the SAP a list of constituents limited only to those contained within the hazardous wastes managed at the permitted unit, if the Permittees can demonstrate that the Facility Operating Record is complete with respect to the history of hazardous waste management operations at the permitted unit undergoing closure. The list of hazardous constituents shall be utilized to select the analytical methods capable of detecting those constituents.

(4) *Site Plan for Verification and Soil Samples.* The site plan shall include:

a. a figure depicting the boundaries of the permitted unit and verification and soil sampling locations. The locations shall include, but not be limited to, where applicable:

- discharge points (*e.g.*, storm water run-off locations);
- sumps and catch basins;
- secondary containment areas;
- conveyance systems (*e.g.*, pipe drains, drainage swales);
- locations of spills or other releases of hazardous waste or hazardous constituents during operation of the unit;
- loading and unloading areas;
- other potential release locations; and
- Permit required sampling grid location points (*see* Permit Sections 9.4.7.1.i and 9.4.7.1.ii(a) and (b)); and

b. rationale for the number and locations of samples.

(5) *Type of Samples.* The type of samples to be collected (*e.g.*, wipe, core, chip, soil) and the rationale for the selection of sample types must be identified.

(6) *Sampling Methods.* A description of the approved *EPA SW-846* sampling methods and procedures that will be used to collect each type of sample must be included.

(7) *Analytical Methods.* A description of the approved *EPA SW-846* laboratory analytical methods that will be used to measure hazardous constituent concentrations must be included.

(8) *Quality Assurance and Quality Control Procedures*. The SAP must include a description of the quality assurance and quality control (QA/QC) procedures that include, but are not limited to:

a. duplicates, trip blanks, equipment blanks;

b. a description of methods for decontamination of re-usable sampling equipment; and

c. a description of all sample preservation, handling, labeling, and chain-of-custody procedures.

9.4.7.1.i Decontamination Verification Sampling Grid for Indoor Units or Structures

The Permittees shall collect one verification sample as described at Section 9.4.4.1 every 250 square feet or less in loading and unloading zones and one verification sample every 900 square feet or less on floors, walls (up to 11 feet from the floor, or another height approved by the Department), and ceilings (lower than 11 feet high, or another height approved by the Department). If the permitted unit (*e.g.,* TA-54 Area G storage shed 8) or the structures related to the permitted unit (*e.g.,* modular unit 35 at TA-54 Area L) have walls with areas less than 900 square feet, the Permittees shall collect at least one verification sample from each wall, floor, and, if applicable, ceiling. If the Permittees

have proposed an alternative decontamination method pursuant to Permit Section 9.4.3.1, the Permittees shall also propose an alternative sampling method in their closure plan. The Permittees shall collect samples at all additional locations identified in Permit Section 9.4.7.1.ii.a where applicable.

9.4.7.1.ii Soil Sampling for Outdoor Storage Units

The Permittees shall collect soil samples at the outdoor storage units from the soils below the sub-grade, from the soils beneath the pad at the interface of fill and native soil or tuff, and from the following locations:

(1) One sample for every 250 square feet in loading and unloading zones;

(2) One sample for every 900 square feet under the pad;

(3) One sample at each discharge point (storm water run-off locations);

(4) One sample at the discharge point of any underground piping;

(5) One sample directly beneath all sumps and catch basins;

(6) One sample at all secondary containment areas;

(7) One sample at all joints and intersections of piping; and

(8) One sample every 30 feet beneath the axis of the lowest portions of any open conveyance drainage system in any permitted unit that has sloped flooring

(*see* 40 CFR § 270.32(b)).

9.4.8 Amendment of the Closure Plan

The Permittees shall submit a permit modification request (*see* 40 CFR § 264.112(c) and Part 270) to seek authorization of a change in the approved closure plan upon the occurrence of events listed in 40 CFR § 264.112(c)(2), which is incorporated herein by reference. The request must include a copy of the amended closure plan and all proposed modifications to the plan.

The Permittees shall amend a permitted unit's closure plan whenever:

(1) newly identified hazardous constituents are determined to have been managed at the unit; and

(2) new sampling locations are determined as a result of the records review and structural assessment (*see* Permit Section 9.4.6)

(*see* 40 CFR §§ 264.112(c)(2)(iii)).

9.4.9 Variance to Decontamination Verification Standards

The Permittees may seek approval of a variance from the decontamination verification wipe standards in Permit Section 9.4.4.1 for surfaces and related equipment at indoor and outdoor units by submitting to the Department a written request for a determination that attainment of the standards are impracticable because of the inherent properties of the materials subjected to wipe sampling. The request shall include, at a minimum, the following:

(1) a statement of the proposed variance;

(2) a discussion of decontamination activities performed in accordance with the SAP;

(3) a discussion of the properties of the equipment or surface pertinent to the requested variance;

(4) the analytical data demonstrating the effectiveness of decontamination, as well as the analytical data demonstrating the chemical or physical properties of the equipment or surface that inhibit attainment of the standards;

(5) a justification for why further decontamination beyond the requirements in the SAP would not be effective;

(6) all other supporting documentation and analyses; and

(7) any other information requested by the Department.

9.5 CLOSURE CERTIFICATION REPORT TO THE DEPARTMENT

At the completion of closure of any permitted unit, the Permittees shall submit, by registered mail, a closure report (Report) for Department review and approval. The Report shall document that the permitted unit has been closed in compliance with the specifications in this Permit Part and the approved closure plans. The Report shall summarize all activities conducted during closure including, but not limited to, the following:

(1) the results of all investigations;

(2) remediation waste management;

(3) decontamination;

(4) decontamination verification and soil sampling activities; and

(5) results of all chemical analyses and other characterization activities.

The Permittees shall submit the Report to the Department no later than 60 days after completion of closure of a permitted unit. The Department may require interim reports that document the progress of closure. The certification must be signed by the Permittees and by an independent professional engineer registered in the State of New Mexico (*see* 40 CFR § 264.115).

The report will document the permitted unit's closure and contain, at a minimum, the following information:

(6) a copy of the certification pursuant to 40 CFR § 264.115;

(7) any variance, and the reason for the variance, from the activities approved in this closure plan;

(8) documentation of the structural assessment and records review conducted under this Permit Part 9;

(9) a summary of all sampling results, showing:

a. sample identification;
b. sampling location;
c. data reported;
d. detection limit for each analyte;
e. a measure of analytical precision (*e.g.*, uncertainty, range, variance);
f. identification of analytical procedure;
g. identification of analytical laboratory;

(10) a QA/QC statement on analytical data validation and decontamination verification;

(11) the location of the file of supporting documentation, including:

a. field logbooks;

b. laboratory sample analysis reports;

c. QA/QC documentation;

d. chain-of-custody forms;

(12) storage or disposal location of hazardous waste resulting from closure activities;

(13) a copy of the Human Health and Ecological Risk Assessment Reports, if a site-specific risk assessment was conducted pursuant to Permit Sections 11.10.4 and 11.10.5 for the permitted unit; and

(14) a certification statement of the accuracy of the Closure Report.

If the Permittees leave waste in place, they shall submit to the Department a survey plat as required by 40 CFR § 264.116 in conjunction with the closure certification report.

PART 10: POST-CLOSURE CARE

10.1 POST-CLOSURE CARE

The Permittees shall conduct all post-closure care activities in accordance with the provisions in 40 CFR §§ 264.117 through 264.120, which are incorporated herein by reference.

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

(1) monitoring and reporting in accordance with the requirements of 40 CFR Part 264, Subparts F, N, and X; and

(2) maintenance and monitoring of waste containment systems in accordance with the requirements of 40 CFR Part 264, Subparts F, N, and X.

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

(3) shorten the post-closure care period applicable to the permitted unit if all disposal units have been closed, if it is found that the reduced period is sufficient to protect human health and the environment; or

(4) extend the post-closure care period applicable to the permitted unit if it is found that the extended period is necessary to protect human health and the environment.

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

The Permittees shall conduct all post-closure care activities in accordance with the provisions of the Department-approved post-closure care plans at Attachment H (*Post-Closure Plans*) (*see* 40 CFR § 264.117(d)).

The Permittees shall submit a request to modify this Permit in accordance with 40 CFR § 270.42 to conduct post-closure care. The request shall be submitted to the Department no later than 90 days from the date that the Permittees or the Department determine that the permitted unit will be closed with waste in place. The Permittees shall submit with the permit modification request a copy of the post-closure care plan (*see* 40 CFR § 270.32(b)(2)).

10.1.1 Post-Closure Care Plan

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

(1) A description of the planned monitoring activities and frequencies at which they will be performed to comply with 40 CFR Part 264, Subparts F, N, and X;

(2) A description of the planned maintenance activities, and frequencies at which they will be performed to ensure:

   a. the integrity of the cap and final cover or other containment systems in accordance with the requirements of 40 CFR Part 264, Subparts F, N, and X;
   b. the function of the monitoring equipment in accordance with the requirements of 40 CFR Part 264, Subparts F, N, and X;

(3) The name, address and phone number of the person(s) or office to contact regarding the unit during the post-closure care period;

(4) Sampling and analysis of waste, contaminated media, or both, during the post-closure period:

(5) Security requirements during the post-closure period;

(6) Inspection requirements, including schedules:

(7) The alternative requirements, if any, under 40 CFR § 264.110(c), that apply to the closed unit, or a reference to the enforceable document containing those requirements: and

(8) Post-closure care plans shall define the beginning date and duration of post-closure care in accordance with this Permit Section 10.1.

(*see* 40 CFR §§ 264.118(a) and (b))

After final closure has been certified, the person or office specified in Permit Section 10.1.1.3 of the Permit Part shall keep the approved post-closure care plan during the remainder of the post-closure period (*see* 40 CFR § 264.118(c)).

10.1.2 Amendment of the Post-Closure Care Plan

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

The Permittees may submit a request to the Department to modify the permit to amend the post-closure care plan at any time during the life of the unit or the post-closure care period (*see* 40 CFR § 264.118(d)(1)).

The Permittees shall submit a request for a permit modification to authorize a change in the approved post-closure care plan whenever:

(1) changes in the operating plans or facility design affect the approved post-closure care plan;

(2) there is a change in the expected year of final closure;

(3) events which occur during the active life of the facility affect the approved post-closure care plan; or

(4) the Permittees request the Department to apply alternative requirements to a regulated unit under 40 CFR § 264.110(c).

(*see* 40 CFR § 264.118(d)(2)(i-iv))

10.2 NOTICES AND CERTIFICATIONS

10.2.1 Notification Requirements

The Permittees shall maintain in the Facility Operating Record copies of all documentation submitted to the local zoning authority or the authority with jurisdiction over local land use. The Permittees shall submit to the Department a record of the type, location, and quantity of hazardous wastes and hazardous constituents remaining within each permitted unit. For hazardous wastes disposed of before January 12, 1981, the Permittees shall identify the type, location, and quantity of the hazardous wastes in accordance with all records retained (*see* 40 CFR §§ 264.119(a) and 270.32(b)(2)).

10.2.2 Record Requirements

The Permittees shall maintain documentation of certification of closure of all hazardous waste management units in accordance with 40 CFR § 264.119(b), which is incorporated herein by reference (*see* 40 CFR § 270.32(b)(2)).

The Permittees shall record a notation on the deed to the Facility property, or on some other instrument that is normally examined during the title search, that will in perpetuity notify any potential purchaser of the property of the following:

(1) the land has been used to manage hazardous wastes;

(2) its use is restricted under 40 CFR Part 264, Subpart G; and

(3) the survey plat and record of the type, location, and quantity of hazardous wastes managed at the permitted unit at the Facility have been filed with the Department.

(*see* 40 CFR §§ 264.119(b)(1) and 270.32(b)(2))

10.2.3 Completion of Post-Closure Requirements

No later than 60 days after completion of the established post-closure care period for each permitted unit required to conduct post-closure care, the Permittees shall submit to the Department, by registered mail, a certification that the post-closure care for the hazardous waste management unit was performed in accordance with the requirements of the approved Post-Closure Care Plan. The certification must be signed by the Permittees and an independent, New Mexico registered professional engineer. Documentation supporting the independent, registered professional engineer's certification must be furnished to the Department in conjunction with the certification (*see* 40 CFR §§ 264.120 and 270.32(b)(2)).

PART 11: CORRECTIVE ACTION

11.1 CORRECTIVE ACTION REQUIREMENTS UNDER THE CONSENT ORDER

The Department and the Permittees have agreed to a Compliance Order on Consent (Consent Order) dated March 1, 2005, which requires the Permittees to conduct corrective action at all solid waste management units (SWMUs) and Areas of Concern (AOCs), at the Facility to fulfill the requirements of 40 CFR § 264.101. The Consent Order is an enforceable document pursuant to 40 CFR §§ 264.90(f), 264.110(c), and as defined in 40 CFR § 270.1(c)(7). Nothing in this Permit Part shall be construed to constitute a change to the Consent Order.

11.2 CORRECTIVE ACTION REQUIREMENTS UNDER THE PERMIT

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

(1) new releases and newly discovered releases of hazardous waste or hazardous constituents from hazardous waste management units at the Facility;

(2) the closure and post-closure care requirements of 40 CFR Part 264, Subpart G, as they apply to hazardous waste management units at the Facility;

(3) implementation of the controls, including long-term monitoring, for any SWMUs or AOCs on Attachment K (*Listing of SWMUs and AOCs*), Table K-2 (*Corrective Action Complete with Controls*); and

(4) any corrective action conducted under this Part (11) to address releases of hazardous waste or hazardous constituents that occur or are discovered after the date on which the Consent Order terminates.

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

In circumstances where Corrective Action is required under the Permit, the Permittees shall conduct corrective action pursuant to this Permit in accordance with §§ 74-4-4(A)(5)(h) and (i) and 74-4-4.2(B) of the HWA. The Permittees shall coordinate all corrective action conducted under this Permit with corrective action conducted under the Consent Order. Corrective action for releases from hazardous waste management units that commingle with releases originating from other sources shall be conducted under the Consent Order. Any SWMU or AOC for which corrective action is required that is not subject to corrective action under the Consent Order shall be subject to corrective action under this Permit Part and 40 CFR §§ 264.100 and 264.101, which are incorporated herein by reference.

11.2.1 Identification of SWMUs and AOCs Requiring Corrective Action

Attachment K, Table K-1 (*SWMUs and AOCs Requiring Corrective Action*) lists SWMUs and AOCs at the Facility for which corrective action is required under the Consent Order. If any additional SWMUs or AOCs are discovered while the Consent Order is in effect, corrective action for such units shall be conducted under the Consent Order. Table K-1 will be modified to include any newly identified SWMUs and AOCs for tracking purposes.

Attachment K, Table K-2 lists SWMUs and AOCs at the Facility for which corrective action is complete with controls.

Attachment K, Table K-3 (*Corrective Action Complete without Controls*) lists SWMUs at the Facility for which corrective action is complete without controls and that do not require monitoring.

Attachment J, Table J-1 (*Active Portion of the Facility*) lists hazardous waste management units at the Facility and their status (*e.g.*, interim status, permitted operating, closed).

11.3 GENERAL CONDITIONS

11.3.1 Groundwater Monitoring

The Permittees shall conduct groundwater monitoring for all regulated units, as defined in 40 CFR § 264.90(a)(2), at the Facility subject to the groundwater monitoring requirements of 40 CFR Part 264, Subpart F and subject to corrective action under Permit Section 11.2.

The Permittees shall coordinate such monitoring with the monitoring conducted under the Interim Facility Wide Groundwater Monitoring Plans, and any Department-approved Long-term Groundwater Monitoring Plans for the Facility, as approved under the Consent Order. So long as the Consent Order is in effect, fulfilling the groundwater monitoring requirements of the Consent Order shall fulfill the groundwater monitoring requirements of 40 CFR §§ 264.90 through 100.

The Permittees shall notify the Department, in writing, of any new detections of hazardous waste and hazardous waste constituents in groundwater at any location that was received during the previous month as described in Permit Section 11.3.1.1. For purposes of this Permit Section (11.3), “hazardous constituent” includes explosive compounds, any toxic pollutant identified at 20.6.2.7.WW NMAC and any contaminant listed in 20.6.2.3103 NMAC. Such detections of hazardous waste or hazardous constituents shall also be highlighted in the periodic groundwater monitoring report submitted to the Department, in accordance with Permit Section 11.3.2, summarizing the groundwater monitoring results for the appropriate monitoring period.

11.3.1.1 Notification of Detections

By the fifteenth day of each month, the Permittees shall review the analytical data from all groundwater monitoring conducted under this Permit that was received during the previous month, and shall record the date of such review in the Operating Record. If the fifteenth day of a month is a non-business day, then the review shall be conducted by the next business day.

The Permittees shall notify the Department orally within one business day after review of the analytical data if such data show detection of a contaminant in a well screen interval or spring at a concentration that exceeds the groundwater cleanup levels established in Permit Section 11.4.1 if that contaminant has not previously exceeded such water quality standard or cleanup level in such well screen interval or spring.

The Permittees shall notify the Department in writing within fifteen days after review of the analytical data if the data show any of the following:

(1) Detection of a hazardous constituent that is an organic compound in a spring or screened interval of a well if that hazardous constituent has not previously been detected in the spring or screened interval;

(2) Detection of a hazardous constituent that is a metal or other inorganic compound at a concentration above the background level in a spring or screened interval of a well if that hazardous constituent has not previously exceeded the background level in the spring or screened interval;

(3) Detection of a hazardous constituent in a spring or screened interval of a well at a concentration that exceeds one-half the cleanup level established in Permit Section 11.4.1, if that hazardous constituent has not previously exceeded one-half such standard or screening level in the spring or screened interval;

(4) Detection of perchlorate in a spring or screened interval of a well at a concentration of 2 µg/L or greater if perchlorate at such concentration has not previously been detected in the spring or screened interval;

(5) Detection of a hazardous constituent that is a metal or other inorganic compound in a spring or screened interval of a well at a concentration that exceeds two times the background level for the third consecutive sampling of the spring or screened interval; and

(6) Detection of a hazardous constituent in a spring or screened interval of a well at a concentration that exceeds one-half the cleanup level established in Permit Section 11.4.1 and that has increased for the third consecutive sampling of that spring or screened interval.

The written notification shall be submitted to the Department in a letter report in table format that includes, but is not limited to, the date or dates of the sampling event, an identification of the well or spring, the location of the well or spring, the depth of the screened interval of the well or zone sampled, a list of the analytical data that triggered

the reporting requirement, any known issues with sample quality, and the specific category for which the data is reported under this Permit Section (11.3.1.1).

Previous data to be evaluated under this Permit Section (11.3.1.1) to determine whether specified levels have been exceeded, or to determine trends in data for three consecutive samples shall include only data acquired after September 30, 2009. For the purpose of the notice requirements of this Permit Section (11.3.1.1), the background level of a contaminant shall be the most recent Department-approved 95 percent upper tolerance limit for the background for that contaminant set forth in the *Groundwater Background Investigation Report* approved by the Department, including any approved revisions, as it may be revised or replaced with another document.

The Permittees shall give notice by e-mail to persons on the e-mail notification list of groundwater analytical data reported under this Permit Section (11.3.1.1) in accordance with Permit Section 1.13.

11.3.1.2 Source Identification and Corrective Action

The Permittees shall provide written notification to the Department if a detected concentration exceeds the cleanup levels established in Permit Section 11.4.1, within seven business days of discovery of the exceedance in accordance with 40 CFR § 264.99(h)(1). The Permittees shall include in the notification whether or not they intend to attempt to make a determination that the source of the detected hazardous constituent is not the regulated unit, in accordance with 40 CFR § 264.99(i)(1). The Permittees shall submit a report to the Department within 90 days of such determination that demonstrates that the source of the detected hazardous constituent is not the regulated unit, in accordance with 40 CFR § 264.99(i)(2).

If the source of the detection is the regulated unit, the Permittees shall determine the nature and extent of the release in accordance with Permit Section 11.8.5, and take all steps necessary to contain and otherwise mitigate the release. The Permittees shall conduct a corrective measures evaluation (CME) in accordance with the procedures included in Permit Section 11.8.6 (*Corrective Measures Evaluation*), if the Department determines that such evaluation is necessary in order to select a remedy to achieve the cleanup levels included in Permit Section 11.4.1.

11.3.2 Groundwater Monitoring Reporting

The Permittees shall submit to the Department periodic monitoring reports in accordance with the schedule in the Interim Facility Wide Groundwater Monitoring Plan (IFGMP) or the Department-approved Long-term Groundwater Monitoring Plans. The reports shall be prepared in accordance with Permit Section 11.12. The Permittees shall submit to the Department periodic groundwater monitoring reports for all groundwater monitoring data generated pursuant to this Permit. The Permittees shall propose a schedule for such reporting to the Department for approval. Such reporting shall be coordinated with, and may be combined with, the reporting conducted under § IV.A.6 of the Consent Order.

11.3.3 Corrective Action Beyond the Facility Boundary

The Permittees shall notify the Department, orally and in writing in accordance with Permit Section 1.9.12, upon discovering that a release of hazardous waste or hazardous constituents has migrated beyond the Facility boundary or has the potential to migrate beyond the Facility boundary.

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

11.3.4 Off-Site Access

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

11.3.5 Newly Discovered Releases

The Permittees shall notify the Department, orally and in writing in accordance with Permit Section 1.9.12, upon discovery of any previously unknown release of hazardous waste or hazardous constituents into soil, sediment, surface water, or groundwater. The Department may determine that further investigation of the release is needed. The Department may also determine that corrective action is needed to address the release. If the Department makes such a determination, it will notify the Permittees in writing.

11.3.6 Field Activities

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

11.3.7 Health and Safety Plan

The Permittees shall prepare Health and Safety Plans for all field activities. The Health and Safety Plans shall be prepared in accordance with all applicable provisions of this

Permit and all local, State and federal regulations and be developed as stand-alone documents.

11.3.8 Recordkeeping

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

11.4 CLEANUP LEVELS

The Department and the New Mexico Water Quality Control Commission (WQCC) have separately specified certain cleanup goals and methods of calculating cleanup levels. The Department has also specified certain reporting requirements for sites where corrective action is required in response to releases to the environment. In general, the Department has selected a human health target risk level of 10^{-5} for carcinogenic substances and a Hazard Index (HI) of 1.0 for non-carcinogenic substances as cleanup goals for establishing site-specific cleanup levels for one or more contaminants for which toxicological data are published. The Permittees shall follow the cleanup and screening levels described in this Permit Part in implementing the corrective action requirements of this Permit. In addition, cleanup levels for the protection of the environment shall address ecological risk consistent with the Department's guidance for assessing ecological risk as specified in Permit Section 11.5.

11.4.1 Groundwater Cleanup Levels

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

The most recent version of NMED's Tap Water Screening Levels listed in Table A-1 of *Technical Background Document for Development of Soil Screening Levels* (as updated) shall be used to establish the cleanup level if either a WQCC standard or an MCL has not been established for a specific substance. In the absence of an NMED tap water screening level then the EPA *Regional Screening Levels for Chemical Contaminants at Superfund Sites* (RSLs) for tap water shall be used. If no WQCC groundwater standard or MCL has been established for a contaminant for which toxicological information is published, the Permittees shall use a target excess cancer risk level of 10^{-5} for

carcinogenic substances and a HI of 1.0 for non-carcinogenic substances as the basis for proposing a cleanup level for the contaminant. If the background concentration of an inorganic constituent, as established in accordance with Permit Section 11.10.6, exceeds the standard then the cleanup level is the background concentration for that specific substance. Any cleanup level based on a risk assessment must be submitted to the Department for its review and approval.

The Permittees shall give notice by e-mail to persons on the e-mail notification list in accordance with Permit Section 1.13 of a submittal to the Department under this Permit Section (11.4.1).

11.4.1.1 Groundwater Cleanup Level for Perchlorate

If, during the term of this Permit, the WQCC adopts a groundwater quality standard for perchlorate, or EPA or the EIB adopts an MCL for perchlorate, such standard or MCL shall be the cleanup level in accordance with Permit Section 11.4.1. If perchlorate is detected, the Permittees shall evaluate the nature and extent of the perchlorate contamination. In the absence of a groundwater quality standard or MCL, if perchlorate is detected at concentrations at or greater than 4 µg/L, then the cleanup level shall be established using a HI of 1.0 in accordance with Permit Section 11.4.1 above.

11.4.2 Soil and Sediment

The cleanup levels for soil and sediments shall be the cleanup levels for soil set forth in this Permit Section (11.4.2). Should the Permittees be unable to achieve the Soil Cleanup Levels established under Permit Section 11.4.2.1, they shall conduct risk assessments in accordance with Permit Sections 11.10.4 and 11.10.5. Any cleanup level based on a risk assessment must be submitted to the Department for its review and approval.

11.4.2.1 Soil Cleanup Levels

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

designated "c" (carcinogen effects). The cumulative risk shall not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target HI of 1.0 at sites where multiple contaminants are present.

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

11.4.2.2 Soil Cleanup Levels for Polychlorinated Biphenyls

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

11.4.3 Surface Water Cleanup Levels

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

11.5 ECOLOGICAL RISK EVALUATION

Screening for ecological risk shall be conducted using the LANL Ecological Screening Levels (ESLs), which are included in LANL's *Screening Level Ecological Risk Assessment Methods,* (as updated and approved by the Department). In the absence of ESLs, the Permittees may use U.S. EPA's ECO-SSLs with the Department approval. If the LANL's ESL database does not contain a screening value for the receptor or contaminant, the Permittees shall derive a screening level using the methodology in the Department's *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment* (as updated) or in LANL's *Screening Level Ecological Risk Assessment Methods*. Ecological risk at each site shall be evaluated in a manner consistent with the Department's *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment* (as updated) *and, if appropriate, Assessing Ecological Risks Posed by Radionuclides: Screening-Level Radioecological Risk Assessment* (as updated).

11.6 VARIANCE FROM CLEAN-UP LEVELS

The Permittees may seek a variance from a particular cleanup level in accordance with this Permit Section (11.6).

11.6.1 Water Quality Standards

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

11.6.2 Other Cleanup Levels

For all other cleanup levels, the Permittees may seek approval of a variance from a cleanup level by submitting to the Department a written request for a determination that attainment of the cleanup level is impracticable. The request must include a demonstration that attaining the cleanup level is technically or physically impossible or otherwise impractical using potential corrective action remedies. The request shall include, at a minimum, the following:

(1) a discussion of the effectiveness of potential corrective action remedies;

(2) a discussion of whether the proposed variance would result in a present or future hazard to public health or the environment;

(3) proposed alternate cleanup levels that are practical, based on potential corrective action remedies and a site-specific risk assessment;

(4) all supporting documentation and analyses; and

(5) any other information requested by the Department.

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

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a request under this Permit Section (11.6.2), in accordance with Permit Section 1.13.

11.7 PERMIT MODIFICATION FOR CORRECTIVE ACTION COMPLETE

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

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

Department will initiate a permit modification to remove the SWMU or AOC from the corrective action complete lists.

11.7.1 Long-term Monitoring and Maintenance of SWMUs and AOCs

The Permittees shall submit a Long-term Monitoring and Maintenance Plan as part of the permit modification request, as described in Permit Section 11.7, to change the status of a SWMU or AOC from corrective action required (*i.e.,* listed in Attachment K, Table K-1) to corrective action complete with controls (*i.e.,* listed in Attachment K, Table K-2). The Plan shall describe the combination of ongoing measures required to ensure protection of human health and the environment, such as maintenance of physical or institutional controls, monitoring of environmental media, or other measures. Upon approval, such plans shall be included in Attachment O (*Long-term Monitoring and Maintenance Plans*).

11.8 CORRECTIVE ACTION PROCEDURES

The Permittees shall conduct corrective action at sites where releases of hazardous waste or hazardous constituents have occurred. If corrective action is necessary to protect human health or the environment, the Department will direct the Permittees to complete one or more of the requirements included in this Permit Section (11.8). The conditions listed below apply to all corrective action conducted under this Permit unless otherwise specified in Permit Part 9 (*Closure*).

11.8.1 Release Assessment

11.8.1.1 Release Assessment Report

If required by the Department, the Permittees shall submit a Release Assessment Report for newly discovered releases from any Permitted unit. Any revisions to the Release Assessment Report required by the Department shall be submitted within 30 calendar days of receipt of the Department's comments on the Release Assessment Report.

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

(1) location of unit(s) on a topographic map of appropriate scale, as required under 40 CFR § 270.14(b)(19);

(2) designation of type and function of unit(s);

(3) general dimensions, capacities and structural description of unit(s) (supply any available plans/drawings);

(4) dates that the unit(s) was operated;

(5) all available site history information;

(6) specifications of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous waste or hazardous constituents in the wastes; and

(7) all available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include ground water data, soil analyses, air, and surface water data).

11.8.1.2 Requirement to Proceed

The Department will review the Release Assessment Report to determine whether any further investigative action is required. The Department will notify the Permittees of the need for confirmatory sampling, if necessary, or notify the Permittees that an Investigation Work Plan is required in accordance with the requirements in Permit Section 11.8.5.1. The Department will notify the Permittees of any corrective action complete decision.

11.8.2 Interim Measures

11.8.2.1 Department-Initiated Interim Measures

Upon written notification by the Department, the Permittees shall prepare and submit an Interim Measures (IM) Work Plan where the Department determines that interim measures are necessary to minimize or prevent the migration of hazardous waste or hazardous constituents and limit actual or potential human and environmental exposure to hazardous waste or hazardous constituents while long term corrective action remedies are evaluated and implemented. The Permittees shall submit its IM Work Plan to the Department within 30 calendar days of the Department's notification, unless another time period is specified by the Department. Such interim measures may be conducted concurrently with any required corrective action. The Permittees shall prepare and submit IM Work Plans in accordance with the work plan format included in Permit Section 11.12 (*Reporting Requirements*).

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a submittal made under this Permit Section (11.8.2.1), in accordance with Permit Section 1.13.

11.8.2.2 Permittees-Initiated Interim Measures

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

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a submittal made under this Permit Section (11.8.2.2), in accordance with Permit Section 1.13.

11.8.3 Emergency Interim Measures

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

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a submittal made under this Permit Section (11.8.3), in accordance with Permit Section 1.13.

11.8.4 IM Work Plan Requirements

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

11.8.4.1 Interim Measures Implementation

11.8.4.1.i Implementation and Completion of Approved IM Work Plan

The Permittees shall implement interim measures required under Permit Section 11.8.2 in accordance with the Department-approved IM Work Plan. The Permittees shall complete interim measures within 180 calendar days of the start of implementation of the interim measure. The Permittees may submit a written request to the Department to extend the period for implementation of the interim measure. The request must provide justification for the extension and a proposed schedule for completion of the interim measure. The Department will notify the Permittees, in writing, of the approval or disapproval of the request within 30 calendar days of receipt of the IM implementation extension request.

11.8.4.1.ii Notification of Changes

The Permittees shall give notice to the Department as soon as possible of any planned changes, reductions or additions to the IM Work Plan required by the Department under Permit Section 11.8.2.1 or initiated by the Permittees in accordance with Permit Section 11.8.2.2.

11.8.4.1.iii Interim Measures Reports

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

(1) a description of interim measures implemented;

(2) summaries of results;

(3) summaries of all problems encountered during IM investigations;

(4) summaries of accomplishments and/or effectiveness of interim measures; and,

(5) copies of all relevant laboratory/monitoring data, maps, logs, and other related information.

11.8.5 Corrective Action Investigations

11.8.5.1 Investigation Work Plan

11.8.5.1.i Investigation Work Plan Submittal

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

11.8.5.1.ii Investigation Work Plan Requirements

Investigation Work Plans shall meet the requirements specified in Permit Section 11.12 (*Reporting Requirements*). Investigation Work Plans shall include schedules of implementation and completion of specific actions necessary to determine the nature and extent of contamination and the potential pathways of contaminant releases to the air, soil, surface water, and ground water. The Permittees shall provide sufficient justification and associated documentation that a release is not probable or has already been characterized if a unit or a media/pathway associated with a unit (ground water, surface water, soil, subsurface gas, or air) is not included in an Investigation Work Plan. Such deletions of a unit, medium, or pathway from the work plan(s) are subject to the approval of the Department. The Permittees shall provide sufficient written justification for any omissions or deviations from the minimum requirements specified in Permit Section 11.12 (*Reporting Requirements*). Such omissions or deviations are subject to the

approval of the Department. In addition, Investigation Work Plans shall include all investigations necessary to ensure compliance with 40 CFR § 264.101.

11.8.5.1.iii Historical Documents

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

11.8.5.1.iv Investigation Work Plan Implementation

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

11.8.5.2 Corrective Action Investigation Reports

The Permittees shall prepare and submit to the Department Investigation Reports for the investigations conducted in accordance with Investigation Work Plans submitted under Permit Section 11.8.5.1. The Permittees shall submit the Investigation Reports to the Department for review and approval in accordance with the schedules included in its approved Investigation Work Plans.

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

11.8.5.2.i Cleanup Levels

The Investigation Reports shall identify the applicable cleanup levels in accordance with Permit Sections 11.4 through 11.6 for each hazardous waste or hazardous constituent found at each unit where corrective action is required. The Permittees shall propose in the Investigation Report or in a subsequent Risk Assessment or Corrective Measures Evaluation appropriate cleanup levels for those hazardous wastes or hazardous constituents without established cleanup levels based upon human and ecological risk.

11.8.5.2.ii Requirement to Proceed

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

11.8.5.3 Risk Assessment

The Permittees shall attain the cleanup goals outlined in Permit Sections 11.4 through 11.6. If the Department determines that the cleanup levels included in Permit Sections 11.4 and 11.5 cannot be achieved at a site, the Department will require performance of risk analyses to establish alternative cleanup levels. Such risk analyses shall be prepared in the format included in the Permit Section 11.12 (*Reporting Requirements*). The Permittees shall submit to the Department for approval a Risk Assessment Report in accordance with this Permit Section (11.8.5.3) according to the schedule set forth by the Department for sites where risk analyses are conducted.

11.8.6 Corrective Measures Evaluation

11.8.6.1 General

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

11.8.6.2 Corrective Measures Evaluation Report

Following written notification from the Department that a corrective measures evaluation is required, the Permittees shall submit to the Department for approval a Corrective Measures Evaluation Report. The Permittees shall follow the Corrective Measures Evaluation Report format outlined in Permit Section 11.12 (*Reporting Requirements*). The corrective measures evaluation shall evaluate potential remedial alternatives and shall recommend a preferred remedy that will be protective of human health and the environment and that will attain the appropriate cleanup goals. The Corrective Measures Evaluation Report shall, at a minimum, comply with Permit Section 11.12 (*Reporting Requirements*) and include the following:

(1) a description of the location, status, and current use of the site;

(2) a description of the history of site operations and the history of releases of contaminants;

(3) a description of site surface conditions;

(4) a description of site subsurface conditions;

(5) a description of on- and off-site contamination in all affected media;

(6) an identification and description of all sources of contaminants;

(7) an identification and description of contaminant migration pathways;

(8) an identification and description of potential receptors;

(9) a description of cleanup standards or other applicable regulatory criteria;

(10) an identification and description of a range of remedy alternatives;

(11) remedial alternative pilot or bench scale testing results;

(12) a detailed evaluation and rating of each of the remedy alternatives, applying the criteria set forth in Permit Section 11.8.6.4 including costs for long-term monitoring and maintenance (*Reporting Requirements*);

(13) an identification of a proposed preferred remedy or remedies;

(14) design criteria of the selected remedy or remedies; and

(15) a proposed schedule for implementation of the preferred remedy.

11.8.6.3 Cleanup Standards

Following written notification from the Department that a corrective measures evaluation is required, the Permittees shall submit to the Department for approval a Corrective Measures Evaluation Report. The Permittees shall follow the Corrective Measures Evaluation Report format outlined in Permit Section 11.12 (*Reporting Requirements*). The corrective measures evaluation shall evaluate each of the remedy alternatives. The Permittees shall select corrective measures that are capable of achieving the clean-up standards and goals outlined in Permit Sections 11.4 through 11.6 (*Clean-up Levels*) including, as applicable, approved alternative clean-up goals established by a risk assessment.

11.8.6.4 Remedy Evaluation Criteria

11.8.6.4.i Threshold Criteria

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

(1) be protective of human health and the environment;

(2) attain media cleanup standards;

(3) control the source or sources of releases so as to reduce or eliminate, to the extent practicable, further releases of contaminants that may pose a threat to human health and the environment; and

(4) comply with applicable standards for management of wastes.

11.8.6.4.ii Remedial Alternative Evaluation Criteria

The Permittees shall evaluate each of the remedy alternatives for the factors described in this Permit Section (11.8.6.4). These factors shall be balanced in proposing a preferred alternative.

11.8.6.4.iii Long-term Reliability and Effectiveness

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

11.8.6.4.iv Reduction of Toxicity, Mobility, or Volume

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

11.8.6.4.v Short-Term Effectiveness

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

11.8.6.4.vi Implementability

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

11.8.6.4.vii Cost

The remedy shall be evaluated for its cost. This factor includes a consideration of both capital costs, and operation and maintenance costs. Capital costs shall include, without limitation, construction and installation costs; equipment costs; land development costs; and indirect costs including engineering costs, legal fees, permitting fees, startup and shakedown costs, and contingency allowances. Operation and maintenance costs shall include, without limitation, operating labor and materials costs; maintenance labor and materials costs; replacement costs; utilities; monitoring and reporting costs; administrative costs; indirect costs; and contingency allowances for the entire anticipated post-closure care or long term monitoring period. All costs shall be calculated based on their net present value. Permittees shall give preference to a remedy that is less costly, but does not sacrifice protection of health and the environment.

11.8.6.5 Approval of Corrective Measures Evaluation Report

The Department will review and approve the Corrective Measures Evaluation Report in accordance with Permit Section 11.9. If the Department disapproves the Corrective Measures Evaluation Report, the Department will notify the Permittees in writing of the Corrective Measures Evaluation Report's deficiencies and specify a due date for submission of a revised Corrective Measures Evaluation Report. Upon receipt of such notification of disapproval, the Permittees shall submit to the Department, within the specified time, a revised Corrective Measures Evaluation Report that corrects the deficiencies. If the Department approves the Corrective Measures Evaluation Report, the Department will notify the Permittees in writing.

11.8.6.6 Relationship to Corrective Action Requirements

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

11.8.6.7 Statement of Basis

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

selecting a remedy, the Department will follow the public participation requirements applicable to remedy selection under 40 CFR §§ 270.41 through 270.42 and 20.4.1.901 NMAC.

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

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

11.8.7 Corrective Measures Implementation

11.8.7.1 General

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

11.8.7.2 Corrective Measures Implementation Plan

Within 90 days after the Department's selection of a final remedy, or as otherwise specified by the schedule contained in the approved Corrective Measure Evaluation Report or as specified by a schedule required by the Department in the written approval notification, the Permittees shall submit to the Department for approval a Corrective Measures Implementation Plan outlining the design, construction, operation, maintenance, and performance monitoring for the selected remedy, and a schedule for its implementation. The implementation plan shall be submitted to the Department for review in accordance with the procedures in Permit Section 11.9. The Corrective Measures Implementation Plan shall, at a minimum, include the following elements:

(1) a description of the selected final remedy;

(2) a description of the cleanup goals and remediation system objectives;

(3) an identification and description of the qualifications of all persons, consultants, and contractors that will be implementing the remedy;

(4) detailed engineering design drawings and systems specifications for all elements of the remedy;

(5) a construction work plan;

(6) an operation and maintenance plan;

(7) the results of any remedy pilot tests;

(8) a plan for monitoring the performance of the remedy, including sampling and laboratory analysis of all affected media;

(9) a waste management plan;

(10) a proposed schedule for submission to the Department of periodic progress reports; and

(11) a proposed schedule for implementation of the remedy.

11.8.7.3 Health and Safety Plan

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

11.8.7.4 Progress Reports

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

(1) a description of the remedy work completed during the reporting period;

(2) a summary of problems, potential problems, or delays encountered during the reporting period;

(3) a description of actions taken to eliminate or mitigate the problems, potential problems, or delays;

(4) a discussion of the remedy work projected for the next reporting period, including all sampling events;

(5) copies of the results of all monitoring, including sampling and analysis, and other data generated during the reporting period; and

(6) copies of all waste disposal records generated during the reporting period.

11.8.8 Remedy Completion

11.8.8.1 Remedy Completion Report

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

(1) a summary of the work completed;

(2) a statement, signed by a registered professional engineer, that the remedy has been completed in accordance with the Department approved work plan for the remedy;

(3) as-built drawings and specifications signed and stamped by a registered professional engineer;

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

(5) copies of all waste disposal records, if not already submitted in a progress report; and

(6) a certification, signed by a responsible official of DOE/LANS (owner/operator), stating: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

11.8.9 Accelerated Clean-up Process

If the Permittees identify a corrective action or measure that, if implemented voluntarily, will reduce risks to human health and the environment to levels acceptable to the Department, will reduce cost and/or will achieve cleanup of a SWMU, AOC or other contaminated location, ahead of schedule, the Permittees may implement the corrective measure as provided in this Permit Section (11.8.9), in lieu of the process established in Permit Section 11.8. The accelerated cleanup process shall be used at sites to implement presumptive remedies (*see* 61 Fed. Reg. 19432, 19439-40)(May 1, 1996) at small-scale and relatively simple sites where groundwater contamination is not a component of the accelerated cleanup, where the remedy is considered to be the final remedy for the site, and where the field work will be accomplished within 180 days of the commencement of field activities. The proposed accelerated cleanup will be documented in an Accelerated Corrective Measure Work Plan, which shall include:

(1) a description of the proposed remedial action, including details of the unit or activity that is subject to the requirements of this Permit;

(2) an explanation of how the proposed cleanup action is consistent with the overall corrective action objectives and requirements of this Permit;

(3) the methods and procedures for characterization and remediation sample collection and analyses; and

(4) a schedule for implementation and reporting on the proposed cleanup action.

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

The Permittees shall give notice by e-mail to persons on the e-mail notification list of a notification made under this Permit Section (11.8.9), in accordance with Permit Section 1.13.

11.8.9.1 Accelerated Corrective Measures Work Plan

The Permittees shall obtain approval of an Accelerated Corrective Measures Work Plan prior to implementation. The Permittees shall prepare the Work Plan in general accordance with the requirements of Permit Section 11.12 (*Reporting Requirements*). The Work Plan shall be submitted to the Department for review in accordance with the procedures in Permit Section 11.9. If the Department disapproves the Accelerated Corrective Measures Work Plan, the Department will notify the Permittees in writing of the Plan's deficiencies and specify a due date for submission of a revised Accelerated Corrective Measures Work Plan. The Permittees shall include an implementation schedule in the revised Accelerated Corrective Measures Work Plan.

11.8.9.2 Accelerated Corrective Measures Implementation

The Permittees shall implement the accelerated corrective measures in accordance with the approved Accelerated Corrective Measures Work Plan. Within 90 days of completion of the accelerated corrective measures, the Permittees shall submit to the Department for approval a Remedy Completion Report in a format approved by the Department in general accordance with Permit Section 11.12 (*Reporting Requirements*). If upon review, the Department identifies any deficiencies in the Remedy Completion Report, the Department will notify the Permittees in writing.

11.8.10 Well Completion Report

The Permittees shall submit to the Department a well completion summary fact sheet within 30 days of completion of each intermediate-perched and regional aquifer well. Installation of all wells shall be considered complete when the well casing has been installed to its final position and the casing rim can be measured relative to the ground surface. Well development must be completed within 30 days of the completion of well installation. The 120-day clock for well completion report submittal for regional aquifer wells will begin 30 days after well completion, as defined above. The details of all drilling and well construction for alluvial depth wells shall be included in the site- or canyon-specific investigation reports. Investigation reports that document the results of the site-specific investigations shall be prepared in accordance with the format described in Section 11.12 of this Permit.

11.9 APPROVAL OF SUBMITTALS

All documents shall be subject to the review and approval procedures described in Permit Section 1.9.18.

11.10 METHODS AND PROCEDURES

The Permittees shall submit to the Department, for review and written approval, site-specific work plans for sites prior to the commencement of field activities where environmental investigation, corrective action, sampling or monitoring is being conducted or proposed. The site-specific work plans shall include the methods to be used to conduct

all activities at each site or unit and shall be prepared in accordance with the format described in the Permit Section 11.12 (*Reporting Requirements*). The Permittees shall provide notification to the Department of corrective action field activities a minimum of 15 days prior to commencing the activity.

The methods used to conduct investigation, remediation, and monitoring activities shall be sufficient to fulfill the requirements of this Permit and provide accurate data for the evaluation of site conditions, the nature and extent of contamination and contaminant migration, and for remedy selection and implementation, where necessary. The methods presented in this Permit Section (11.10) 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 site or unit.

11.10.1 Standard Operating Procedures

The Permittees shall provide a brief 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. Facility standard operating procedures (SOPs) shall not be substituted for such descriptions.

11.10.2 Investigation, Sampling, and Analysis Methods

11.10.2.1 Introduction and Purpose

This Permit Section (11.10.2) provides minimum requirements for field investigations, sample collection, handling and screening procedures, field and laboratory sample analysis, and quality assurance procedures for samples of the medium being investigated or tested at the Facility.

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

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

11.10.2.2 Field Exploration Activities

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

11.10.2.3 Sub-Surface Features/Utility Geophysical Surveys

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

11.10.2.4 Drilling and Soil, Rock, and Sediment Sampling

11.10.2.4.i Drilling

Exploratory and monitoring well borings shall be drilled using the most effective, proven, and practicable method for recovery of undisturbed samples and potential contaminants. The Department shall approve the drilling methods selected for advancement of each boring prior to the start of field activities. Based on the drilling conditions, the borings shall be advanced using one of the following methods:

(1) hollow-stem auger;

(2) air rotary;

(3) mud rotary;

(4) percussion hammer;

(5) sonic;

(6) dual wall air rotary;

(7) direct Push Technology (DPT);

(8) cryogenic; and

(9) cable tool.

Hollow-stem auger or DPT drilling methods are preferred if vapor-phase or VOC contamination is known or suspected to be present. The type of drilling fluid used, if

necessary, shall be approved by the Department prior to the start of drilling activities or prior to use at any site.

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

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

(1) in all borings, 25 ft below the deepest detected contamination based on field screening, laboratory analyses, and/or previous investigations at the site;

(2) 20 ft below the base of disposal units if contamination is not detected;

(3) five ft below the base of shallow structures such as tanks, piping or building sumps, or other building structures;

(4) 50 ft below the deepest known intermediate perched groundwater zone;

(5) 50 ft below the top of the regional aquifer; and

(6) depths specified by the Department based on regional or unit specific data needs.

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

The drilling and sampling shall be accomplished under the direction of a qualified engineer or geologist who shall maintain a detailed log of the materials and conditions encountered in each boring. Both sample information and visual observations of the cuttings and core samples shall be recorded on the boring log. Known site features and/or site survey grid markers shall be used as references to locate each boring prior to surveying the location as described in Permit Section 11.10.2.5. The boring locations shall be measured to the nearest foot, and locations shall be recorded on a scaled site map upon completion of each boring.

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

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

11.10.2.4.ii Soil and Rock Sampling

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

(1) at 5-ft intervals, 10-ft intervals, continuously, or as approved by the Department;

(2) at the depth immediately below the base of the disposal unit or facility structure;

(3) at the maximum depth of each boring;

(4) at the depths of contacts or first encounter, observed during drilling, with geologic units of different lithology, changes in structural or textural characteristics, or zones of relatively higher or lower permeability;

(5) of soil or rock types relatively more likely to sorb or retain contaminants than surrounding lithology;

(6) at the depth of the first encounter, during drilling, with shallow or intermediate saturated zones;

(7) at intervals suspected of being source or contaminated zones;

(8) at the top of the regional aquifer; and

(9) at other intervals approved or required by the Department.

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

A split barrel sampler lined with brass sleeves or a coring device is the preferred sampling method for borehole soil, rock, and sediment sampling. The following procedures should be followed if a split barrel sampler is used. Upon recovery of the sample, one or more brass sleeves shall be removed from the split barrel sampler and the open ends of the sleeves covered with Teflon tape or foil and sealed with plastic caps fastened to the sleeves with tape for shipment to the analytical laboratory. If brass sleeves are not used, a portion of the sample shall be placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. The remaining portions of the sample shall be used for logging and field screening, as described in Permit Sections 11.10.2.4.v and 11.10.2.4.vi, respectively.

Discrete samples shall be collected for field screening and laboratory analyses. Homogenization of discrete samples collected for analyses other than for VOC and

SVOC analyses shall be performed by the analytical laboratory, if necessary. The Permittees may submit site-specific, alternative methods for homogenization of samples in the field to the Department for review and written approval.

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

11.10.2.4.iii Sediment Sampling

Sediment samples shall be collected in the same manner as described in Permit Section 11.10.2.4.ii for soil and rock sampling where borings are drilled to explore alluvial subsurface conditions. The sampling device shall be a decontaminated, hand-held stainless steel coring device, shelby tube, thin-wall sampler, or other device approved by the Department where sediment sampling is conducted without the use of the drilling methods described in Permit Section 11.10.2.4.i. The samples shall be transferred to pre-cleaned laboratory prepared containers for submittal to the laboratory. Samples obtained for volatiles analysis shall be collected using shelby tubes, thin-wall samplers, or other device approved by the Department. The ends of the samplers shall be lined with Teflon tape or aluminum foil and sealed with plastic caps fastened to the sleeves with tape for shipment to the analytical laboratory.

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

11.10.2.4.iv Drill Cuttings (Investigation Derived Waste)

Drill cuttings, excess sample material and decontamination fluids, and all other investigation derived waste (IDW) shall be contained and characterized using methods based on the boring location, boring depth, drilling method, and type of contaminants suspected or encountered. Proposed IDW management shall be included with the unit-specific investigation work plan submitted to the Department for approval prior to the start of field investigations. The Department shall approve the method of containment for drill cuttings prior to the start of drilling activities. Borings not completed as groundwater or vapor monitoring wells shall be properly abandoned in accordance with the methods listed

in Permit Section 11.11.6 or other method approved by the Department. Borings completed as groundwater monitoring wells shall be constructed in accordance with the requirements described in Permit Section 11.11.3.2 (*Well Construction Techniques*).

11.10.2.4.v Logging of Soil/Rock and Sediment Samples

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

11.10.2.4.vi Soil, Rock, and Sediment Sample Field Screening

Samples obtained from borings shall be screened in the field for evidence of the potential presence of contaminants. Field screening results shall be recorded on the exploratory boring and excavation logs. Field screening results are used as a general guideline to determine the nature and extent of possible contamination. In addition, screening results shall be used to aid in the selection of soil, rock, sediment, and vapor-phase samples for laboratory analysis. The Department recognizes that field screening alone will not detect the possible presence or full nature and extent of all contaminants that may be encountered at the site.

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

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

Department shall be used for VOC field screening. The limitations, precision, and calibration procedures of the instrument to be used for VOC field screening shall be included in the site-specific investigation work plan prepared for each unit.

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

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

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

11.10.2.4.vii Soil, Rock, and Sediment Sample Types

The Permittees shall collect soil, rock, and sediment samples at the frequencies outlined in the site-specific investigation, corrective action, or monitoring work plans for each unit, or other site submitted by the Permittees for review and written approval by the Department. The samples collected shall be representative of the media and site conditions being investigated or monitored. The Permittees shall collect QA/QC samples to monitor the validity of the soil, rock, and sediment sample collection procedures. Field duplicates will be collected at a rate of ten percent. The Permittees shall collect equipment blanks from all sampling apparatus at a frequency of ten percent for chemical analysis. Equipment blanks shall be collected at a frequency of one per day if disposable sampling equipment is used. The Permittees shall collect field blanks at a frequency of one per day for each medium (with the exception of air samples) at each unit, or other site. Reagent blanks shall be used if chemical analytical procedures requiring reagents are employed in the field as part of the investigation or monitoring program. The resulting data will provide information on the variability associated with sample

collection, handling, and laboratory analysis operations. The blanks and duplicates shall be submitted for laboratory analyses associated with the project-specific contaminants, data quality concerns, and media being sampled.

11.10.2.5 Sample Point and Structure Location Surveying

The horizontal and vertical coordinates of the top of each monitoring well casing and the ground surface at each monitoring well location shall be determined by a registered New Mexico professional land surveyor in accordance with the State Plane Coordinate System (§§ 47-1-49 through 56 NMSA 1978)). The surveys shall be conducted in accordance with Sections 500.1 through 500.12 of the Regulations and Rules of the Board of Registration for Professional Engineers and Surveyors Minimum Standards for Surveying in New Mexico. Horizontal positions shall be measured to the nearest 0.1-ft, and vertical elevations shall be measured to the nearest 0.01-ft. The Permittees shall prepare site map(s), certified by a registered New Mexico professional land surveyor, presenting all surveyed locations and elevations including relevant site features and structures for submittal with 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), another the Department-approved surveying system, or by using a registered New Mexico Registered Land Surveyor using the methods described in the paragraph above. If using GPS, horizontal locations shall be measured to the nearest 0.5 ft. The Permittees shall provide the Department a statement of accuracy for survey data upon request.

11.10.2.6 Subsurface Vapor-Phase Monitoring and Sampling

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

During subsurface drilling explorations at sites where there is a potential for vapor-phase contamination to be present, soil gas samples shall be obtained at the Department-approved intervals for field screening and/or laboratory analyses. An inflatable packer shall be dropped to isolate the bottom two to three feet of the borehole. The isolated portion of the borehole shall be purged by slowly removing approximately five times the volume of the annular space beneath the packer, followed by a VOC measurement using a PID equipped with a 11.7 eV lamp, a combustible gas indicator or other instrument approved by the Department. The data shall be logged and also used for determining the samples to be sent to an analytical laboratory.

The Permittees shall, as directed by the Department, collect vapor samples for field measurement of the following during subsurface vapor monitoring activities:

(1) percent oxygen;

(2) organic vapors (using a photo-ionization detector with an 11.7 eV (electron volt) lamp, a combustible vapor indicator or other method approved by the Department);

(3) percent carbon dioxide;

(4) static subsurface pressure; and

(5) other parameters (such as carbon monoxide and hydrogen sulfide) as required by the Department.

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

(6) percent moisture;

(7) VOCs; and

(8) other analytes required by the Department.

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

Field vapor measurements, the date and time of each measurement, and the instrument used shall be recorded on a vapor monitoring data sheet. The instruments used for field measurements shall be calibrated daily in accordance with the manufacturer's specifications and as described in Permit Section 11.10.2.12. The methods used to obtain vapor-phase field measurements and samples shall be approved by the Department in writing prior to the start of air monitoring at each Facility site where vapor-phase monitoring is conducted.

11.10.2.7 Groundwater Monitoring

11.10.2.7.i Groundwater Levels

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

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

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

11.10.2.8 Groundwater Sampling

Groundwater samples shall initially be obtained from newly installed monitoring wells between ten and 30 days after completion of well development. Groundwater monitoring and sampling shall be conducted at an interval approved by the Department after the initial sampling event. The Permittees shall sample all saturated zones screened to allow entry of groundwater into each monitoring well during each sampling event (or as otherwise specified in the Department approved groundwater monitoring work plan). All requests for variances from the groundwater sampling schedule shall be submitted to the Department, in writing, no less than 30 days prior to the start of scheduled monitoring and sampling events. Groundwater samples shall be collected from all saturated zones, where possible, within exploratory borings not intended to be completed as monitoring wells prior to abandonment of the borings.

Water samples shall be analyzed in accordance with the Department-approved groundwater monitoring work plan for one or more of the following general chemistry parameters as required by the Department:

nitrate/nitrite	sulfate	chloride	sodium
dissolved CO_2	alkalinity	carbonate/bicarbonate	boron
fluoride	manganese	calcium	silicon
ferric/ferrous iron	ammonia	potassium	phosphorus/phosphate
sulfide	bromide	magnesium	methane
TKN	total organic carbon	total dissolved solids	

11.10.2.8.i Well Purging

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

11.10.2.8.ii Groundwater Sample Collection

Groundwater samples shall be obtained from each well after a sufficient amount of water has been removed from the well casing to ensure that the sample is representative of formation water. Groundwater samples shall be obtained using methods approved by the Department within 24 hours of the completion of well purging. Sample collection methods shall be documented in the field monitoring reports. The samples shall be transferred to the appropriate, clean, laboratory-prepared containers provided by the analytical laboratory. Sample handling and chain-of-custody procedures are described in

Permit Section 11.10.2.9. Decontamination procedures shall be established for reusable water sampling equipment as described in Permit Section 11.10.2.11.

All purged groundwater and decontamination water shall be temporarily stored at satellite accumulation areas or transfer stations in labeled 55-gallon drums, less-than-90-day storage areas or other containers approved by the Department until proper characterization and disposal can be arranged. The methods for disposal of purge/decontamination water shall be approved by the Department prior to removal from the temporary storage area. Disposable materials shall be handled as described in Permit Section 11.10.2.13.

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

11.10.2.8.iii Surface Water Sample Collection

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

11.10.2.8.iv Groundwater and Surface Water Sample Types

Groundwater samples shall be collected from each monitoring well and surface water samples shall be collected at predetermined locations. Field duplicates, field blanks, equipment rinsate blanks, reagent blanks, if necessary, and trip blanks shall be obtained for quality assurance during groundwater and surface water sampling activities. The samples shall be handled as described in Permit Section 11.10.2.9.

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

Field blanks shall be obtained at a frequency of no less than one per day per site or unit. Field blanks shall be generated by filling sample containers in the field with deionized water and submitting the samples, along with the groundwater or surface water samples, to the analytical laboratory for the appropriate analyses.

Equipment rinsate blanks shall be obtained for chemical analysis at the rate of five percent but no fewer than one rinsate blank per sampling day. Equipment rinsate blanks shall be collected at a rate of one per sampling day if disposable sampling apparatus is used. Rinsate samples shall be generated by rinsing deionized water through unused or decontaminated sampling equipment. The rinsate sample then shall be placed in the

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

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

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

11.10.2.9 Sample Handling

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

(1) neoprene, nitrile, or other protective gloves shall be worn when collecting samples. New disposable gloves shall be used to collect each sample;

(2) all samples collected of each medium for chemical analysis shall be transferred into clean sample containers supplied by the project analytical laboratory with the exception of soil, rock, and sediment samples obtained in brass sleeves, shelby tubes, thin wall samplers, or in Encore™ samplers. Upon recovery of the sample collected using split barrel samplers with brass sleeves, the brass sleeves shall be removed from the split barrel sampler and the open ends of the sleeves shall be lined with Teflon tape or foil and sealed with plastic caps. The caps shall be fastened to the sleeve with tape for storage and shipment to the analytical laboratory. Samples collected in shelby tubes or thin wall samplers shall be capped in a similar fashion. The sample depth and the top of the sample shall be clearly marked. Sample container volumes and preservation methods shall be in accordance with EPA *SW-846* and established industry practices for use by accredited analytical laboratories. Sufficient sample volume shall be obtained for the laboratory to complete the method-specific QC analyses on a laboratory-batch basis; and

(3) sample labels and documentation shall be completed for each sample following procedures included in the site-specific work plans approved by the Department. Immediately after the samples are collected, they shall be stored in a cooler with ice or other appropriate storage method until they are delivered to the analytical laboratory. Standard chain-of-custody procedures, as described in Permit Section 11.10.2.14.ii, shall be followed for all samples collected. All samples shall be

submitted to the laboratory soon enough to allow the laboratory to conduct the analyses within the method holding times. All samples shall be submitted to the laboratory within 48 hours after their collection.

Shipment procedures shall include the following:

(4) individual sample containers shall be packed to prevent breakage and transported in a sealed cooler with ice or other suitable coolant or other EPA or industry-wide accepted method. The drainage hole at the bottom of the cooler shall be sealed and secured in case of sample container leakage. Temperature blanks shall be included with each shipping container;

(5) each cooler or other container shall be delivered directly to the analytical laboratory;

(6) glass bottles shall be separated in the shipping container by cushioning material to prevent breakage;

(7) plastic containers shall be protected from possible puncture during shipping using cushioning material;

(8) the chain-of-custody form and sample request form shall be shipped inside the sealed storage container to be delivered to the laboratory;

(9) chain-of-custody seals shall be used to seal the sample-shipping container in conformance with EPA protocol; and

(10) signed and dated chain-of-custody seals shall be applied to each cooler prior to transport of samples from the site.

11.10.2.10 In-Situ Testing

In-situ permeability tests, remediation system pilot tests, stream flow tests, and other tests conducted to evaluate site and subsurface conditions shall be designed to accommodate specific site conditions and to achieve the test objectives. The testing methods shall be approved, in writing, by the Department prior to implementation. The tests shall be conducted in order to appropriately represent site conditions and in accordance with USGS, ASTM or other methods generally accepted by the industry. Detailed logs of all relevant site conditions and measurements shall be maintained during the testing events. If requested, a summary of the general test results, including unexpected or unusual test results and equipment failures or testing limitations shall be reported to the Department within 30 days of completion of the test. The summary shall be presented in a format acceptable to the Department and in general accordance with the report formats outlined in Permit Section 11.12 (*Reporting Requirements*). A report summarizing the results of each test shall be submitted to the Department within 120 days of completion of each test.

11.10.2.11 Decontamination Procedures

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

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

(1) brush equipment with a wire or other suitable brush, if necessary or practicable, to remove large particulate matter;

(2) rinse with potable tap water;

(3) wash with nonphosphate detergent or other detergent approved by the Department (examples include Fantastik™, Liqui-Nox®) followed by a tap water rinse;

(4) rinse with 0.1 molar nitric acid (to remove trace metals, if necessary) followed by a tap water rinse;

(5) rinse with methanol (to remove organic compounds, if necessary) followed by a tap water rinse;

(6) rinse with potable tap water; and

(7) double rinse with deionized water.

All decontamination solutions shall be collected and stored temporarily as described in Permit Section 11.10.2.11. Decontamination procedures and the cleaning agents used shall be documented in the daily field log.

11.10.2.12 Field Equipment Calibration Procedures

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

11.10.2.13 Collection and Management of Investigation Derived Waste

Investigation derived waste (IDW) includes general refuse, drill cuttings, excess sample material, water (decontamination, development and purge), and disposable equipment generated during the course of investigation, corrective action, or monitoring activities. All IDW shall be properly characterized and disposed of in accordance with all Federal, State, and local rules and regulations for storage, labeling, handling, transport, and disposal of waste. The Permittees shall include a description of anticipated management of IDW as part of the applicable work plan submitted to the Department for approval prior to disposal of any IDW produced during investigation, corrective action, or monitoring activities. The Permittees may submit a request to the Department to dispose of IDW on a case-by-case basis prior to submittal of the applicable work plan.

All water generated during sampling and decontamination activities shall be temporarily stored at satellite accumulation areas or transfer stations in labeled 55-gallon drums or other containers approved by the Department until proper characterization and disposal can be arranged. The IDW may be characterized for disposal based on the known or suspected contaminants potentially present in the waste. The methods for waste characterization and disposal of IDW shall be approved by the Department prior to removal from the temporary storage area.

11.10.2.14 Documentation of Field Activities

11.10.2.14.i General

Daily field activities, including observations and field procedures, shall be recorded on appropriate forms. The original field forms shall be maintained at the Facility. Copies of the completed forms shall be maintained in a bound and sequentially numbered field file for reference during field activities. Indelible ink shall be used to record all field activities. Photographic documentation of field activities shall be performed, as appropriate. The daily record of field activities shall include the following:

(1) site or unit designation;

(2) date;

(3) time of arrival and departure;

(4) field investigation team members including subcontractors and visitors;

(5) weather conditions;

(6) daily activities and times conducted;

(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 require modification of required work;

(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 or disposal; and

(14) signature of personnel completing the field record.

11.10.2.14.ii Sample Custody

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

11.10.3 Chemical Analyses

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

The Permittees shall submit a list of analytes and analytical methods to the Department, for review and written approval as part of each site-specific investigation, corrective action, or monitoring work plan. The detection limits for each method shall be less than applicable background, screening, and regulatory cleanup levels. The preferred method detection limits are a maximum of 20 percent of the cleanup, screening, or background levels. Analyses conducted with detection limits that are greater than applicable background, screening, and regulatory cleanup levels shall be considered data quality exceptions and the reasons for the elevated detection limits shall be reported to the Department. These data cannot be used for statistical analyses. All analytical data (non-detects, estimated blanks, and detects) shall be included in the electronic or magnetic copy of the investigation report in Microsoft™ Excel format with qualifiers as attached from the analytical laboratory. The summary tables shall include only detects of the data based on the corresponding qualifiers. The Permittees shall not censor the data based on detection limits, quantitation limits, or measurement uncertainty.

11.10.3.1 Laboratory QA/QC Requirements

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

11.10.3.1.i Quality Assurance Procedures

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

11.10.3.1.ii Equipment Calibration Procedures and Frequency

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

11.10.3.1.iii Laboratory QA/QC Samples

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

11.10.3.1.iv Laboratory Deliverables

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

(1) transmittal letter, including information about the receipt of samples, the testing methodology performed, any deviations from the required procedures, any problems encountered in the analysis of the samples, any data quality exceptions, and any corrective actions taken by the laboratory relative to the quality of the data contained in the report;

(2) sample analytical results, including sampling date; date of sample extraction or preparation; date of sample analysis; dilution factors and test method identification; soil, rock, or sediment sample results in consistent units (mg/kg) or micrograms per kilogram in dry-weight basis; water sample results in consistent units (milligrams per liter or micrograms per liter (μg/L)); vapor sample results in consistent units (ppm or $\mu g/m^3$); and detection limits for undetected analytes. Results shall be reported for all field samples, including field duplicates and blanks, submitted for analysis;

(3) method blank results, including detection limits for undetected analytes;

(4) surrogate recovery results and corresponding control limits for samples and method blanks (organic analyses only);

(5) MS/MSD and/or BS/BSD spike concentrations, percent recoveries, relative percent differences (RPDs), and corresponding control limits;

(6) laboratory duplicate results for inorganic analyses, including relative percent differences and corresponding control limits;

(7) sample chain-of-custody documentation;

(8) holding times and conditions;

(9) conformance with required analytical protocol(s);

(10) instrument calibration;

(11) blanks;

(12) detection/quantitation limits;

(13) recoveries of surrogates;

(14) variability for duplicate analyses;

(15) completeness; and

(16) data report formats.

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

(17) 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;

(18) report of sample collection, extraction, and analysis dates, including sample holding conditions;

(19) tabulated results for samples in units as specified, including data qualification in conformance with EPA protocol, and definition of data descriptor codes;

(20) reconstructed ion chromatograms for gas chromatograph/mass spectrometry (GC/MS) analyses for each sample and standard calibration;

(21) selected ion chromatograms and mass spectra of detected target analytes (GC/MS) for each sample and calibration with associated library/reference spectra;

(22) gas chromatograph/electron capture device (GC/ECD) and/or gas chromatograph/flame ionization detector (GC/FID) chromatograms for each sample and standard calibration;

(23) raw data quantification reports for each sample and calibrations, including areas and retention times for analytes, surrogates, and internal standards;

(24) 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];

(25) final extract volumes (and dilutions required), sample size, wet-to-dry weight ratios, and instrument practical detection/quantitation limit for each analyte;

(26) analyte concentrations with reporting units identified, including data qualification in conformance with the CLP Statement of Work (SOW) (include definition of data descriptor codes);

(27) quantification of analytes in all blank analyses, as well as identification of method blank associated with each sample;

(28) recovery assessments and a replicate sample summary, including all surrogate spike recovery data with spike levels/concentrations for each sample and all MS/MSD results (recoveries and spike amounts); and

(29) report of tentatively identified compounds with comparison of mass spectra to library/reference spectra.

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

(30) 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;

(31) report of sample collection, digestion, and analysis dates, with sample holding conditions;

(32) tabulated results for samples in units as specified, including data qualification in conformance with the CLP SOW (including definition of data descriptor codes);

(33) results of all method QA/QC checks, including inductively coupled plasma (ICP) Interference Check Sample and ICP serial dilution results;

(34) tabulation of instrument and method practical detection/quantitation limits;

(35) raw data quantification report for each sample;

(36) a calibration data summary reporting calibration range used and a measure of linearity, where appropriate;

(37) final digestate volumes (and dilutions required), sample size, and wet-to-dry weight ratios;

(38) quantification of analytes in all blank analyses, as well as identification of method blank associated with each sample; and

(39) recovery assessments and a replicate sample summary, including post-digestate spike analysis; all MS data (including spike concentrations) for each sample, if accomplished; all MS results (recoveries and spike amounts); and laboratory control sample analytical results).

The Permittees shall present summary tables of these data and Level II QA/QC results to the Department in the formats described in Permit Section 11.12 (*Reporting Requirements*). The raw analytical data, including calibration curves, instrument calibration data, data calculation work sheets, and other laboratory support data for samples from this project, shall be compiled and kept on file at the Facility for reference. The Permittees shall make the data and all Level III or Level IV QA/QC data available to the Department upon request.

11.10.3.2 Review of Field and Laboratory QA/QC Data

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

The Permittees shall require the laboratory to notify the Facility project manager of data quality exceptions within one business day of discovery in order to allow for sample re-analysis, if possible. The Facility project manager shall contact the Department within one business day of receipt of laboratory notification of data quality exceptions that may affect the ability to meet the objectives of the investigation or compliance activity in order to discuss the implications and determine whether the data will still be considered acceptable or if sample re-analysis or resampling is necessary. The Facility project manager shall summarize the results of the discussion with the Department project leader

regarding the data quality exceptions in a memorandum. The Permittees shall submit the memorandum to the Department by fax or electronic mail within three business days of the conclusion of the data quality discussion.

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

11.10.3.3.i Blanks

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

11.10.3.3.ii Field Duplicates

Field duplicates shall consist of 2 samples either split from the same sample device or collected sequentially. Field duplicate samples shall be collected at a minimum frequency of 10 percent of the total number of samples submitted for analysis. RPDs for field duplicates shall be calculated. A precision of no more than 20 percent for duplicates shall be considered acceptable for soil, rock, and sediment sampling conducted at the Facility. The analytical DQO for precision shall be used for water duplicates.

11.10.3.3.iii Method Reporting Limits

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

11.10.3.3.iv Holding Times

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

11.10.3.4 Representativeness and Comparability

11.10.3.4.i Representativeness

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

11.10.3.4.ii Comparability

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

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

Upon receipt of each laboratory data package, data shall be evaluated against the criteria outlined in the previous sections. Any deviation from the established criteria shall be noted and the data will be qualified. A full review and discussion of analytical data QA/QC and all data qualifiers shall be submitted as appendices or attachments to investigation and monitoring reports prepared in accordance with Permit Section 11.12 (*Reporting Requirements*). Data validation procedures for all samples shall include checking the following, when appropriate:

(1) holding times;

(2) detection limits;

(3) field equipment rinsate blanks;

(4) field blanks;

(5) field duplicates;

(6) trip blanks;

(7) reagent blanks;

(8) laboratory duplicates;

(9) laboratory blanks;

(10) laboratory matrix spikes;

(11) laboratory matrix spike duplicates;

(12) laboratory blank spikes;

(13) laboratory blank spike duplicates; and

(14) surrogate recoveries.

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

11.10.4 Site-Specific Human Health Risk Assessment

Should the Permittees be unable to meet the cleanup levels in Permit Section 11.4, they shall conduct a site-specific risk assessment in accordance with current and acceptable EPA, Regional EPA, and Department guidance and methodology (as updated). If the Department determines that a human health risk assessment work plan is necessary, the Permittees shall submit to the Department for its review and approval a workplan that includes, at a minimum, the site-specific exposure assumptions and any additional sampling needed to support the risk assessment. The Permittees shall prepare a Human Health Risk Assessment Report in support of corrective action, and, if necessary, for closure in accordance with Permit Part 9.

11.10.4.1 Human Health Risk Assessment Methods

A risk assessment may be required for human receptors that are potentially exposed to site-related chemicals in environmental media. The risk assessment shall contain a conceptual site model (CSM), which shall aid in understanding and describing each site. The CSM shall address the following components:

(1) identification of suspected sources;

(2) identification of contaminants;

(3) identification of contaminant releases;

(4) identification of transport mechanisms;

(5) identification of affected media;

(6) identification of land use scenarios;

(7) identification of potential receptors under current land use scenario;

(8) identification of potential receptors under future land use scenario; and

(9) identification of potential routes of exposure.

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

11.10.4.1.i Exposure Pathways

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

11.10.4.1.ii Data Quality Assurance

The risk assessment shall include an evaluation of analytical data and the usability of the data in the assessment. Data validation shall be conducted in accordance with current EPA guidelines. The evaluation of data shall also include a comparison of detection limits with appropriate and current risk-based screening levels, if MDLs are inconsistent and do not achieve the requirements of Permit Section 11.10.3 (Chemical Analyses).

11.10.4.1.iii Constituents of Potential Concern

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

(1) site attribution analysis;

(2) essential nutrients; and/or

(3) risk-based toxicity screen.

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

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

(4) comparison of maximum site concentrations to a background reference value (*e.g.,* upper tolerance limit, UTL);

(5) if the site maximum exceeds the background reference value, and sample size is sufficient, statistically compare the site data set to the background data set using appropriate statistical analyses (*e.g.,* Wilcoxon Rank Sum Test). If the sampling size is not sufficient to perform statistical analysis, a comparison of the maximum site concentration to the maximum background concentrations shall be used;

(6) conduct a graphical analysis of site data and background data (*e.g.*, histograms and/or box and whisker plots);

(7) conduct a geochemical analysis of site data to a background reference chemical; and/or

(8) evaluate essential nutrients and compare to recommended daily allowances and/or upper intake limits.

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

11.10.4.1.iv Exposure Point Concentrations

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

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

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

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

11.10.4.1.v Toxicity Assessment

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

11.10.4.1.vi Risk Characterization

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

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

11.10.4.1.vii Uncertainties

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

11.10.5 Site-Specific Ecological Risk Assessment Methods

If the screening level ecological risk assessment indicates unacceptable risk, then the Permittees shall conduct a site-specific ecological risk assessment. If the Department determines that an ecological risk assessment work plan is necessary, the Permittees shall submit to the Department for its review and approval a work plan that includes, at a minimum, the site-specific exposure assumptions and any additional sampling needed to support the risk assessment. In addition, the Permittees shall prepare a site-specific Ecological Risk Assessment Report in support of corrective action, and, if necessary, for closure in accordance with Permit Part 9 (*Closure*). The assessment shall be conducted using EPA and/or the Department approved guidance and methodologies. The ecological risk assessment shall follow the same methodologies outlined above in the human health risk assessment for determining constituent of potential ecological concern (COPEC) and data quality assurance.

11.10.6 Determination of Background

The Permittees shall determine an appropriate background data set for inorganic constituents at the site. The Permittees shall determine whether one or more background data sets are appropriate depending on soil types and geology at the site. Background concentrations for groundwater shall be collected from upgradient wells. The background data set shall be representative of natural conditions unaffected by site activities and shall be statistically defensible. A sufficient number of background samples shall be collected for use in the risk assessment, including conducting site attribution analyses and comparison of data sets.

The Permittees shall provide summary statistics for background metals concentrations in each medium of concern and include the following information:

(1) number of detects;

(2) total number of samples;

(3) frequency of detection;

(4) minimum detected concentration;

(5) maximum detected concentration;

(6) minimum sample quantitation limit (SQL);

(7) maximum SQL;

(8) arithmetic mean;

(9) median;

(10) standard deviation; and

(11) coefficient of variation.

The Permittees shall determine the 95% upper tolerance limit (UTL) for each metal using a distribution-based statistical method.

11.10.6.1 Comparing Site Data to Background

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

Site attribution analyses shall be conducted in accordance with Permit Section 11.10.4.1.iii and current EPA and/or the Department accepted guidance. The site attribution analyses shall consist of a statistical comparison of the background data set to the site data set, if sufficient samples are available, using distribution based tests such as the Wilcoxon Rank Sum Test.

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

11.11 MONITORING WELL CONSTRUCTION REQUIREMENTS

11.11.1 Types of Monitoring Wells

Two types of groundwater monitoring wells may be installed at the Facility: single completion (containing one screened interval) and with Department approval, double-screened wells. General drilling procedures are presented in Permit Section 11.11.2 and monitoring well construction requirements are presented in Permit Section 11.11.3.

11.11.2 Drilling Methods

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

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

(1) U.S. EPA, RCRA Groundwater Monitoring: Draft Technical Guidance, EPA/530-R-93-001 (November 1992);

(2) U.S. EPA, RCRA Groundwater Monitoring Technical Enforcement Guidance Document, OSWER-9950.1 (September 1986); and

(3) Aller, L., Bennett, T.W., Hackett, G., Petty, R.J., Lehr, J.H., Sedoris, H., Nielsen, D.M., and Denne, J.E., Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells, EPA 600/4-89/034 (1989).

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

(4) drilling shall be performed in a manner that minimizes impacts to the natural properties of the subsurface materials;

(5) contamination and cross-contamination of groundwater and aquifer materials during drilling shall be avoided;

(6) the drilling method shall allow for the collection of representative samples of rock, unconsolidated materials, and soil;

(7) the drilling method shall allow the Permittees to determine when the appropriate location for the screened interval(s) has been encountered; and

(8) the drilling method shall allow for the proper placement of the filter pack and annular sealants. The borehole diameter shall be at least 4 inches larger in diameter than the nominal diameter of the well casing and screen to allow adequate space for placement of the filter pack and annular sealants.

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

A brief description of the different drilling methods that may be appropriate for the construction of monitoring wells at the Facility follows. Many of these methods may be used alone, or in combination, to install monitoring wells at the Facility. While the selection of the specific drilling procedure will usually depend on the site-specific geologic conditions, justification for the method selected must be provided to the Department.

11.11.2.1 Hollow-Stem Auger

The hollow-stem continuous flight auger consists of a hollow, steel shaft with a continuous, spiraled steel flight welded onto the exterior site of the stem. The stem is connected to an auger bit and, when rotated, transports cuttings to the surface. The hollow stem of the auger allows drill rods, split-spoon core barrels, Shelby tubes, and other samplers to be inserted through the center of the auger so that samples may be retrieved during the drilling operations. The hollow stem also acts to temporarily case the borehole, so that the well screen and casing (riser) may be inserted down through the center of the augers once the desired depth is reached, minimizing the risk of possible collapse of the borehole. A bottom plug or pilot bit can be fastened onto the bottom of the augers to keep out most of the soils and/or water that have a tendency to clog the bottom of the augers during drilling. Drilling without a center plug is acceptable provided that the soil plug, formed in the bottom of the auger, is removed before sampling or installing well casings. The soil plug can be removed by washing out the plug using a side discharge rotary bit, or augering out the plug with a solid-stem auger bit sized to fit inside the hollow-stem auger. In situations where heaving sands are a problem, potable water may be poured into the augers to equalize the pressure so that the inflow of formation materials and water shall be held to a minimum when the bottom plug is removed. The hollow-stem auger method is best suited for drilling shallow overburden wells.

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

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

The injection of air into the borehole during air rotary drilling has the potential to alter the natural properties of the subsurface. This can occur through air-stripping of the VOCs in both soil and groundwater in the vicinity of the borehole, altering the groundwater geochemical parameters (*e.g.,* pH and redox potential), and potentially increasing biodegradation of organic compounds in the aquifer near the borehole. These

factors may prevent the well from yielding groundwater samples that are representative of in-situ conditions.

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

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

11.11.2.3 Water Rotary and Mud Rotary

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

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

subsurface conditions using methods approved by the Department. The Department may require additional sampling and testing periodically to ensure that the data collected is not affected by residual drilling fluids.

11.11.2.4 Dual-Wall Reverse Circulation

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

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

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

11.11.2.5 Resonant Sonic

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

11.11.2.6 Cryogenic

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

alternating hard (competent) and soft (unconsolidated) formations. This drilling method has been tested by the DOE and proposed for future use at various DOE facilities.

11.11.3 Well Construction/Completion Methods

11.11.3.1 Well Construction Materials

Well construction materials shall be selected based on the goals and objectives of the proposed monitoring program and the geologic conditions at the site. When selecting well construction materials, the primary concern shall be selecting materials that will not contribute foreign constituents or remove contaminants from the groundwater. Other factors to be considered include the tensile strength, compressive strength, and collapse strength of the materials; length of time the monitoring well will be in service; and the material's resistance to chemical and microbiological corrosion. Generally, if the monitoring program requires the analysis of only organic constituents, stainless steel should be used. However, if the monitoring program requires only inorganic constituent analyses, polyvinyl chloride (PVC) materials may be used. PVC should not be used for monitoring wells where organic constituents will be analyzed due to its potential for sorption and leaching of contaminants.

Well screen and casing materials acceptable for the construction of RCRA monitoring wells include stainless steel (304 or 316), rigid PVC (meeting American National Standards Institute/National Sanitation Foundation Standard 14), and fluoropolymer materials (polytetrafluoroethylene, fluorinated ethylene propylene, and polyvinylidene). In addition, there are other materials available for the construction of monitoring wells including acrylonitrile butadiene styrene (ABS), fiberglass-reinforced plastic (FRP), black iron, carbon steel, and galvanized steel, but these materials are not recommended for use in long term monitoring wells due to their low resistance to chemical attack and potential contribution of contamination to the groundwater. However, these materials may be used in the construction of monitoring wells where they will not be in contact with the groundwater that will be sampled (*e.g.,* carbon steel pipe used as surface casing).

11.11.3.2 Well Construction Techniques

11.11.3.2.i Single-cased Wells

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

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

The well casings (riser assembly) should be secured to the well screen by flush-jointed threads or other appropriate connections and placed into the borehole and plumbed by the use of centralizers, a plumb bob, or a level. No petroleum-based lubricating oils or grease shall be used on casing threads. Teflon tape can be used to wrap the threads to insure a tight fit and minimize leakage. No glue of any type shall be used to secure casing joints. Teflon "O" rings can also be used to ensure a tight fit and minimize leakage. "O" rings made of materials other than Teflon are not acceptable if the well will be sampled for organic compound analyses. Before the well screen and casings are placed at the bottom of the borehole, at least six inches of filter material shall be placed at the bottom to serve as a firm footing. The string of well screen and casing should then be placed into the borehole and plumbed. If centralizers are used, they shall be placed below the well screens and above the bentonite annular seals so that the placement of the filter pack, overlying bentonite seal, and annular grout will not be hindered. Centralizers placed in the wrong locations can cause bridging during material placement. If installing the well screen and casings through hollow-stem augers, the augers shall be slowly extracted as the filter pack, bentonite seal, and grout are tremied or poured into place. The gradual extraction of the augers will allow the materials being placed in the augers to flow out of the bottom of the augers into the borehole. If the augers are not gradually extracted, the materials will accumulate at the bottom of the augers causing potential bridging problems. After the string of well screen and casing is plumb, the filter material shall be placed around the well screen (preferably by the tremie pipe method) up to the designated depth. After the filter pack has been installed, the bentonite seal shall be placed directly on top of the filter pack up to the designated depth or a minimum of two ft above the filter pack, whichever is greater. After the bentonite seal has hydrated for the specified time, the annular grout shall be pumped by the tremie method into the annular space around the casings (riser assembly) up to within two feet of the ground surface or below the frost line, whichever is greater. The grout shall be allowed to cure for a minimum of 24 hours before the surface pad and protective casing are installed. After the surface pad and protective casing are installed, bumper guards (guideposts) shall be installed (if necessary).

11.11.3.2.ii Double-cased Wells

Double-cased wells should be constructed when there is reason to believe that interconnection of two aquifers by well construction may cause cross contamination, or when flowing sands make it impossible to install a monitoring well using conventional methods. A pilot borehole should be advanced through the overburden and the

contaminated zone into a clay, confining layer, or bedrock. An outer casing (surface or pilot casing) shall be placed into the borehole and sealed with grout. The borehole and outer casing should extend into tight clay a minimum of two ft or into competent bedrock a minimum of one foot. The total depth into the clay or bedrock will vary depending upon the plasticity of the clay and the extent of weathering and fracturing of the bedrock. The size of the outer casing shall be of sufficient inside diameter to contain the inner casing and the two-inch annular space. In addition, the borehole shall be of sufficient size to contain the outer casing and the two-inch minimum outer annular space, if applicable.

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

11.11.3.2.iii Bedrock Wells

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

The second method is to install the outer surface casing and drill the borehole into bedrock, and then install an inner casing and well screen with the filter pack, bentonite

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

11.11.3.3 Well Screen and Filter Pack Design

Well screens and filter packs shall be designed to accurately sample the aquifer zone that the well is intended to sample, minimize the passage of formation materials (turbidity) into the well, and ensure sufficient structural integrity to prevent the collapse of the intake structure. The selection of the well screen length depends upon the objective of the well. Piezometers and wells where only a discrete flow path is monitored are generally completed with short screens (two ft or less). While monitoring wells are usually constructed with longer screens (usually five to ten ft), they shall be kept to the minimum length appropriate for intercepting a contaminant plume. The screen slot size shall be selected to retain from 90 to 100 percent of the filter pack material in artificially filter packed wells, and from 50 to 100 percent of the formation material in naturally packed wells. All well screens shall be factory wire-wrapped or machine slotted.

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

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

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

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

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

11.11.3.4 Annular Sealant

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

During well construction, an annular seal shall be placed on top of the filter pack. This seal shall consist of a high solids (10-30 percent) bentonite material in the form of bentonite pellets, granular bentonite, or bentonite chips. The bentonite seal shall be placed in the annulus through a tremie pipe if the well is deep (greater than 30 ft), or by pouring directly down the annulus in shallow wells (less than 30 ft). If the bentonite materials are poured directly down the annulus (which is an acceptable method only in wells less than 30 feet deep), a tamping device shall be used to ensure that the seal is emplaced at the proper depth and the bentonite has not bridged higher in the well casing. The bentonite seal shall be placed above the filter pack a minimum of two ft vertical thickness. The bentonite seal shall be allowed to completely hydrate in conformance

with the manufacturer's specifications prior to installing the overlying annular grout seal. The time required for the bentonite seal to completely hydrate will differ with the materials used and the specific conditions encountered, but is generally a minimum of four to 24 hours.

A grout seal shall be installed on top of the filter pack annular seal. The grout seal may consist of a high solids (30 percent) bentonite grout, a neat cement grout, a cement/bentonite grout, or other suitable seal material that is approved by the Department. The grout shall be pumped under pressure (not gravity fed) into the annular space by the tremie pipe method, from the top of the filter pack annular seal to within a few feet of the ground surface. The tremie pipe shall be equipped with a side discharge port (or bottom discharge for grouting at depths greater than 100 feet) to minimize damage to the filter pack or filter pack annular bentonite seal during grout placement. The grout seal shall be allowed to cure for a minimum of 24 hours before the concrete surface pad is installed. All grouts shall be prepared in accordance with the manufacturer's specifications. High solids (30 percent) bentonite grouts shall have a minimum density of 10 pounds per gallon (as measured by a mud balance) to ensure proper setup. Cement grouts shall be mixed using six and one-half to seven gallons of water per 94-pound bag of Type I Portland cement. Bentonite (five to ten percent) may be added to delay the setting time and reduce the shrinkage of the grout.

11.11.4 Well Development

All monitoring wells shall be developed to create an effective filter pack around the well screen, correct damage to the formation caused by drilling, remove fine particles from the formation near the borehole, and assist in restoring the natural water quality of the aquifer in the vicinity of the well. Development stresses the formation around the screen, as well as the filter pack, so that mobile fines, silts, and clays are pulled into the well and removed. Development is also used to remove any foreign materials (*e.g.*, water, drilling mud) that may have been introduced into the borehole during the drilling and well installation activities, and to aid in the equilibration that will occur between the filter pack, well casing, and the formation water. The development of a well is extremely important to ensuring the collection of representative groundwater samples.

Newly installed monitoring wells shall not be developed for at least 48 hours after the surface pad and outer protective casing are installed. This will allow sufficient time for the well materials to cure before the development procedures are initiated. A new monitoring well shall be developed until the column of water in the well is free of visible sediment, and the pH, temperature, turbidity, and specific conductivity have stabilized. In most cases, the above requirements can be satisfied. However, in some cases, the pH, temperature, and specific conductivity may stabilize but the water remains turbid. In this case, the well may still contain well construction materials, such as drilling mud in the form of a mud cake or formation soils that have not been washed out of the borehole. Thick drilling mud cannot be flushed out of a borehole with one or two well volumes of flushing. Instead, continuous flushing over a period of several days may be necessary to complete the well development. If the well is pumped dry, the water level shall be

allowed to sufficiently recover before the next development period is initiated. The common methods used for developing wells include:

(1) pumping and over-pumping;

(2) backwashing;

(3) surging (with a surge block);

(4) bailing;

(5) jetting; and

(6) airlift pumping.

These development procedures can be used, either individually or in combination, to achieve the most effective well development. However, the most favorable well development methods include pumping, over-pumping, bailing, surging, or a combination of these methods. Well development methods and equipment that alter the chemical composition of the groundwater shall not be used. Development methods that involve adding water or other fluids to the well or borehole, or that use air to accomplish well development should be avoided, if possible. Approval shall be obtained from the Department prior to introducing air, water, or other fluids into the well for the purpose of well development. If water is introduced to a borehole during well drilling and completion, then the same or greater volume of water shall be removed from the well during development. In addition, the volume of water withdrawn from a well during development shall be recorded, and the Permittees shall use their best efforts to avoid pumping wells dry during development activities.

11.11.5 Surface Completion

Monitoring wells may be completed either as flush-mounted wells, or as above-ground completions. A surface seal shall be installed over the grout seal and extended vertically up the well annulus to the land surface. The lower end of the surface seal shall extend a minimum of 1 foot below the frost line to prevent damage from frost heaving. The composition of the surface seal shall be neat cement or concrete. In above-ground completions, a three-foot wide, four-inch thick concrete surface pad shall be installed around the well at the same time the protective casing is installed. The surface pad shall be sloped so that drainage will flow away from the protective casing and off the pad. In addition, a minimum of one inch of the finished pad shall be below grade or ground elevation to prevent washing and undermining by soil erosion.

A locking protective casing shall be installed around the well casing (riser) to prevent damage or unauthorized entry. The protective casing shall be anchored in the concrete surface pad below the frost line and extend several inches above the well riser stickup. A weep hole 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 around the well riser. A cap shall be placed on the well riser to prevent tampering or the entry of foreign materials, and a lock shall be installed on the protective casing to provide

security. If the wells are located in an area that receives traffic, a minimum of three bumper guards consisting of steel pipes three to four inches in diameter and a minimum of five-foot length should be installed. The bumper guards should be installed to a minimum depth of two feet below the ground surface in a concrete footing and extend a minimum of three feet above ground surface. The pipes should be filled with concrete to provide additional strength. The pipes should be painted a bright color to reduce the possibility of vehicular damage.

If flush-mounted completions are required (*e.g.,* in active roadway areas), a protective structure such as a utility vault or meter box should be installed around the well casing. In addition, measures should be taken to prevent the accumulation of surface water in the protective structure and around the well intake. These measures should include outfitting the protective structure with a steel lid or manhole cover that has a rubber seal or gasket, and ensuring that the bond between the cement surface seal and the protective structure is watertight.

11.11.6 Well Abandonment

All well abandonment must be conducted in accordance with 19.27.4 NMAC. Wells are usually abandoned when they are no longer required in the monitoring network or when they are damaged beyond repair. The goal of well abandonment is to seal the borehole in such a manner that the well cannot act as a conduit for migration of contaminants from the ground surface to the aquifer or between aquifers. To properly abandon a well, the preferred method is to completely remove the well casing and screen from the borehole, clean out the borehole, and backfill with a cement or bentonite grout, neat cement, or concrete. The well abandonment procedure must also comply with current EPA well abandonment guidance.

For wells with small diameter casing, abandonment shall be accomplished by overdrilling the well with a large diameter hollow-stem auger. After the well has been overdrilled, the well casing and grout can be lifted out of the ground with a drill rig, and the remaining filter pack can be drilled out. The open borehole can then be pressure grouted (via the tremie pipe method) from the bottom of the borehole to the ground surface. After the grout has cured, the top two ft of the borehole shall be filled with concrete to insure a secure surface seal.

Several other well abandonment procedures are available for wells with larger diameter screens and casings. One method is to force a drill stem with a tapered wedge assembly or a solid-stem auger into the well casing and pull the casing out of the ground. However, if the casing breaks or the well cannot be pulled from the ground, the well will have to be grouted in place. To abandon a well in place, a tremie pipe shall be placed at the lowest point in the well (at the bottom of the screen or in the well sump). The entire well is then pressure grouted from the bottom of the well upward. The pressurized grout will be forced out through the well screen into the filter pack and up the inside of the well casing sealing off all breaks and holes in the casing. Once the well is grouted, the casing is cut off even with the ground surface and covered with concrete.

If a PVC well cannot be abandoned due to internal casing damage (*e.g.*, the tremie pipe cannot be extended to the bottom of the screen), it may be necessary to drill out the casing with a roller cone or drag bit using the wet rotary drilling method, or grind out the casing using a solid-stem auger equipped with a carbide tooth bit. Once the casing is removed, the open borehole can be cleaned out and pressure grouted from the bottom of the borehole upward.

11.11.7 Documentation

All information on the design, construction, and development of each monitoring well shall be recorded and presented on a boring log, a well construction log, and well construction diagram. The well construction log and well construction diagram shall include the following information:

(1) well name/number;

(2) date/time of well construction;

(3) borehole diameter and well casing diameter;

(4) well depth;

(5) casing length;

(6) casing materials;

(7) casing and screen joint type;

(8) screened interval(s);

(9) screen materials;

(10) screen slot size and design;

(11) filter pack material and size;

(12) filter pack volume (calculated and actual);

(13) filter pack placement method;

(14) filter pack interval(s);

(15) annular sealant composition;

(16) annular sealant placement method;

(17) annular sealant volume (calculated and actual);

(18) annular sealant interval(s);

(19) surface sealant composition;

(20) surface seal placement method;

(21) surface sealant volume (calculated and actual);

(22) surface sealant interval;

(23) surface seal and well apron design and construction;

(24) well development procedure and turbidity measurements;

(25) well development purge volume(s) and stabilization parameter measurements;

(26) type and design and construction of protective casing;

(27) well cap and lock;

(28) ground surface elevation;

(29) survey reference point elevation on well casing;

(30) top of monitoring well casing elevation; and

(31) top of protective steel casing elevation.

11.12 REPORTING REQUIREMENTS

11.12.1 General

The purpose of this Permit Section is to provide the reporting requirements and report formats for corrective action activities at all SWMUs, AOCs, and permitted units required under this Permit. This Permit Section is not intended to provide reporting requirements for every potential corrective action conducted at the Facility; therefore, the formats for all types of reports are not presented below. The described formats include the general reporting requirements and formats for site-specific investigation work plans, investigation reports, periodic monitoring reports, risk assessment reports, and corrective measures evaluations. The Permittees shall generally consider the reports to be the equivalents of RCRA Facility Investigation (RFI) work plans, RFI reports, periodic monitoring reports, risk assessments, Corrective Measures Study (CMS) plans, and CMS reports, for the purposes of RCRA compliance. The Permittees shall include detailed, site-specific requirements in all SWMU, AOC, permitted unit and facility-wide investigation work plans, investigation reports, monitoring reports, and corrective measures evaluations. All plans and reports shall be prepared with technical and regulatory input from the Department. All work plans, reports and other documents shall be submitted to the Department in the form of two paper copies and one copy in electronic or other format acceptable to the Department. The Permittees shall submit maps and figures in a format specified by the Department (*e.g.,* *shp, *dwg).

The reporting requirements listed in this attachment do not include all sections that may be necessary to complete each type of report listed and may include sections that are not relevant for a specific site action. The Permittees or the Department may determine that additional sections may be needed to address additional site-specific issues or information collected during corrective action or monitoring activities not listed below. However, the Permittees must submit variations of the general report format and the formats for reports not listed in this Permit Section (11.12) in outline form to the Department for approval prior to submittal of the reports. The Department will approve or disapprove, in writing, the proposed report outline within 90 days of receipt of the outline. If the Department disapproves the report outline, the Department will notify the Permittees, in writing, of the outline's deficiencies and will specify a date for submittal of

a revised report outline. All reports submitted by the Permittees shall follow the general approach and limitations for data presentation described in this attachment.

11.12.2 Investigation Work Plan

The Permittees shall prepare work plans for site investigations or corrective action activities at the Facility using the general outline below. The minimum requirements for describing proposed activities within each section are included. All research, locations, depths and methods of exploration, field procedures, analytical results, data collection methods, and schedules shall be included in each work plan. In general, interpretation of data acquired during previous investigations shall be presented only in the background sections of the work plans. The other text sections of the work plans shall be reserved for presentation of anticipated site-specific activities and procedures relevant to the project. The general work plan outline is described below.

11.12.2.1 Title Page

The title page shall include the type of document; Facility name; Area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the names and titles of the responsible DOE and LANS representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

11.12.2.2 Executive Summary (Abstract)

The executive summary or abstract shall provide a brief summary of the purpose and scope of the investigation to be conducted at the subject site. The Facility, SWMU or AOC name, permitted unit reference, site name, any other unit name, location, and Area designation shall be included in the executive summary.

11.12.2.3 Table of Contents

The table of contents shall list all text sections, tables, figures, and appendices or attachments included in the work plan. The corresponding page numbers for the titles of each section of the work plan shall be included in the table of contents.

11.12.2.4 Introduction

The introduction shall include the Facility name, area designation, unit location, and unit status (*e.g.*, closed, corrective action). General information on the current site usage and status shall be included in this section. A brief description of the purpose of the investigation and the type of site investigation to be conducted shall be provided in this section.

11.12.2.5 Background

The background section shall describe relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of pertinent subsurface features such as pipelines, underground tanks, utility lines, and other subsurface structures shall be included in the background summary and labeled on the figure, unless none exist.

This section shall identify potential receptors, including groundwater, and include a brief summary of the type and characteristics of all waste and all contaminants managed or released at the site, the known and possible sources of contamination, the history of releases or discharges of contamination, and the known extent of contamination. This section shall include brief summaries of results of previous investigations, if conducted, including references to pertinent figures, data summary tables, and text in previous reports. At a minimum, detections of contaminants encountered during previous investigations shall be presented in table format, with an accompanying figure showing sample locations. References to previous reports shall include page, table, and figure numbers for referenced information. Summary data tables and site plans showing relevant investigation locations shall be included in the Tables and Figures sections of the document, respectively.

11.12.2.6 Site Conditions

11.12.2.6.i Surface Conditions

A section on surface conditions shall provide a brief detailed description of current site topography, features and structures including a description of topographic drainages, man-made drainages, vegetation, erosional features, and basins. It shall also include a detailed description of current site usage and any current operations at the site. In addition, descriptions of features located in surrounding sites that may have an impact on the subject site regarding sediment transport, surface water run-off, or contaminant fate and transport shall be included in this section.

11.12.2.6.ii Subsurface Conditions

A section on subsurface conditions shall provide a brief, detailed description of the site conditions observed during previous subsurface investigations, including relevant soil horizons, stratigraphy, presence of groundwater, and other relevant information. A site plan showing the locations of all borings and excavations advanced during previous investigations shall be included in the Figures section of the work plan. A brief description of the anticipated stratigraphic units that may be encountered during the investigation may be included in this subsection if no previous investigations have been conducted at the site.

11.12.2.7 Scope of Activities

A section on the scope of activities shall briefly describe a list of all anticipated activities to be performed during the investigation including background information research, health and safety requirements that may affect or limit the completion of tasks, drilling, test pit or other excavations, well construction, field data collection, survey data collection, chemical analytical testing, aquifer testing, remediation system pilot tests, and IDW storage and disposal.

11.12.2.8 Investigation Methods

A section on investigation methods shall provide a description of all anticipated locations and methods for conducting the activities to be performed during the investigation. This section shall include research methods, health and safety practices that may affect the completion of tasks, drilling methods, test pit or other excavation methods, sampling intervals and methods, well construction methods, field data collection methods, geophysical and land survey methods, field screening methods, chemical analytical testing, materials testing, aquifer testing, pilot tests, and other proposed investigation and testing methods. This information may also be summarized in table format, if appropriate.

11.12.2.9 Monitoring and Sampling Program

A section on monitoring and sampling shall provide a description of the groundwater, ambient air, subsurface vapor, remediation system, engineering controls, and other monitoring and sampling programs currently being implemented at the site.

11.12.2.10 Schedule

A section shall set forth the anticipated schedule for completion of field investigation, pilot testing, and monitoring and sampling activities. In addition, this section shall set forth a schedule for submittal of reports and data to the Department including a schedule for submitting all status reports and preliminary data.

11.12.2.11 Tables

The following summary tables may be included in the investigation work plans, if previous investigations have been conducted at the site:

(1) summaries of regulatory criteria, background, and applicable cleanup levels (may be included in the analytical data tables instead of as separate tables);

(2) summaries of historical field survey location data;

(3) summaries of historical field screening and field parameter measurements of soil, rock, sediments, groundwater, surface water, and air quality data;

(4) summaries of historical soil, rock, or sediment laboratory analytical data shall include the analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data;

(5) summaries of historical groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths, the screened intervals in each well, and the dates and times measurements were taken;

(6) summaries of historical groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data;

(7) summary of historical surface water laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data;

(8) summary of historical air sample screening and chemical analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data; and

(9) summary of historical pilot or other test data, if applicable, including units of measurement and types of instruments used to obtain measurements.

Data presented in the tables shall include information on dates of data collection, analytical methods, detection limits, and significant data quality exceptions. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

11.12.2.12 Figures

The following figures shall be included with each investigation work plan for each site, including presentation of data where previous investigations have been conducted. All figures must include an accurate bar scale and a north arrow. An explanation shall be included on each figure for all abbreviations, symbols, acronyms, and qualifiers. All maps shall contain a date of preparation.

(1) a vicinity map showing topography and the general location of the site relative to surrounding features and properties;

(2) a site plan that presents pertinent site features and structures, underground utilities, well locations, and remediation system locations and details. Off-site well locations and other relevant features shall be included on the site plan, if appropriate. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features;

(3) figures showing historical and proposed soil boring or excavation locations and sampling locations;

(4) figures presenting historical soil sample field screening and laboratory analytical data if applicable;

(5) figures presenting the locations of all existing and proposed borings and vapor monitoring well locations;

(6) figures showing all existing and proposed wells and piezometers, presenting historical groundwater elevation data, and indicating groundwater flow directions;

(7) figures presenting historical groundwater laboratory analytical data, if applicable. The chemical analytical data corresponding to each sampling location can be presented in tabular form on the figure or as an isoconcentration map;

(8) figures presenting historical and proposed surface water sample locations and field measurement data, if applicable;

(9) figures presenting historical surface water laboratory analytical data, if applicable;

(10) figures showing historical and proposed air or vapor sampling locations and presenting historical air quality data, if applicable;

(11) figures presenting historical pilot and other testing locations and data, where applicable, including site plans and graphic data presentation; and

(12) figures presenting geologic cross-sections, based on outcrop and borehole data acquired during previous investigations, if applicable.

11.12.2.13 Appendices

A description of IDW management shall be included as an appendix to the investigation work plan. The results of historical investigations required in this Permit shall be submitted with the investigation work plan as a separate document. Additional appendices may be necessary to present additional data or documentation not listed above.

11.12.3 Investigation Report

The Permittees shall prepare investigation reports at the Facility using the general outline below. The Investigation Report shall be the reporting mechanism for presenting the results of completed Investigation Work Plans. This Permit Section (11.12.3) describes the minimum requirements for reporting on site investigations. All data collected during each site investigation event in the reporting period shall be included in the reports. In general, interpretation of data shall be presented only in the background, conclusions and recommendations sections of the reports. The other text sections of the reports shall be reserved for presentation of facts and data without interpretation or qualifications. The general report outline is provided below.

11.12.3.1 Title Page

The title page shall include the type of document; Facility name; Area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the names and titles of the responsible DOE and LANS

representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

11.12.3.2 Executive Summary (Abstract)

The executive summary or abstract shall provide a brief summary of the purpose, scope, and results of the investigation; site names; location; and area designation. In addition, this section shall include a brief summary of conclusions included in the report based on the investigation data collected and recommendations for future investigation, monitoring, remedial action or site closure.

11.12.3.3 Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the report. The corresponding page numbers for the titles of each section of the report shall be included in the table of contents.

11.12.3.4 Introduction

The introduction section shall include the Facility name, area designation, unit location, and unit status (*e.g.*, closed, corrective action). General information on the site usage and status shall be included in this section. A brief description of the purpose of the investigation, the type of site investigation conducted, and the type of results presented in the report also shall be provided in this section.

11.12.3.5 Background

The background section shall describe relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of any subsurface features such as pipelines, underground tanks, utility lines, and other subsurface structures shall be included in the background summary and labeled on the figure, as appropriate. In addition, this section shall include a brief summary of the possible sources of contamination, the history of releases or discharges of contamination, the known extent of contamination, and a general summary of the results of previous investigations including references to previous reports. The references to previous reports shall include page, table, and figure numbers for referenced information. A site plan, showing relevant investigation locations, and summary data tables shall be included in the Figures and Tables sections of the document, respectively.

11.12.3.6 Scope of Activities

A section on the scope of activities shall briefly describe all activities performed during the investigation event including background information research, implemented health and safety measures that affected or limited the completion of tasks, drilling, test pit or

other excavation methods, well construction methods, field data collection, survey data collection, chemical analytical testing, aquifer testing, remediation system pilot tests, and IDW storage or disposal.

11.12.3.7 Field Investigation Results

A section shall provide a summary of the procedures used and the results of all field investigation activities conducted at the site including the dates that investigation activities were conducted, the type and purpose of field investigation activities performed, field screening measurements, logging and sampling results, pilot test results, construction details, and conditions observed. Field observations or conditions that altered the planned work or may have influenced the results of sampling, testing, and logging shall be reported in this section. The following sections shall be included.

11.12.3.8 Site Conditions

11.12.3.8.i Surface Conditions

A section on surface conditions shall provide a brief detailed description of current site topography, features and structures including a description of topographic drainages, man-made drainages, vegetation, erosional features, and basins. It shall also include a detailed description of current site usage and any current operations at the site. In addition, descriptions of features located in surrounding sites that may have an impact on the subject site regarding sediment transport, surface water run-off, or contaminant fate and transport shall be included in this section.

11.12.3.8.ii General Subsurface Conditions

A section on subsurface conditions shall provide a brief, detailed description of the general site conditions observed during the subsurface investigations, including relevant soil horizons, stratigraphy, presence of groundwater, and other relevant information. A site plan showing the locations of all borings and excavations advanced during the investigation and, as applicable, previous investigations shall be included in the Figures section of the work plan. A brief description of the stratigraphic units that were observed during the investigation shall be included in this subsection if no previous investigations have been conducted at the site.

11.12.3.9 Exploratory Drilling or Excavation Investigations

A section shall describe the locations, methods, and depths of subsurface explorations. The description shall include the types of equipment used, the logging procedures, the soil or rock classification system used to describe the observed materials, exploration equipment decontamination procedures, and conditions encountered that may have affected or limited the investigation.

A description of the site conditions observed during subsurface investigation activities shall be included in this section, including soil horizon and stratigraphic information.

Site plans showing the locations of all borings and excavations shall be included in the Figures Section of the report. Boring and test pit logs for all exploratory borings and test pits shall be presented in an appendix or attachment to the report.

11.12.3.10 Exploratory and Monitoring Well Boring Geophysical Logging

A section shall describe the methods, dates of measurement, depth intervals measured, and the results of geophysical logging. The relative merits and limitations of each geophysical logging method employed shall be discussed, along with any field conditions or instrument malfunctions that occurred that may have affected the results of the geophysical logging.

11.12.3.11 Subsurface Conditions

A section on subsurface conditions shall describe known subsurface lithology and structures, based on observations made during the current and previous subsurface investigations, including interpretation of geophysical logs and as-built drawings of man-made structures. A description of any known locations of pipelines and utility lines and observed geologic structures shall also be included in this section. A site plan showing boring and excavation locations and the locations of the site's above- and below-ground structures shall be included in the Figures Section of the report. In addition, cross-sections shall be constructed, if appropriate, to provide additional visual presentation of site or regional subsurface conditions.

11.12.3.12 Monitoring Well Construction and Boring or Excavation Abandonment

A section shall describe the methods and details of monitoring well construction and the methods used to abandon or backfill exploratory borings and excavations. The description shall include the dates of well construction, boring abandonment, or excavation backfilling. In addition, well construction diagrams shall be included in an appendix or attachment with the associated boring logs for monitoring well borings. The Permittees may submit well abandonment reports as an appendix to the investigation report.

11.12.3.13 Groundwater Conditions

A section shall describe groundwater conditions observed beneath the subject site and relate local groundwater conditions to regional groundwater conditions. A description of the depths to water, aquifer thickness, and groundwater flow directions shall be included in this section for alluvial groundwater, shallow perched groundwater, intermediate perched groundwater, and regional groundwater, as appropriate to the investigation. Figures showing well locations, surrounding area, and groundwater elevations and flow directions for each hydrologic zone shall be included in the Figures Section of the report.

11.12.3.14 Surface Water Conditions

A section shall describe surface water conditions and include a description of surface water run-off, drainage, surface water sediment transport, and contaminant transport in surface water as suspended load and as a dissolved phase in surface water via natural and man-made drainages, if applicable. A description of contaminant fate and transport shall be included, if appropriate.

11.12.3.15 Surface Air and Subsurface Vapor Conditions

A section shall describe surface air and subsurface vapor monitoring and sampling methods used during the site investigation. It shall also describe observations made during the site investigation regarding subsurface flow pathways and the subsurface air-flow regime.

11.12.3.16 Materials Testing Results

A section shall discuss the materials testing results, such as core permeability testing, grain size analysis, or other materials testing results. Sample collection methods, locations, and depths shall also be included. Corresponding summary tables shall be included in the Tables Section of the report.

11.12.3.17 Pilot Testing Results

A section shall discuss the results of any pilot tests. Pilot tests are typically conducted after initial subsurface investigations are completed and the need for additional investigation or remediation has been evaluated. Pilot tests, including aquifer tests and remediation system pilot tests, shall be addressed through separate work plans and pilot test reports. The format for pilot test work plans and reports shall be approved by the Department prior to submittal.

11.12.3.18 Regulatory Criteria

A section shall set forth the cleanup standards, risk-based screening levels, and risk-based cleanup goals for each pertinent medium at the subject site. The appropriate cleanup levels for each site shall be included if site-specific levels have been established at separate Facility sites or units. A table summarizing the applicable cleanup standards or levels or inclusion of applicable cleanup standards or levels in the data tables shall be included as part of the document. The risk assessment, if conducted, shall be presented in a separate document or in an appendix to this report. If cleanup or screening levels calculated in the Department-approved risk evaluation are employed, the risk evaluation document shall be referenced and shall include pertinent page numbers for referenced information.

11.12.3.19 Site Contamination

A section shall provide a description of sampling intervals and methods for detection of surface and subsurface contamination in soils, rock, sediments, groundwater, and surface water, and as vapor-phase contamination. Only factual information shall be included in this section. Interpretation of the data shall be reserved for the summary and conclusions sections of the report. Tables summarizing all sampling, testing, and screening results for detected contaminants shall be prepared in a format approved by the Department. The tables shall be presented in the Tables Section of the report.

11.12.3.19.i Soil, Rock, and Sediment Sampling

A section shall describe the sampling of soil, rock, and sediment. It shall include the dates, locations and methods of sample collection; sampling intervals; sample logging methods; screening sample selection methods; and laboratory sample selection methods including the collection depths for samples submitted for laboratory analyses. A site plan showing the sample locations shall be included in the Figures Section of the report.

11.12.3.19.ii Soil, Rock, and Sediment Sample Field Screening Results

A section shall describe the field screening methods used during the investigation and the field screening results. Field screening results also shall be presented in summary tables in the Tables Section of the document. The limitations of field screening instrumentation and any conditions that influenced the results of field screening shall be discussed in this section.

11.12.3.19.iii Soil, Rock, and Sediment Sampling Analytical Results

A section shall summarize the results of laboratory analysis for soil, rock, and sediment samples. It shall also describe the analytical methods used and provide a comparison of the analytical results to background levels, cleanup standards, or established cleanup levels for the site. The laboratory results also shall be presented in summary tables in the Tables Section of the document. Field conditions and sample collection methods that could potentially affect the analytical results shall be described in this section. If appropriate, soil analytical data shall be presented with sample locations on a site plan and included in the Figures Section of the report.

11.12.3.19.iv Groundwater Sampling

A section on groundwater sampling shall describe the dates, locations, depths, and methods of sample collection; methods for sample logging; and methods for screening and laboratory sample selection. A map showing all sites and surrounding area well locations shall be included in the Figures Section of the report.

11.12.3.19.v Groundwater General Chemistry

A section on the general groundwater chemistry shall describe the results of measurement of field purging parameters and field analytical measurements. Field parameter measurements and field analytical results also shall be presented in summary tables in the Tables Section of the document. The limitations of field measurement instrumentation and any conditions that may have influenced the results of field screening shall be discussed in this section. As determined by the Permittees and the Department, relevant water chemistry concentrations shall be presented as data tables or as iso-concentration contours on a map included in the Figures Section of the report.

11.12.3.19.vi Groundwater Chemical Analytical Results

A section shall summarize the results of groundwater chemical analyses. It shall describe the groundwater chemical analytical methods and analytical results. It shall also provide a comparison of the data to cleanup standards or established cleanup levels for the site. The rationale or purpose for altering or modifying the groundwater sampling program outlined in the site investigation work plan shall also be provided in this section. Field conditions shall be described in this section that may have affected the analytical results during sample collection. Tables summarizing the groundwater laboratory, field, and field sample QA/QC chemical analytical data; applicable cleanup levels; and modifications to the groundwater sampling program shall be provided in the Tables Section of the report. Relevant contaminant concentrations shall be presented as individual analyte concentrations, data tables, or as isoconcentration contours on a map included in the Figures Section of the report.

11.12.3.19.vii Surface Water Sampling

A section shall describe the surface water sampling and shall include the dates, times, locations, depths, and methods of sample collection. It shall also describe methods for sample logging, sample-screening methods, and laboratory sample selection methods. A map showing all surface-water sampling locations shall be included in the Figures Section of the report.

11.12.3.19.viii Surface Water General Chemistry

A section on the surface water general chemistry shall describe the results of measurement of field parameters and field analytical measurements. Field parameter measurements and field analytical results also shall be presented in summary tables in the Tables Section of the document. The limitations of field measurement instrumentation and any conditions that influenced the results of field screening shall be discussed in this Section. Relevant water chemistry concentrations shall be presented as data tables on a map included in the Figures Section of the report.

11.12.3.19.ix Surface Water Chemical Analytical Results

A section shall summarize the results of surface water chemical analyses. It shall describe the analytical methods and analytical results, and provide a comparison of the data to the cleanup standards or established background or cleanup levels for the site. The rationale or purpose for altering or modifying the surface-water sampling program outlined in the site investigation work plan also shall be provided in this section. Field conditions that may have affected the analytical results during sample collection shall be described in this section. Tables summarizing the surface water laboratory, field, and analytical field sample QA/QC analytical data; applicable cleanup levels; and modifications to the surface-water sampling program shall be provided in the Tables Section of the report. Relevant contaminant concentrations shall be presented as individual analyte concentrations or as data tables on a map included in the Figures Section of the report.

11.12.3.19.x Air and Subsurface Vapor Sampling

A section shall describe the air and subsurface vapor sampling. It shall describe the dates, locations, depths or elevations above ground surface, methods of sample collection, methods for sample logging, and methods for laboratory sample selection. A map showing all air sampling locations shall be provided in the Figures Section of the report.

11.12.3.19.xi Air and Subsurface Vapor Field Screening Results

A section shall describe the air and subsurface vapor field screening results. It shall describe the field screening methods used for ambient air and subsurface vapors during the investigation. Field screening results shall also be presented in summary tables in the Tables Section of the report. The locations of ambient air and subsurface vapor screening sample collection shall be presented on a site plan included in the Figures Section of the report. The limitations of field screening instrumentation and any conditions that influenced the results of field screening shall be discussed in this Section.

11.12.3.19.xii Air and Subsurface Vapor Laboratory Analytical Results

A section shall describe the results of air and subsurface vapor laboratory analysis. It shall describe the air sampling laboratory analytical methods and analytical results, and provide a comparison of the data to emissions standards or established cleanup or emissions levels for the site. The rationale or purpose for altering or modifying the air monitoring or sampling program outlined in the site investigation work plan also shall be provided in this section. Field conditions that may have affected the analytical results during sample collection shall be described in this section. Tables summarizing the air sample laboratory, field, and analytical field sample QA/QC data; applicable cleanup levels or emissions standards; and modifications to the air sampling program shall be provided in the Tables Section of the report. Relevant contaminant concentrations shall

be presented as individual analyte concentrations, data tables, or as iso-concentration contours on a map included in the Figures Section of the report.

11.12.3.20 Conclusions

A section shall provide a brief summary of the investigation activities and a discussion of the conclusions of the investigation conducted at the site. In addition, this section shall provide a comparison of the results to applicable cleanup or screening levels, and to relevant historical investigation results and analytical data. Potential receptors, including groundwater, shall be identified and discussed. An explanation shall be provided with regard to data gaps. A risk assessment may be included as an appendix to the investigation report; however, the risk assessment shall be presented in the Risk Assessment format described in Permit Section 11.12.5. References to the risk assessment shall be presented only in the summary and conclusions sections of the Investigation Report.

11.12.3.21 Recommendations

A section shall discuss the need for further investigation, corrective measures, risk assessment and monitoring, or recommendations for corrective action completed, based on the conclusions provided in the Conclusions section. It shall include explanations regarding additional sampling, monitoring, and site closure. A corresponding schedule for further action regarding the site shall also be provided. No action recommendations shall include the anticipated schedule for submittal of a petition for a permit modification.

11.12.3.22 Tables

A section shall provide the following summary tables as applicable:

(1) tables summarizing regulatory criteria, background levels, and applicable cleanup levels (this information may be included in the analytical data tables instead of as separate tables);

(2) tables summarizing field survey location data. Separate tables shall be prepared for well locations and individual medium sampling locations except where the locations are the same for more than 1 medium;

(3) tables summarizing field screening and field parameter measurements of soil, rock, sediments, groundwater, surface water, and air quality data;

(4) a table summarizing soil, rock, and/or sediment laboratory analytical data. It shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;

(5) a table summarizing the groundwater elevations and depths to groundwater. The table shall include the monitoring well depths and the screened intervals in each well;

(6) a table summarizing the groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;

(7) a table summarizing the surface water laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;

(8) a table summarizing the air sample screening and laboratory analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;

(9) tables summarizing the pilot test data, if applicable, including units of measurement and types of instruments used to obtain measurements; and

(10) a table summarizing any materials test data.

With prior approval from the Department, the Permittees may combine one or more of the tables. Data presented in the tables shall include the current data, dates of data collection, analytical methods, detection limits, and significant data quality exceptions. The summary analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

11.12.3.23 Figures

A section shall provide the following figures as applicable:

(1) a vicinity map showing topography and the general location of the subject site relative to surrounding features and properties;

(2) a site plan that presents any pertinent site features and structures, underground utilities, well locations, and remediation system location(s) and details. Off-site well locations and other relevant features shall be included on the site plan. Additional site plans may be required to present the locations of relevant off-site well locations, structures and features;

(3) figures showing boring or excavation locations and sampling locations;

(4) figures presenting soil sample field screening and laboratory analytical data;

(5) figures displaying the locations of all newly installed and existing wells and borings;

(6) figures presenting monitoring well and piezometer locations, groundwater elevation data, and groundwater flow directions;

(7) figures presenting groundwater laboratory analytical data, including any past data requested by the Department. The laboratory analytical data corresponding to each sampling location may be presented in table form on the figure or as an isoconcentration map;

(8) figures presenting surface water sample locations and field measurement data including any past data requested by the Department;

(9) figures presenting surface water laboratory analytical data including any past data requested by the Department. The laboratory analytical data corresponding to each sampling location may be presented in table form on the figure;

(10) figures showing air sampling locations and presenting air quality. The field screening or laboratory analytical data corresponding to each sampling location may be presented in table form on the figure or as an isoconcentration map;

(11) figures presenting geologic cross-sections based on outcrop and borehole data; and

(12) figures presenting pilot test locations and data, where applicable, including site plans or graphic data presentation.

All figures shall include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers. All maps shall have a date.

11.12.3.24 Appendices

Each investigation report shall include the following appendices. Additional appendices may be necessary to present data or documentation not listed below.

11.12.3.24.i Field Methods

An appendix shall provide detailed descriptions of the methods used to acquire field measurements of each medium that was surveyed or tested during the investigation. This appendix shall include exploratory drilling or excavation methods, the methods and types of instruments used to obtain field screening, field analytical or field parameter measurements, instrument calibration procedures, sampling methods for each medium investigated, decontamination procedures, sample handling procedures, documentation procedures, and a description of field conditions that affected procedural or sample testing results. Methods of measuring and sampling during pilot tests shall be reported in this appendix, if applicable. Geophysical logging methods shall be discussed in a separate section of this appendix. Investigation derived waste (IDW) storage and disposal methods shall also be discussed in this appendix. Copies of IDW disposal documentation shall be provided in a separate appendix.

11.12.3.24.ii Boring/Test Pit Logs and Well Construction Diagrams

An appendix shall provide boring logs, test pit logs, or other excavation logs, and well construction details. In addition, a key to symbols and a soil or rock classification system shall be included in this appendix. Geophysical logs shall be provided in a separate section of this appendix.

11.12.3.24.iii Analytical Program

An appendix shall discuss the analytical methods, a summary of data quality objectives, and the data quality review procedures. A summary of data quality exceptions and their effect on the acceptability of the field and laboratory analytical data with regard to the investigation and the site status shall be included in this appendix along with references to the case narratives provided in the laboratory reports.

11.12.3.24.iv Analytical Reports

An appendix shall provide the contract laboratory final analytical data reports generated for the investigation. The reports shall include all chain-of-custody records and Level II QA/QC results provided by the laboratory. The final laboratory reports and data tables shall be provided electronically in a format approved by the Department. Paper copies (or copies electronically scanned in PDF format) of all chain-of-custody records shall be provided with the reports.

11.12.3.24.v Other Appendices

Other appendices containing additional information shall be included as required by the Department or as otherwise appropriate.

11.12.4 Periodic Monitoring Report

The Permittees shall use the following guidance for preparing periodic monitoring reports. The reports shall present the reporting of periodic groundwater, surface water, vapor, and remediation system monitoring at the Facility. The following sections provide a general outline for monitoring reports, and also provide the minimum requirements for reporting for specific Facility sites, areas, and regional monitoring. All data collected during each monitoring and sampling event in the reporting period shall be included in the reports. In general, interpretation of data shall be presented only in the background, conclusions, and recommendations sections of the reports. The other text sections of the reports shall be reserved for presentation of facts and data without interpretation or qualifications.

11.12.4.1 Title Page

The title page shall include the type of document; Facility name; area designation; SWMU or AOC name, site, watershed, and any other unit name; and the submittal date. A signature block providing spaces for the names and titles of the responsible DOE and LANS representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

11.12.4.2 Executive Summary (Abstract)

The executive summary or abstract shall provide a brief summary of the purpose, scope, and results of the monitoring conducted at the subject site during the reporting period.

The area (*e.g.*, Plume-front, Facility-wide) SWMU, AOC and site name, location, and/or area designation shall be included in the executive summary. In addition, this section shall include a brief summary of conclusions based on the monitoring data collected.

11.12.4.3 Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the report. The corresponding page numbers for the titles of each section of the report shall be included in the table of contents.

11.12.4.4 Introduction

The introduction section shall include the Facility name, area designation physical area and/or, unit location, and unit status as applicable (*e.g.* closed, corrective action). General information on the site usage and status shall be included in this section. A brief description of the purpose of the monitoring, type of monitoring conducted, and the type of results presented in the report also shall be provided in this section.

11.12.4.5 Scope of Activities

A section on the scope of activities shall briefly describe all activities performed during the monitoring event or reporting period including field data collection, analytical testing, remediation system monitoring, if applicable, and purge/decontamination water storage and disposal.

11.12.4.6 Regulatory Criteria

A section on regulatory criteria shall provide information regarding applicable cleanup standards, risk-based screening levels and risk-based cleanup goals for the subject site. A separate table summarizing the applicable screening levels or standards or inclusion of the applicable cleanup standards or screening levels in the data tables can be substituted for this section. The appropriate cleanup or screening levels for each site shall be included, if site-specific levels have been established at separate sites. Risk-based evaluation procedures, if used to calculate cleanup or screening levels, must either be included as an attachment or referenced. The specific document and page numbers must be included for all referenced materials.

11.12.4.7 Monitoring Results

A section shall provide a summary of the results of monitoring conducted at the site. This section shall include the dates and times that monitoring was conducted, the measured depths to groundwater, directions of groundwater flow, field air and water quality measurements, contaminant surveys, static pressures, field measurements, and a comparison to previous monitoring results. Field observations or conditions that may influence the results of monitoring shall be reported in this section. Tables summarizing vapor-monitoring parameters, groundwater elevations, depths to groundwater

measurements, and other field measurements can be substituted for this section. The tables shall include all information required in Permit Section 11.12.4.11.

11.12.4.8 Analytical Data Results

A section shall discuss the results of the chemical analyses. It shall provide the dates of sampling, the analytical methods, and the analytical results. It shall also provide a comparison of the data to previous results and to background levels, cleanup standards, or established cleanup levels for the site. The rationale or purpose for altering or modifying the monitoring and sampling program shall be provided in this section. A table summarizing the laboratory analytical data, QA/QC data, applicable cleanup levels, and modifications to the sampling program can be substituted for this section. The tables shall include all information required in Permit Section 11.12.4.11.

11.12.4.9 Remediation System Monitoring

A section shall discuss the remediation system monitoring. It shall summarize the remediation system's capabilities and performance. It shall also provide monitoring data, treatment system discharge sampling requirements, and system influent and effluent sample analytical results. The dates of operation, system failures, and modifications made to the remediation system during the reporting period shall also be included in this section. A summary table may be substituted for this section. The tables shall include all information required in Permit Section 11.12.4.11.

11.12.4.10 Summary

A summary section shall provide a discussion and conclusions of the monitoring conducted at the site. In addition, this section shall provide a comparison of the results to applicable cleanup levels, and to relevant historical monitoring and laboratory analytical data. An explanation shall be provided with regard to data gaps. A discussion of remediation system performance, monitoring results, modifications, if applicable, and compliance with discharge requirements shall be provided in this section. Recommendations and explanations regarding future monitoring, remedial actions, or site closure, if applicable, shall also be included in this section.

11.12.4.11 Tables

A section shall provide the following summary tables for the media sampled:

(1) a table summarizing the regulatory criteria (a Regulatory Criteria text section may be substituted for this table or the applicable cleanup levels may be included in the analytical data tables);

(2) a table summarizing groundwater elevations and depths to groundwater data. The table shall include the monitoring well depths, the screened intervals in each well, and the dates and times of measurements;

(3) a table summarizing field measurements of surface water quality data;

(4) a table summarizing field measurements of vapor monitoring data (must include historical vapor monitoring data as described above);

(5) a table summarizing field measurements of groundwater quality data (must include historical water quality data as described above);

(6) a table summarizing vapor sample analytical data (must include historical vapor sample analytical data as described above);

(7) a table summarizing surface water analytical data (must include historical surface water analytical data as described above);

(8) a table summarizing groundwater analytical data (must include historical groundwater analytical data as described above); and

(9) a table summarizing remediation system monitoring data, if applicable (must include historical remediation system monitoring data as described above).

With prior approval from the Department, the Permittees may combine one or more of the tables. Data presented in the tables shall include the current sampling and monitoring data plus data from the three previous monitoring events or, if data from less than three monitoring events is available, data acquired during previous investigations. Remediation system monitoring data also shall be presented. The dates of data collection shall be included in the tables. Summary tables may be substituted for portions of the text. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

11.12.4.12 Figures

The section shall include the following figures:

(1) a vicinity map showing topography and the general location of the subject site relative to surrounding features or properties;

(2) a site plan that presents pertinent site features and structures, well and piezometer locations, and remediation system location(s) and features. Off-site well locations and pertinent features shall be included on the site plan, if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features;

(3) figures presenting the locations of piezometer, monitoring and other well locations, groundwater elevation data, and groundwater flow directions;

(4) figures presenting groundwater analytical data for the current monitoring event. The analytical data corresponding to each sampling location may be presented as individual concentrations or in table form on the figure or as an iso-concentration map;

(5) figures presenting surface water sampling locations and analytical data for the current monitoring period if applicable;

(6) figures presenting vapor sampling locations and analytical data for the current monitoring event if applicable. The analytical data corresponding to each sampling location may be presented as individual concentrations or in table form on the figure or as an iso-concentration map; and

(7) figures presenting geologic cross-sections based on outcrop and borehole data, if applicable.

All figures shall include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers. All figures shall have a date.

11.12.4.13 Appendices

Each monitoring report shall include the following appendices. Additional appendices may be necessary to present data or documentation not listed below.

11.12.4.13.i Field Methods

An appendix shall include the methods used to acquire field measurements of groundwater elevations, vapor and water quality data, and vapor, surface water and groundwater samples. It shall include the methods and types of instruments used to measure depths to water, air or headspace parameters, flow measurements, and water quality parameters. In addition, decontamination, well purging techniques, well sampling techniques, and sample handling procedures shall be provided in this appendix. Methods of measuring and sampling remediation systems shall be reported in this appendix, if applicable. Purge and decontamination water storage and disposal methods shall also be presented in this appendix. Copies of purge and decontamination water disposal documentation shall be provided in a separate appendix, if applicable.

11.12.4.13.ii Analytical Program

An appendix shall discuss the analytical program. It shall include the analytical methods, a summary of data quality objectives, and data quality review procedures. A summary of data quality exceptions and their effect on the acceptability of the analytical data with regard to the monitoring event and the site status shall be included in this appendix along with references to case narratives provided in the laboratory reports.

11.12.4.13.iii Analytical Reports

An appendix shall provide the analytical reports and shall include the contract laboratory final chemical analytical data reports generated during this reporting period. The reports must include all chain-of-custody records and Level II QA/QC results provided by the laboratory. The laboratory final reports and data tables shall be provided electronically in a format approved by the Department. Paper copies (or electronically scanned in PDF format) of all chain-of-custody records shall be provided with the reports.

11.12.5 Risk Assessment Report

The Permittees shall prepare risk assessment reports for sites requiring corrective action at the Facility using the format listed below. This Permit Section (11.12.5) provides a general outline for risk assessments and also lists the minimum requirements for describing risk assessment elements. In general, interpretation of data shall be presented only in the Background, Conceptual Site Model, and Conclusions and Recommendations Sections of the reports. The other text sections of the Risk Assessment report shall be reserved for presentation of sampling results from all investigations, conceptual and mathematical elements of the risk assessment, and presentations of toxicity information and screening values used in the risk assessment. The general risk assessment outline, applicable to both human health and ecological risk assessments, is provided below.

11.12.5.1 Title Page

The title page shall include the type of document; Facility name; Area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the names and titles of the responsible DOE and LANS representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

11.12.5.2 Executive Summary (Abstract)

The executive summary or abstract section shall provide a brief summary of the purpose and scope of the risk assessment of the subject site. The executive summary shall also briefly summarize the conclusions of the risk assessment. The Facility, SWMU, AOC, and site names; location; and Area designation shall be included in the executive summary.

11.12.5.3 Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the risk assessment. The corresponding page numbers for the titles of each unit of the report shall be included in the table of contents.

11.12.5.4 Introduction

The introduction section shall include the Facility name, area designation, unit location, and unit status (*e.g.,* closed, corrective action). General information on the current site usage and status shall be included in this section.

11.12.5.5 Background

The background section shall describe relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled

figure shall be included in the document showing the locations of current and former site structures and features.

11.12.5.6 Site Description

A section shall describe current site topography, features and structures including topographic drainages, man-made drainages, erosional features, current site uses, and other data relevant to assessing risk at the site. Depth to groundwater and direction of groundwater flow shall be included in this section. The presence and location of surface water bodies such as any springs or wetlands shall be noted in this section. Photographs of the site may be incorporated into this section. Ecological features of the site shall be described here, including type and amount of vegetative cover, observed and expected wildlife receptors, and level of disturbance of the site. A topographical map of the site and vicinity of the site showing habitat types, boundaries of each habitat, and any surface water features shall be included in the Figures Section of the document.

11.12.5.7 Sampling Results

A section shall discuss the results of the sampling at the site. It shall include a description of the history of releases of contaminants, the known and possible sources of contamination, and the vertical and lateral extent of contamination present in each medium. This section shall include summaries of sampling results of all investigations including site plans (included in the Figures Section of the report) showing locations of detected contaminants. This section shall reference pertinent figures, data summary tables, and references in previous reports. References to previous reports shall include page, table, and figure numbers for referenced information. Summaries of sampling data shall include for each constituent: the maximum value detected, the detection limit, the 95 percent upper confidence level (UCL) of the mean value detected (if applicable to the data set), and whether the 95 percent UCL of the mean was calculated based on a normal or lognormal distribution. Background values used for comparison to inorganic constituents at the site shall be presented here. The table of background values should appear in the Tables Section of the document and include actual values used as well as the origin of the values (*e.g.* Facility-wide, UCL, upper tolerance level (UTL)). This section shall also include a discussion of how "non-detect" sample results were handled in the averaging of data.

11.12.5.8 Conceptual Site Model

A section shall present the conceptual site model. It shall include information on the expected fate and transport of contaminants detected at the site. This section shall provide a list of all sources of contamination at the site. Sources that are no longer considered to be ongoing but represent the point of origination for contaminants transported to other locations shall be included. The discussion of fate and transport shall address potential migration of each contaminant in each medium, potential breakdown products and their migration, and anticipated pathways of exposure for human or

ecological receptors. Diagrammatic representations of the conceptual site model shall appear in the Figures Section of the document.

For human health risk assessments, the conceptual site model shall include the current and reasonably foreseeable future land use and residential land use for all risk assessments. All values for exposure parameters and the source of those values shall be included in table format and presented in the Tables Section of the document.

Conceptual site models presented for ecological risk assessments shall identify assessment endpoints and measurement receptors for the site. The discussion of the model shall explain how the measurement receptors for the site are protective of the wildlife receptors identified by the Permittees in the Site Description Section (*see* Permit Section 11.12.5.6).

11.12.5.9 Risk Screening Levels

A section shall present the actual screening values used for each contaminant for comparison to all human health and ecological risk screening levels. The Department's SSLs for residential and industrial soil shall be used to screen soil for human health using EPA's *Risk Assessment Guidance for Superfund (RAGS), Volume I, Part A, 1989* as updated. For those contaminants not appearing on the Department's SSL table, the EPA Region 6 soil screening value adjusted to meet the Department's risk goal of 10^{-5} for total risk for carcinogens shall be used to screen the site for human health risks. Screening for ecological risk shall be conducted using U.S. EPA's ECO-SSLs, or derive a screening level using the methodology in the Department's *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening–Level Ecological Risk Assessment. (*Version 2.0)(July 2008). If no valid toxicological studies exist for a particular receptor or contaminant, the contaminant/receptor combination shall be addressed using qualitative methods. If a Department-approved site-specific risk scenario is used for the human health risk assessment, this section shall include all toxicity information and exposure assessment equations used for the site-specific scenario as well as the sources for that information. Other regulatory levels applicable to screening the site, such as drinking water Maximum Contaminant Levels (MCLs), shall also be included in this section.

11.12.5.10 Risk Assessment Results

A section shall present all risk values, hazard quotients (HQ), and HIs for human health based on current and reasonably foreseeable future land use. Where the current or reasonably foreseeable future land use is not residential, risk values, HQs, and HIs for a residential land use scenario shall also be calculated and reported. The residential scenario shall be used for comparison purposes only, unless the land use becomes residential. This section shall also present the HQ and HI for each contaminant for each ecological receptor.

11.12.5.10.i Uncertainty analysis

A section shall include discussion of qualitative, semi-quantitative, and quantitative uncertainty in the risk assessment and estimate the potential impact of the various uncertainties.

11.12.5.11 Conclusions and Recommendations

A section shall include the interpretation of the results of the risk assessment and any recommendations for future disposition of the site. This section may include additional information and considerations that the Permittees believe are relevant to the analysis of the site.

11.12.5.12 Tables

A section shall provide the following summary tables, as appropriate:

(1) a table presenting background values used for comparison to inorganic constituents at the site. The table shall include actual values used as well as the origin of the values (Facility-wide, UCL, UTL, or maximum);

(2) a table summarizing sampling data shall include, for each constituent, all detected values above background, the maximum value detected, the 95 percent UCL of the mean value detected (if applicable to the data set), and whether that 95 percent UCL of the mean was calculated based on a normal or lognormal distribution;

(3) a table of all screening values used and the sources of those values.

(4) a table presenting all risk values, HQs, and HIs under current and reasonably foreseeable future land use for human health;

(5) if residential use is not a current or reasonably foreseeable future land use, a table presenting all risk values, HQs, and HIs under a residential land use scenario for human health shall be included for comparison purposes;

(6) a table presenting the HQ and HI for each contaminant for each ecological receptor; and

(7) a table presenting values for exposure parameters and the source of the values.

With prior approval from the Department, the Permittees may combine one or more of the tables. Data presented in the summary tables shall include information on detection limits and significant data quality exceptions. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

11.12.5.13 Figures

A section shall present the following figures for each site, as appropriate:

(1) a vicinity map showing topography and the general location of the subject site relative to surrounding features or properties;

(2) for human health risk assessments, a site plan that presents pertinent site features and structures, underground utilities, well locations, and remediation system location(s) and its details. Off-site well locations and other relevant features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features;

(3) for ecological risk assessments, a topographical map of the site and vicinity of the site showing habitat types, boundaries of each habitat, and any surface water features; and

(4) conceptual site model diagrams for both human health and ecological risk assessments.

With prior approval from the Department, the Permittees may combine one or more of the figures. All figures shall include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers.

11.12.5.14 Appendices

Each risk assessment report shall include appendices containing supporting data. Appendices may include the results of statistical analyses of data sets and comparisons of data, full sets of results of all sampling investigations at the site, or other data as appropriate.

11.12.6 Corrective Measures Evaluation Report

The Permittees shall prepare corrective measures evaluations for sites requiring corrective measures using the format listed below. This Permit Section (11.12.6) provides a general outline for corrective measures evaluations and also lists the minimum requirements for describing corrective measures when preparing these documents. All investigation summaries, site condition descriptions, corrective action goals, corrective action options, remedial options selection criteria, and schedules shall be included in the corrective measures evaluations. In general, interpretation of historical investigation data and discussions of prior interim activities shall be presented only in the background sections of the corrective measures evaluations. At a minimum, detections of contaminants encountered during previous site investigations shall be presented in the corrective measures evaluations in table format with an accompanying site plan showing sample locations. The other text sections of the corrective measures evaluations shall be reserved for presentation of corrective action-related information regarding anticipated or potential site-specific corrective action options and methods relevant to the project. The general corrective measures evaluation outline is provided below.

11.12.6.1 Title Page

The title page shall include:

(1) the type of document;

(2) facility name;

(3) area designation;

(4) SWMU or AOC name, site, and any other unit name; and

(5) the submittal date.

A signature block providing spaces for the names and titles of the responsible DOE and LANS representatives shall be provided on the title page in accordance with 40 CFR § 270.11(d)(1).

11.12.6.2 Executive Summary (Abstract)

This executive summary or abstract shall provide a brief summary of the purpose and scope of the corrective measures evaluation to be conducted at the subject site. The executive summary or abstract shall also briefly summarize the conclusions of the evaluation. The SWMU, AOC, and site names, location, and Area designation shall be included in the executive summary.

11.12.6.3 Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the corrective measures evaluation. The corresponding page numbers for the titles of each section of the report shall be included in the table of contents.

11.12.6.4 Introduction

The Introduction Section shall include the Facility name, Area designation, site location, and site status (*e.g.* closed, corrective action). General information on the current site usage and status shall be included in this Section. A brief description of the purpose of the corrective measures evaluation and the corrective action objectives for the project also shall be provided in this Section.

11.12.6.5 Background

The Background Section shall describe the relevant background information. This Section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of any subsurface features such as pipelines, underground tanks, utility lines, and other subsurface structures shall be included in this Section and labeled on the site plan, as appropriate.

This Section shall include contaminant and waste characteristics, a brief summary of the history of contaminant releases, known and possible sources of contamination, and the vertical and lateral extent of contamination present in each medium. This Section shall include brief summaries of results of previous investigations, including references to

pertinent figures, data summary tables, and text in previous reports. References to previous reports shall include page, table, and figure numbers for referenced information. Summary tables and site plans showing relevant investigation locations shall be referenced and included in the Tables and Figures Sections of the document, respectively.

11.12.6.6 Site Conditions

11.12.6.6.i Surface Conditions

A section on surface conditions shall describe current and historic site topography, features, and structures, including a description of topographic drainages, man-made drainages, vegetation, and erosional features. It shall also include a description of current uses of the site and any current operations at the site. This section shall also include a description of those features that could potentially influence corrective action option selection or implementation such as archeological sites, wetlands, or other features that may affect remedial activities. In addition, descriptions of features located in surrounding sites that may have an effect on the subject site regarding sediment transport, surface water run-off or contaminant transport shall be included in this section. A site plan displaying the locations of all pertinent surface features and structures shall be included in the Figures Section of the corrective measures evaluation.

11.12.6.6.ii Subsurface Conditions

A section on subsurface conditions shall describe the site conditions observed during previous subsurface investigations. It shall include relevant soil horizon and stratigraphic information, groundwater conditions, fracture data, and subsurface vapor information. A site plan displaying the locations of all borings and excavations advanced during previous investigations shall be included in the Figures Section of the corrective measures evaluation. A brief description of the stratigraphic units anticipated to be present beneath the site may be included in this section if stratigraphic information is not available from previous investigations conducted at the site.

11.12.6.7 Potential Receptors

11.12.6.7.i Sources

A section shall provide a list of all sources of contamination at the subject site where corrective measures are to be considered or required. Sources that are no longer considered to be releasing contaminants at the site, but may be the point of origination for contaminants transported to other locations, shall be included in this section.

11.12.6.7.ii Pathways

A section shall describe potential migration pathways that could result in either acute or chronic exposures to contaminants. It shall include such pathways as utility trenches, paleochannels, surface exposures, surface drainages, stratigraphic units, fractures, structures, and other features. The migration pathways for each contaminant and each

relevant medium should be tied to the potential receptors for each pathway. A discussion of contaminant characteristics relating to fate and transport of contaminants through each pathway shall also be included in this section.

11.12.6.7.iii Receptors

A section shall provide a listing and description of all anticipated potential receptors that could possibly be affected by the contamination present at the site. Potential receptors shall include human and ecological receptors, groundwater, and other features such as pathways that could divert or accelerate the transport of contamination to human receptors, ecological receptors, and groundwater.

11.12.6.8 Regulatory Criteria

A section shall set forth the applicable cleanup standards, risk-based screening levels, and risk-based cleanup goals for each pertinent medium at the subject site. The appropriate cleanup levels for each site shall be included, if site-specific levels have been established at separate sites or units. A table summarizing the applicable cleanup standards or levels, or inclusion of applicable cleanup standards or levels in the summary data tables shall be included in the Tables Section of the document. The risk assessment shall be presented in a separate document or in an appendix to this report. If cleanup or screening levels calculated in a risk evaluation are employed, the risk evaluation document shall be referenced including pertinent page numbers for referenced information.

11.12.6.9 Identification of Corrective Measures Options

A section shall identify and describe potential corrective measures for source, pathway, and receptor controls. Corrective measures options shall include the range of available options including, but not limited to, a no action alternative, institutional controls, engineering controls, in-situ and on-site remediation alternatives, complete removal, and any combination of alternatives that would potentially achieve cleanup goals.

11.12.6.10 Evaluation of Corrective Measures Options

A section shall provide an evaluation of the corrective measures options identified in Permit Section 11.12.6.9. The evaluation shall be based on the applicability, technical feasibility, effectiveness, implementability, impacts to human health and the environment, and cost of each option. A table summarizing the corrective measures alternatives and the criteria listed below shall be included in the Tables Section of the document. The general basis for evaluation of corrective measures options is defined below.

11.12.6.10.i Applicability

Applicability addresses the overall suitability for the corrective action option for containment or remediation of the contaminants in the subject medium for protection of human health and the environment.

11.12.6.10.ii Technical Practicability

Technical practicability describes the uncertainty in designing, constructing, and operating a specific remedial alternative. The description shall include an evaluation of historical applications of the remedial alternative including performance, reliability, and minimization of hazards.

11.12.6.10.iii Effectiveness

Effectiveness assesses the ability of the corrective measure to mitigate the measured or potential impact of contamination in a medium under the current and projected site conditions. The assessment also shall include the anticipated duration for the technology to attain regulatory compliance. In general, all corrective measures described above will have the ability to mitigate the impacts of contamination at the site, but not all remedial options will be equally effective at achieving the desired cleanup goals to the degree and within the same time frame as other options. Each remedy shall be evaluated for both short-term and long-term effectiveness.

11.12.6.10.iv Implementability

Implementability characterizes the degree of difficulty involved during the installation, construction, and operation of the corrective measure. Operation and maintenance of the alternative shall be addressed in this section.

11.12.6.10.v Human Health and Ecological Protectiveness

This category evaluates the short-term (remedy installation-related) and long-term (remedy operation-related) hazards to human health and the environment of implementing the corrective measure. The assessment shall include whether the technology will create a hazard or increase existing hazards and the possible methods of hazard reduction.

11.12.6.10.vi Cost

This section shall discuss the anticipated cost of implementing the corrective measure. The costs shall be divided into:

(1) capital costs associated with construction, installation, pilot testing, evaluation, permitting, and reporting of the effectiveness of the alternative; and

(2) continuing costs associated with operating, maintaining, monitoring, testing, and reporting on the use and effectiveness of the technology.

11.12.6.11 Selection of Preferred Corrective Measure

The Permittees shall propose the preferred corrective measure(s) at the site and provide a justification for the selection in this section. The proposal shall be based upon the ability of the remedial alternative to:

(1) achieve cleanup objectives in a timely manner;

(2) protect human and ecological receptors;

(3) control or eliminate the sources of contamination;

(4) control migration of released contaminants; and

(5) manage remediation waste in accordance with State and Federal regulations.

The justification shall include the supporting rationale for the remedy selection, based on the factors listed in Permit Section 11.12.6.10 and a discussion of short- and long-term objectives for the site. The benefits and possible hazards of each potential corrective measure alternative shall be included in this section.

11.12.6.12 Design Criteria to Meet Cleanup Objectives

The Permittees shall present descriptions of the preliminary design for the selected corrective measures in this section. The description shall include appropriate preliminary plans and specifications to effectively illustrate the technology and the anticipated implementation of the remedial option at the subject area. The preliminary design shall include a discussion of the design life of the alternative and provide engineering calculations for proposed remediation systems.

11.12.6.13 Schedule

A section shall set forth a proposed schedule for completion of remedy-related activities such as bench tests, pilot tests, construction, installation, remedial excavation, cap construction, installation of monitoring points, and other remedial actions. The anticipated duration of corrective action operations and the schedule for conducting monitoring and sampling activities shall also be presented. In addition, this section shall provide a schedule for submittal of reports and data to the Department, including a schedule for submitting all status reports and preliminary data.

11.12.6.14 Tables

A section shall present the following summary tables, as appropriate:

(1) a table summarizing regulatory criteria, background, and/or the applicable cleanup standards;

(2) a table summarizing historical field survey location data;

(3) tables summarizing historical field screening and field parameter measurements of soil, rock, sediments, groundwater, surface water, and air quality data;

(4) tables summarizing historical soil, rock, or sediment laboratory analytical data. The summary tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;

(5) a table summarizing historical groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths and the screened intervals in each well;

(6) tables summarizing historical groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;

(7) tables summarizing historical surface water laboratory analytical data if applicable. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;

(8) tables summarizing historical air sample screening and analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data;

(9) tables summarizing historical pilot or other test data, if applicable, including units of measurement and types of instruments used to obtain measurements;

(10) a table summarizing the corrective measures alternatives and evaluation criteria; and

(11) a table presenting the schedule for installation, construction, implementation and reporting of selected corrective measures.

With prior approval of the Department, the Permittees may combine one or more of the tables. Data presented in the summary tables shall include information on dates of sample collection, analytical methods, detection limits, and significant data quality exceptions. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

11.12.6.15 Figures

A section shall present the following figures for each site, as appropriate:

(1) a vicinity map showing topography and the general location of the subject site relative to surrounding features or properties;

(2) a unit site plan that presents pertinent site features and structures, underground utilities, well locations, and remediation system locations and details. Off-site well locations and other relevant features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features;

(3) figures showing historical soil boring or excavation locations and sampling locations.

(4) figures presenting historical soil sample field screening and laboratory analytical data, if appropriate;

(5) figures showing all existing wells including vapor monitoring wells and piezometers. The figures shall present historical groundwater elevation data and indicate groundwater flow directions;

(6) figures presenting historical groundwater laboratory analytical data including past data, if applicable. The analytical data corresponding to each sampling location may be presented as individual concentrations, in table form on the figure or as an iso-concentration map;

(7) figures presenting historical surface water sample locations and analytical data including past data, if applicable. The laboratory analytical data corresponding to each sampling location may be presented as individual concentrations or in table form on the figure;

(8) figures presenting historical air sampling locations and presenting air quality data. The field screening or laboratory analytical data corresponding to each sampling location may be presented as individual concentrations, in table form on the figure or as an iso-concentration map;

(9) figures presenting historical pilot or other test locations and data, where applicable, including site plans or graphic data presentation;

(10) figures presenting geologic cross-sections based on outcrop and borehole data, if applicable;

(11) figures presenting the locations of existing and proposed remediation systems;

(12) figures presenting existing remedial system design and construction details; and

(13) figures presenting preliminary design and construction details for preferred corrective measures.

All figures must include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers. All figures shall have a date.

11.12.6.16 Appendices

Each corrective measures evaluation shall include, as appropriate, as an appendix, the management plan for waste, including investigation derived waste, generated as a result of construction, installation, or operation of remedial systems or activities conducted. Each corrective measures evaluation shall include additional appendices presenting relevant additional data, such as pilot or other test or investigation data, remediation system design specifications, system performance data, or cost analyses as necessary.

ATTACHMENTS

Attachment A	Technical Area Unit Descriptions
Attachment B	Part A Application
Attachment C	Waste Analysis Plan
Attachment D	Contingency Plan
Attachment E	Inspection Plan
Attachment F	Personnel Training Plan
Attachment G	Closure Plans
Attachment H	Post-Closure Plans (reserved)
Attachment I	Compliance Schedule
Attachment J	Hazardous Waste Management Units
Attachment K	Listing of SWMUs and AOCs
Attachment L	Listing of Off-site Facilities
Attachment M	(reserved)
Attachment N	Figures
Attachment O	Long-term Monitoring and Maintenance Plans (reserved)

ATTACHMENT A

TECHNICAL AREA (TA) - UNIT DESCRIPTIONS

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ATTACHMENT A

This attachment contains TA-specific unit descriptions, including the dimensions, materials of construction, security procedures, and emergency equipment of each unit provided by the Permittees in their permit application.

A.1 TA-3

TA-3 is located in the northern portion of the Facility on South Mesa between Los Alamos Canyon on the north and Two Mile Canyon on the south. Sandia and Mortandad Canyons head on the east margin of TA-3 forming steep cliffs at the top of canyon walls.

A.1.1 TA-3 Building 29

TA-3-29, the Chemistry Metallurgy Research Building (CMR), was established in 1952 as a research facility (*see* Figure 12 in Permit Attachment N (*Figures*)). It is a three story structure containing offices, laboratories, and one permitted container storage unit located in the basement at TA-3 building 29 of Wing 9. The TA-3-29 permitted unit consists of a room (9010) and portions of two other rooms (9020 and 9030) where storage of hazardous and mixed waste occurs. The following provides a description of the permitted unit.

A.1.2 TA-3-29 Room 9010

Room 9010 measures 21 feet by 8 inches wide by 106 feet, 9 inches (in) long (*see* Figure 13 in Permit Attachment N (*Figures)*). The floor is concrete and is painted with an epoxy sealant. Waste storage takes place in the lower level portion of Room 9010 but may also take place in or near the two room enclosures 9010A and 9010B.

The northern enclosure is approximately 10 ft wide by 24 ft long; the southern enclosure measures approximately 17 ft wide by 54 ft long. The enclosures have ceilings, walls with windows, and doors for entry through airlocks; the enclosures are anchored to the floor. The wall to floor joints are sealed with grout. Floors and the lower six inches of the interior enclosure walls are coated with an epoxy sealant. Each enclosure includes emergency and communication equipment as well as ventilation, fire sprinkler, water, and electrical support functions connected to the main building systems. The enclosures are kept at negative pressure by exhaust fans ducted to the building's high-efficiency particulate air filters to provide radioactive material air-release protection.

A.1.3 TA-3-29 Portion of Room 9020

Room 9020 is approximately 27 feet wide by 141 feet long. The permitted container storage area measures 19 feet wide by 25 feet long (*see* Figure 14 in Permit Attachment N (*Figures)*) and is located in the northeast side of the room. The floor is concrete and painted with an epoxy sealant.

A.1.4 TA-3-29 Portion of Room 9030

Room 9030 is approximately 62 feet wide by 141 feet long. The permitted container storage area within Room 9030 measures approximately 30 feet long by 8 feet wide (*see* Figure 15 in Permit Attachment N (*Figures)*) and is located in the southwest corner of the room. The floor is concrete and has been painted with an epoxy sealant. Hand trucks, dollies, or casters will be used to move waste containers from the loading area to the storage portions of the permitted unit. Should a spill occur during waste handling activities, management of the spill and residual material will be performed in accordance with Attachment D (*Contingency Plan*). Drums on dollies will be moved manually and a pallet jack will be used to move standard waste boxes.

A.1.5 Security and Access

Security at TA-3-29 is maintained with physical and administratively-controlled barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into the areas. Eight-foot-high chain-link security fences with barbed wire at the top surround the entire perimeter of the building. Bilingual (*i.e.,* English and Spanish) warning signs are also posted at the entrances to each portion of the permitted unit within the building and can be seen from any approach to these locations. The legends on the signs indicate "Danger: Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The signs are legible from a distance of at least 25 ft. There are four entry gates through the security fence at TA-3-29 (*see* Figure 4 in Permit Attachment N (*Figures)*). A fire access and shipping gate is located south of TA-3-29 and is routinely closed and locked. When the gate is opened for shipments of material or waste, personnel are present at the gate to restrict the entry and exit of unauthorized persons. One combined pedestrian and vehicular unmanned badge reader entry gate is located at the northwest corner of the TA-3-29 fence line. Another unmanned badge reader entry pedestrian gate is located at the southeast corner of the building‘s fence line. This gate is combined with a double vehicular gate which allows access from the parking area south of the building. Security personnel are present at each of these gates during operational hours to restrict the entry and exit of unauthorized persons. Outside doors to the main wings of TA-3-29 are always locked. Access for visitors to the operational portion of the building is controlled through a manned security station in the east side lobby and another on the west side of the building. Roll-up doors to the building can only be opened from inside the building and are also locked; opening these doors must be coordinated with security personnel. The building site is patrolled by security personnel during nonoperational hours to ensure that the gates are locked and that unauthorized entry has not occurred.

A.1.6 Emergency Equipment

TA-3-29 is equipped with an audible alarm system to alert personnel to evacuate the area. The evacuation alarm system may be activated by facility personnel pushing one of the evacuation buttons located throughout TA-3-29. The building also contains a fire alarm system which may be activated by manual pull stations, heat and smoke detectors, and sprinkler system flow valves found throughout TA-3-29. Rooms 9010, 9020, and 9030 contain wet-pipe sprinkler systems that are equipped with fusible-link heads that actuate at 212 degrees Fahrenheit.

Wing 9 of TA-3-29 contains gamma alarms that monitor for the presence of gamma radioactive contamination. Continuous air monitors are utilized throughout TA-3-29 to detect airborne radioactive contamination and, when detected, sound an alarm. The building also has a public address system for announcing fires or evacuations. Telephones with paging capabilities are located throughout TA-3-29. Paging telephones are used to page on-site personnel and may be used in the event of an emergency to communicate the location and nature of hazardous conditions to personnel in the area. The alarm system is interrupted when the paging telephone system is activated to allow personnel to hear the announcement. Personnel working in Rooms 9010, 9020, and 9030 can also use these phones to summons assistance from local emergency response teams in case of emergency. Rooms 9010, 9020, and 9030 are equipped with fire extinguishers and pull stations. Depending on the size of a fire and the fuel source, fire extinguishers may be used by on-site personnel. However, the Facility policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. The fire alarm control panel continuously monitors all fire-suppression and detection systems and transmits signals to the Los Alamos County Fire Department through the Facility's central alarm system.

Fire hydrants installed according to National Fire Protection Association standards are located around the outside of TA-3-29. Water is supplied to the fire hydrants by a municipal water system through 8-in. pipes at an adequate volume and pressure (*i.e.*, 200 gallons per minute and 90 pounds per square inch static pressure) to supply a water hose in the event of a fire. Spill kits, which contain sorbent pillows, safety glasses, and gloves, are located at the south end of Room 9010 in enclosures 9010a and 9010b. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Available personnel decontamination equipment includes safety showers and emergency eyewashes in enclosures 9010a and 9010b.

Personnel working in Room 9020 have access to the eyewashes in enclosures 9010a and 9010b and a safety shower and emergency eyewash in Room 9030. The buddy system will always be employed when containers are actively managed in Rooms 9010, 9020, and 9030 to assure that safety showers and eyewashes can be reached in an emergency. Material Safety Data Sheets provide useful exposure information and are available in Rooms 9010, Room 9030, and outside Room 9130.

A.2 RESERVED

A.3 TA-50

TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south (*see* Figure 22 in Attachment N (*Figures)*). The container storage units at TA-50 include the TA-50-69 Indoor unit (Rooms 102 and 103) and the TA-50-69 Outdoor unit.

The northern and eastern portions of TA-50 drain mainly to an unlined channel on the boundary between TA-50 and TA-35 (east of TA-50), although some flow diverges into a shallow channel running southward between TA-50-37 and TA-50-1.

Security at TA-50 is predominantly maintained with artificial barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into the area.

An 8ft high chain-link security fence surrounds the entire perimeter of TA-50. Bilingual (*i.e.*, English and Spanish) warning signs are posted on the fences at approximately 50 to 75 foot intervals. Warning signs are also posted at the entrances to each area that will manage hazardous and mixed waste and are visible from any approach to these areas. The legends on the posted signs indicate "Danger - Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." Existing signs with a legend other than "Danger-Unauthorized Persons Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry into the active portion can be dangerous. The signs are legible from a distance of 25 ft. Additionally, signs are posted at the entrance to each hazardous and mixed waste permitted unit to address requirements associated with entering and working in the area.

There are four entry gates into TA-50. Two entry gates are located north of TA-50-1. During normal business hours, the easternmost of these two gates may remain open to receive deliveries. After normal business hours, this gate is padlocked. The westernmost of these two gates is the main access gate and remains open during normal business hours for personal and government-owned passenger vehicles. After normal business hours, access through this gate is by badge-reader only. The third gate is a fire access and shipping gate which is located west of TA-50-69 and is routinely kept closed and locked. When this gate is opened for shipments of materials or waste, facility personnel are present in the yard west of TA-50-69 to limit entry by unauthorized persons. When shipments are completed, the gate is re-closed and locked. A fourth gate to the south of TA-50-1 is locked except when authorized access is necessary.

TA-50-69 is located in the southwest quadrant of TA-50. The TA-50-69 Indoor unit was constructed in 1979 to house the Waste Characterization, Reduction, and Repackaging Facility (WCRRF). The primary purpose of WCRRF was to size reduce and repackage large transuranic contaminated metallic items (*e.g.*, glove boxes, process equipment) into standard sized containers for transport to, and disposal at, the Waste Isolation Pilot Plant. The facility was first used to size reduce mixed transuranic waste in 1982. The original function of the WCRRF has since been expanded to include other activities related to hazardous and mixed waste management including waste characterization, transuranic and mixed transuranic waste prohibited item disposition and repackaging operations, and experimental process demonstration support.

TA-50-69 is a single-story building constructed in two phases. The original structure (45ft by 52 ft) was built in 1979 to house the main process room (Room 102) and personnel change rooms. An unloading area (Room 103), a vehicle airlock entrance (Room 104), and a mezzanine over the western third of the main process room were added to the building in 1986.

The exterior walls of TA-50-69 are load-bearing and constructed of structural steel framing with a plastic veneer finish on polystyrene insulation and gypsum wallboard. The interior

walls are similarly constructed. The epoxy-painted floor of the building is a reinforced concrete slab on compacted fill.

A forklift will be used to move containers stored at the permitted units at TA-50-69. Fiberglass-reinforced plywood boxes and palletized drums will be handled with a forklift equipped with tines. Individual drums of waste will be manipulated with a drum-grapple attachment on the forklift. Small containers may be handled manually or with a dolly. Inside TA-50-69 two cranes are available to move heavy objects.

TA-50 is patrolled by security personnel during non-operational hours to ensure that unauthorized entry has not occurred. The locations of the security fences and entry gates at TA-50 are shown on Figure 6 in Permit Attachment N (*Figures*).

TA-50-69 access is controlled through a centralized Operations Center located in TA-50-84. The Indoor permitted unit is always locked and access is gained by a badge reader. Doors to the building and transportainers are locked. Keys to these doors are distributed to designated personnel only. A chain is installed at the east end of the operations area and adjacent to TA-50-84 and is posted with the bilingual hazardous waste sign.

All personnel involved in waste management activities at the TA-50-69 indoor and outdoor permitted units have immediate access to an internal alarm or emergency communication device. In the event of an emergency, this communication equipment allows personnel to contact the operating group management, the Emergency Management and Response personnel, or the Central Alarm Station operator.

TA-50-69 is equipped with an audible alarm system to alert personnel to evacuate the area. The alarm system may be activated by one of the fire alarm pull stations located throughout the building. TA-50-69 also has a public address system for announcing fires or evacuations and telephones with paging capabilities. Paging telephones are used to page on-site personnel and may be used in the event of an emergency to communicate the location and nature of hazardous conditions to personnel in the area. The alarm system is interrupted when the paging telephone system is activated to allow personnel to hear the announcement. Personnel can also use these phones to summon assistance from local emergency response teams in case of an emergency. Personnel may carry pagers, two-way radios, or cellular telephones so they can contact, or be contacted by, on-site and the Facility emergency support personnel at all times.

TA-50-69 is equipped with fire extinguishers and fire suppression systems. Depending on the size of a fire and the fuel source, fire extinguishers may be used by on-site personnel. However, the Facility policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. The fire alarm control panel continuously monitors all fire suppression and detection systems and transmits signals to the Los Alamos County Fire Department through the Facility's central alarm system.

A fire hydrant installed according to National Fire Protection Association standards is located approximately 55 feet west of TA-50-69. Water is supplied to the fire hydrant by a municipal water system through eight inch pipes at an adequate volume and pressure (*i.e.*, 200 gallons

per minute and 90 pounds per square inch static pressure) to supply a water hose in the event of a fire.

TA-50-69 has an automatic wet-pipe sprinkler system in the main building and in the large glove box enclosure. The sprinkler system is heat-activated at 100°C (212°F). The TA-50-69 Outdoor permitted unit transportainers and weather protective structures are not equipped with automatic sprinkler systems; however, a fire extinguisher is located within 20 feet of the unit. Personnel may use the fire alarm pull station at TA-50-69 in the event of a fire at both the indoor and the outdoor permitted units.

Two spill centers are located in TA-50-69 Room 102. They contain spill control equipment, personal protective equipment, and sorbents. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Depending on the size and severity of the spill, EM&R provides additional spill control equipment and assistance upon request. Available personnel decontamination equipment includes safety showers and eye wash stations located in the TA-50-69 indoor permitted unit.

A.3.1 TA-50-69 Indoor Permitted Unit

The TA-50-69 Indoor permitted unit consists of Rooms 102 and 103 as shown in Figure 23 in Attachment N (*Figures)*. Room 102, the main process room, measures approximately 45 feet wide and 52 feet long. Room 103, the unloading area, measures approximately 18 feet wide and 19 feet long and is located adjacent to and southeast of Room 102. A 12 foot by 20-foot roll-up vehicle access door is located at the southernmost end of Room 103 separating the unloading area (Room 103) from the vehicle airlock entrance (Room 104). This design allows for unobstructed transport of oversized fiberglass-reinforced plywood boxes from outside the facility, through the vehicle airlock entrance, into the unloading area, and into the glove box cutting enclosure.

A.3.2 TA-50-69 Outdoor Permitted Unit

The TA-50-69 Outdoor permitted unit was constructed before 1980 and was first used to store mixed waste in 1982. It is located in the southwest corner of TA-50 (*see* Figure 23 in Attachment N (*Figures)*). The TA-50-69 Outdoor unit is comprised of an unlined and non-coated asphalt pad measuring 24 feet in width and 90 feet in length with an additional strip of asphalt added to the southeast end that measures 12 feet in width and 90 feet in length. The entire pad is approximately 4 inches thick and slopes gently (approximately one to five percent) from west to east and up to 2.5 percent toward the centerline. Transportainers and other weather protective structures (*i.e.*, containers covered with tarps, containers inside SWBs) in the permitted unit provide weather protection for containers of various sizes. Painted lines are used to visually delineate the TA-50-69 Outdoor unit boundary. Drainage swales located in the vicinity divert storm water away from the pad. One drainage swale is located just south of the unit; between it and the material disposal area C. A second drainage swale is located on the west side of the permitted unit between Pecos Drive and the TA-50 fence line.

A.4 TA-54

TA-54 consists of 130 acres atop Mesita del Buey and is used for storage of hazardous and mixed waste generated throughout the Facility (*see* Figure 24 in Attachment N (*Figures)).* A principal mission of TA-54 is to manage Facility waste safely and efficiently, consistent with federal and state regulations and U.S. Department of Energy (DOE) requirements. TA-54 has three separate areas where hazardous and mixed waste is stored; Area L, Area G, and TA-54 West (*see* Figure 25 in Attachment N (*Figures)*). There is one permitted unit at Area L, nine permitted units at Area G, and two permitted units at TA-54 West (*see* Attachment J (*Hazardous Waste Management Units*)).

Waste containers are transported to the permitted units at Areas L, G, and West by flatbed trucks, closed-box trucks, or trailers. The permitted units have design features that promote safe unloading and handling of waste containers from these trucks and trailers. Ramps are typically located at vehicle entrances to the dome structures at the Area L and Area G permitted units. Shed 31 at Area L and Shed 8 at Area G have sloped entryways for container-handling equipment. The storage domes have roll-up or roll-away vehicle access doors. The loading dock at TA-54 West allows access from the transport vehicles to the loading dock platform. These design features facilitate safe handling of containers in and out of the permitted units.

All waste containers at the TA-54 permitted units are handled in a manner that will not cause them to rupture or leak. Most containers are handled with forklifts (using drum grapplers, when appropriate) and are placed directly in the appropriate permitted unit. For larger containers, personnel can use a boom or, at TA-54 West and in portions of Area L, a bridge crane or mobile crane, respectively. At TA-54-412, waste containers (*e.g.*, fiberglass reinforced plywood crates, drums, large boxes) are generally handled with forklifts, overhead cranes, or frictionless air pallets. Smaller containers are generally handled manually or with drum dollies. The use of proper handling equipment, appropriate to a container's size and weight, helps to prevent hazards while moving containers (*e.g.*, when loading and unloading containers).

A.4.1 AREA L

The Area L permitted unit is the area within the fence and is comprised of several storage structures: dome 215; concrete pad with canopy 32; concrete pads 35 and 36; storage sheds 68, 69, 70, 31; modular units 39 and 58 (*see* Figure 26 in Attachment N (*Figures*)).

The permitted unit stores containers of hazardous and mixed low level waste in solid and liquid form. Liquid wastes are stored primarily in structures that are designed for secondary containment; however, secondary containment pallets are also used. Secondary containment pallets are typically constructed of polyethylene or metal painted with a chemical-resistant coating. Polyethylene secondary containment pallets used at TA-54 are generally 50 inches long by 50 inches wide by 17 inches deep, with a designed capacity of 83 gallons. Currently, two sizes of metal secondary containment pallets are used at TA-54. One is 52 inches long by 52 inches wide by 6.5 inches deep, with a designed capacity of 57 gallons; the other is 60 inches wide by 60 inches long by 6.5 inches deep, with a designed capacity of 77 gallons. The

metal secondary containment pallets are coated with chemically-resistant urethane. The stressed- or tensioned-membrane fabric used on Storage Dome 215 at the aboveground permitted unit within the fence at Area L is coated with ultraviolet (UV)-stabilized plasticized polyvinyl chloride (PVC). It is fungus-resistant and certified flame-retardant (*i.e.*, self-extinguishing).

A.4.1.1 Storage Dome 215

Storage Dome 215 is 60 feet wide, approximately 266 feet long, and 26 feet high (*see* Figure 25 in Attachment N (*Figures)*). It is an arch frame-supported stressed-membrane structure. The dome is of modular construction and uses light construction materials (*i.e.*, aluminum framework with membrane or fabric covering). It is equipped with 14 personnel doors and two roll-up doors. The dome's pad is equipped with a 6-inch-high, 8-inch-wide concrete ring wall that surrounds the perimeter of the dome, and the dome is anchored to the concrete ring wall with anchor bolts. A ramp is located at the vehicle entrance to the dome and allows vehicles and container handling equipment to pass safely over the ring wall. The ring wall and the ramp prevent run-on into the dome. Any liquid that might accumulate within the storage dome (*e.g.*, liquids resulting from fire-suppression activities) is contained within the ring-walled area. Liquid that may result from fire-suppression activities and that is in excess of the capacity inside the ring wall is collected in a double-walled holding tank connected to dome 215 by a double-walled pipe.

A.4.1.2 Reserved

A.4.1.3 Storage Sheds 68, 69, and 70

Storage sheds 68, 69, and 70 are prefabricated sheds constructed of steel (Safety Storage Building, Model 22) (*see* Figure 26 in Attachment N (*Figures)*). Each shed measures approximately 23 feet long, 9 feet wide and 8.5 feet high. Access to these storage sheds is obtained through one of three sets of double doors. Storage Shed 68 has three separate compartments with one door leading to each compartment. Storage Sheds 69 and 70 each have two separate compartments with one door leading to the smaller compartment and two doors leading to the larger compartment. The sheds are elevated by design which prevents run-on. Each shed is constructed with liquid-tight sumps to ensure containment of any potential leaks or spills and to prevent runoff. The floor of each shed consists of a metal grate that covers the sump areas. Containers are placed directly on the metal grates which prevent contact with liquids that may have accumulated in the sumps. The interior of each shed and sump is coated with chemically-resistant epoxy paint. The designed sump storage capacity of each shed is 750 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of each shed (1,760 gallons).

Shed 68 has three separate compartments each having its own sump with individual capacities of 250 gallons. Sheds 69 and 70 have two separate compartments, each having its own sump. One compartment consists of two thirds of the surface area (and capacity) of Sheds 69 and 70. The capacity of this compartment's sump is 500 gallons; the smaller compartment's sump

capacity is 250 gallons. The designed sump storage capacity of each shed is 750 gallons which exceeds the amount necessary to hold 10% of the total storage capacity of each shed (1,760 gallons).

A.4.1.4 Storage Shed 31

Storage Shed 31 is a prefabricated shed constructed of steel. It measures approximately 14 feet long, 13 feet wide, and 8 feet high (*see* Figure 26 in Attachment N (*Figures)*). The shed sits on a concrete foundation that has a raised edge and is surrounded by asphalt that is sloped away from the shed to prevent run-on. The shed has three separate liquid-tight recessed sumps in the concrete foundation that are each covered with a steel grate. Containers are stored on the steel grates, which prevent contact with liquids that may have accumulated in the sumps. The sumps and the concrete foundation are coated with chemically-resistant paint. Two of the sumps are approximately 6 feet long by 4 feet wide; the third sump is approximately 7 feet long by 6 feet wide. All three sumps are 5 inches deep. The total capacity of the three sumps is approximately 285 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of the shed (1,320 gallons). The total capacity of the three sumps is approximately 285 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of the shed (1,320 gallons).

A.4.1.5 TA-54-32

TA-54-32 (*see* Figure 26 in Attachment N (*Figures)*) consists of a concrete pad that is 116.5 feet long by 15.5 feet wide. The structure is covered by a 117.75 feet-long by 25.75 feet-wide canopy. The canopy provides protection from the weather. The concrete pad is bermed by a 1-feet-wide, 6- to 8-inch-high concrete curb. This curbed area is divided into six separate containment cells to segregate wastes with different hazard classes. The curb prevents run-on of storm water. Each containment cell consists of a recessed sump covered with grate flooring on which containers are stored; this prevents contact with liquids that may have accumulated in the sumps. The cells are separated by metal partitions above the flooring. The concrete sumps are treated with chemical-resistant epoxy filler-sealer and protective coating, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. Cells 1 and 6 are approximately 26.5 feet long by 13.5 feet wide by 1 feet deep, with a sump capacity of 2,675 gallons each. Cells 3 and 5 are approximately 16.8 feet long by 13.5 feet wide by 1 feet deep, with a sump capacity of 1,700 gallons each. Cells 2 and 4 are approximately 13.5 feet long by 11.2 feet wide by 1 foot deep, with a sump capacity of approximately 1,130 gallons each. These sump capacities exceed the amount necessary to hold 10% of the maximum storage capacity for TA-54-32.

A.4.1.6 TA-54-35

TA-54-35 (*see* Figure 26 in Attachment N (*Figures)*) consists of a concrete pad that measures 31.5 feet long by 31.5 feet wide. The area is covered by a 136 ft-long, 48 feet-wide canopy that provides protection from the weather. The pad has a 6-inch-high concrete berm that prevents run-on and runoff of liquids. The bermed area has an elevated ramp on one side to

allow access for equipment to move waste containers. The ramp also helps to prevent run-on of precipitation and runoff of any accumulated liquids. The bermed secondary containment area of the pad is approximately 29.5 feet long by 24.5 feet wide by 8 inches deep. Stored waste containers are elevated on pallets to prevent contact with any potential accumulated liquids. The secondary containment capacity of the bermed area is approximately 3,570 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity for TA-54-35 (15,840 gallons)

A.4.1.7 TA-54-36

TA-54-36 (*see* Figure 26 in Attachment N (*Figures)*) is a 33-feet-long by 31.5-feet-wide concrete pad. It is covered by a 136 feet-long, 48 feet-wide canopy that provides protection from the weather. The pad is surrounded by a 1-feet-wide berm that varies from 6 inches to 1 ft in height. The berm prevents run-on and runoff of liquids. The bermed secondary containment area of the pad is approximately 30.5 feet long by 30 feet wide by 9 inches deep. The pad also contains a Perma-Con® structure. This structure is located, at the time of Permit issuance, at TA-54-36 but is authorized to be moved onto TA-54-32. The Perma-Con® is constructed of 4-foot-wide, 8- or 4-foot-long, 22-gauge stainless-steel panels that interlock in a self-supporting structural steel framework. The Perma-Con® system can be assembled into multiple configurations. The Perma-Con® is 28 feet wide by 28 feet long by 12 feet high. It is equipped with a 20-feet-long observation room that attaches to the main enclosure. The main enclosure has two personnel doors and an 8-foot-wide roll-up door. The floor in the main enclosure is the concrete pad covered with multiple layers of heavy duty plastic sheeting that are taped together and are extended approximately 1 foot up the sides of the Perma-Con®. The Perma-Con® has a tarp covering its roof to provide additional protection from the elements, thereby preventing the influx of precipitation, including melting snow. The secondary containment capacity of the bermed area is approximately 4,595 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity for TA-54-36 (13,200 gallons).

A.4.1.8 TA-54-58

TA-54-58 (*see* Figure 26 in Attachment N (*Figures)*) is a pad that measures 33 ft long by 31.5 ft wide. It is covered by a 136 ft-long, 48 ft-wide canopy that provides protection from the weather. The pad has a 1-ft-wide berm that varies from 6 in to 1 ft in height. The berm prevents run-on and runoff of liquids. The bermed area has an elevated ramp on one side to allow access for equipment to move waste containers. The ramp also helps to prevent run-on of precipitation and runoff of any accumulated liquids. The bermed secondary containment area of the pad is approximately 30.5 ft long by 25 ft wide by 6 in deep. The secondary containment capacity of the bermed area is approximately 2,850 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity for TA-54-58 (15,840 gallons).

A.4.1.9 TA-54-39 and Containment Pad

TA-54-39 measures 40 ft-long by 40 ft-wide (*see* Figure 26 in Attachment N (*Figures)*). It is a metal panel building set on a concrete foundation with a metal canopy attached to the south side of the building. The rectangular metal canopy measures 83 ft long by 46 ft wide. There are two areas associated with TA-54-39 that provide secondary containment. These areas include Room 101, located inside the building, and a containment pad located at the south end of the building. Room 101 inside TA-54-39 has a 6-in-high concrete curb that surrounds the room. The containment pad at the south end of TA-54-39 consists of two sections. The pad is covered by a metal canopy, which provides protection from the weather. The eastern section of the containment pad is constructed of asphaltic concrete and measures 83 ft-long by 23 ft-wide. The western section of the containment pad is approximately 58 ft-long by 16 ft-wide and is surrounded by a 1-feet-high concrete curb, which prevents run-on and runoff of liquids. The secondary containment capacity for Room 101 is approximately 3,280 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity of the room (9,900 gallons). The secondary containment capacity for the western section of the TA-54-39 containment pad is approximately 7,120 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity of this section of the containment pad (15,180 gallons).

A.4.2 AREA G

The permitted units at Area G are used to store containers of hazardous, mixed low level, and mixed transuranic wastes in solid and liquid form (*see* Figure 27 in Attachment N (*Figures)*. Liquid wastes are stored primarily in structures that are designed for secondary containment. However, secondary containment pallets are also used.

Secondary containment pallets are typically constructed of polyethylene or metal painted with a chemical-resistant coating Polyethylene secondary containment pallets used at TA-54 Area G are generally 50 in long by 50 in wide by 17 in deep with a designed capacity of 83 gallons. Two sizes of metal secondary containment pallets are typically used at TA-54 Area G. One size is 52 in long by 52 in wide by 6.5 in deep with a designed capacity of 57 gallons. The other is 60 in long by 60 in wide by 6.5 in deep with a designed capacity of 77 gallons.

A.4.2.1 Pad 9

The 4 to 6 in thick asphalt pad is approximately 570 feet long and 275 feet wide (*see* Figure 28 in Attachment N (*Figures)*). Transuranic Waste Inspectable Storage Project (TWISP) domes 229, 230, 231, and 232 are located on Pad 9 at the east end of Area G. Each dome is approximately 246 ft long, and 88 ft by 7 inches wide and consist of a rigid aluminum frame that supports a tensioned membrane. A series of aluminum I-beam trusses spanning the width of the structures comprise the dome framework. The membrane material is a polyester fabric coated with UV-stabilized plasticized PVC. The material is fungus-resistant and fire-retardant (*i.e.*, self-extinguishing). The membrane is integrally connected to the frame to provide a fully tensioned fit. Each dome is equipped with personnel doors and a roll-up door for vehicle access and is anchored to a concrete ring-wall with anchor bolts. Under Pad 9 is a fire water collection system that collects water from Domes 232 and 231 and transports it to a sump

system in Dome 229 at the south end of Pad 9. The system is not intended for, nor was it designed to provide, secondary containment of liquid waste releases. It was designed to provide an augmented fire water collection capability to prevent fire water running off the pad if any fire suppression activities exceeded the capacity contained in the upstream domes. Domes 231 and 232 have three drain inlets apiece in the southeast portion of the domes. The drains in each dome are connected and drain to a collection pipe line that runs down the east side of Pad 9. The line terminates in the collection sump in the east end of Dome 229. The floor of Dome 230 is designed for secondary containment of liquids. The asphalt pad floor is sloped (1%) towards a concrete sump at the east end of the dome. The asphalt floor and curbs in Dome 230 are lined with a double layer of 40 mil high-density polyethylene (HDPE), and the sump is lined with a single layer of 40 mil HDPE, creating an impervious layer to contain any liquids that might accumulate. The secondary containment capacity for Dome 230, which includes the sump and curbed area, is approximately 48,255 gallons which exceeds the amount necessary to hold 10% of the total storage capacity of the dome (330,000 gallons). The TWISP domes on Pad 9 are unheated; the storage of waste within the transportainer is for the purpose of temperature equilibration of the waste for characterization procedures (*i.e.*, real-time radiography and headspace gas sampling associated with the transuranic waste characterization program).

A.4.2.2 Pad 1

The 4 to 6 inch thick asphalt pad is approximately 358 feet long and 213 feet wide. TA-54-412 and the Mobile Visual Examination and Repackaging (MOVER) with support trailer are located on the pad in the northeastern portion of Area G (*see* Figure 29 in Attachment N (*Figures)*).

TA-54-412 (*see* Figure 29 in Attachment N (*Figures)*) is a one story building that is approximately 220 feet long by 60 feet wide (13,200 ft^2). It consists of two structures, an internal primary confinement structure that houses the DVRS processing operations and an external secondary confinement structure which surrounds the primary confinement structure. The external secondary confinement structure (hereinafter referred to as "building") provides protection from the elements and a temperature-controlled space for the internal structures and associated process equipment. A 16 ft by 16 ft roll-up vehicle-access door is located on the north end of the building. The roll-up vehicle access door opens to the secondary confinement structure area and serves as a pass-through for moving DVRS feed-stock waste into the primary confinement structure. There is also vehicle access on the south end of the building for removal of compacted waste from DVRS operations. The concrete slab provides a structural foundation for the building and the shearer and baler system and provides a direct working surface for movement of fiberglass reinforced plywood boxes and processing equipment. The concrete slab is above grade to direct potential run-on away from the building. The floor in the building is sloped to a sump that has a grating cover to provide traction and a level working surface. The sump is treated with chemical-resistant epoxy filler-sealer and protective coating.

The primary confinement structure is housed entirely within the building and consists of five interconnected enclosures or cells. The system is approximately 150 feet long by 50 feet wide

by 16 feet high and sits directly on the sealed concrete floor. The primary confinement structure is constructed of 6-inch-thick, two-hour fire-rated sandwich panels made of 16-gauge steel and gypsum wallboard measuring 40 feet wide by 4 or 8 feet long. The structure interlocks in a self-supporting steel framework that can be assembled into multiple configurations. The primary confinement structure has five cells each of which is used for a specific function of the DVRS process. The cells are equipped with both personnel and large roll-up doors so that personnel, equipment, and material can access the structure and move from one cell to the next. A cell is used to sort and segregate transuranic and mixed transuranic waste and contains various tools used to dismantle the fiberglass reinforced plywood boxes. Other cells are used for decontamination and packaging and a final cell contains the shearer and baler used to compact waste items. The shearing and baling process takes place within a tightly sealed compartment. Waste containers that need to be dismantled are processed using circular saws, reciprocating saws, hammers, pry bars, and other tools, as needed. Waste containers are moved with trucks, forklifts, air pallets, and hand dollies. The primary and secondary confinement structures are built to meet criteria specified in DOE-STD-1020-92, "*Natural Phenomena Hazards Design and Evaluation Criteria for DOE Facilities"* (DOE, 1992) for Performance Criteria 2 structures. Performance Criteria 2 structures include active fire suppression, emergency communications, and confinement systems that provide important safety functions related to emergency handling or hazard recovery and are designed to protect the health and safety of workers and visitors during active operations. The building contains fire protection piping and heating, ventilation, and air conditioning ducting and is a two-hour code-compliant fire-rated building. Panels in the primary confinement structure are the same material as the two-hour fire-rated wall construction with additional supports. A dry-pipe fire-protection system provides coverage for the primary confinement structure. A water collection area in the south end of the building provides for containment of any potential leaks, spills, or accumulated water resulting from the activation of the fire protection system.

Located on the northeast portion of Pad 1 (form location of Dome 226) is the MOVER and support trailer. The MOVER is a 10 by 40-ft transportainer unit that contains a glovebox utilized to visually examine and repackage the contents of high activity TRU waste drums. The MOVER unit is a certified DOT 7A Type Container (CPC 1998). The MOVER structure is classified as a Type II (000) structure per NFPA 220, *Standard on Types of Building Construction*. Interior walls are double-walled for containment purposes with sealed and polished stainless steel interior for ease of decontamination. The outside walls of the MOVER are constructed of carbon steel. The walls are insulated with cellulose, which is manufactured under Consumer Product Safety Commission performance criteria mandating fire standards. The interior and exterior of the MOVER are non-flammable metal with steel stud construction. All electrical systems are designed to the National Electrical Code.

The MOVER is comprised of three rooms consisting of a control room, glovebox operations room, and the drum entry room. The control room provides space for personnel entry, a portal radiation monitor, and system controls. There are doors between each section to isolate each room. Doors are kept closed during the glovebox operations to maintain negative pressure in the unit. Airflow direction is maintained so that air flows from areas of low contamination to areas of potentially higher contamination before being exhausted through the HEPA

ventilation system. The unit has continuous air and fixed head monitors, intercom system, fire protection system, HVAC, and lighting.

The glove box operation room contains the glovebox, drum lifter, HEPA filters and differential pressure-monitor panel. The drum entry room is located at one end of the trailer. This room provides space for four standard 55-gallon drums on transport dollies. TRU waste drums are bagged into the glovebox and opened. The contents are examined and then bagged out into another drum(s). Nonconformance items are identified and bagged out into a third drum. The empty parent drum and newly filled drum(s) are then removed from the MOVER unit.

The glovebox is 12-ft long, 2.75-ft high and the end is 2.3-ft wide at the top. The glovebox is fabricated from Type 304L stainless steel and includes a HEPA ventilations system.

The MOVER support trailer is 9 by 20 ft metal trailer that houses ventilation blowers with a monitored discharge system, the fire suppression system and electrical distribution system for the MOVER.

A.4.2.3 Pad 3

The 4 inch thick asphalt pad 3 is approximately 339 feet long and 50 feet wide. Storage Dome 48, located at the eastern end of pad 3, is 285 feet long and 50 feet wide and has a peak height of 24 feet (*see* Figure 30 in Attachment N (*Figures)*). The design and materials of construction for dome 48 are the same as the other domes at TA-54. The dome is equipped with a double-panel rolling door at the south end of the dome and eight personnel doors located approximately every 80 feet along the dome's length mainly to allow for adequate access both by vehicles and personnel. The interior perimeter of the dome is surrounded by a 6-inch-high, 8-inch-wide asphalt curb which helps prevent run-on into, and runoff from, the dome. An asphalt ramp located at the vehicle entrance allows vehicles and container handling equipment to pass safely over the curb. The dome is anchored to Pad 3 with standard drift pins.

A.4.2.4 Pad 10 (former Pads 2 and 4)

Pad 10 is constructed at the location of former Pads 2 and 4. The asphalt pad measures approximately 350 feet long by 250 feet wide and is constructed of asphalt (*see* Figure 31 in Attachment N (*Figures)*). The transuranic waste characterization facilities and container storage area are located on this pad. The transuranic waste characterization facilities consist of mobile and modular units equipped with instruments and equipment for waste characterization and repackaging. The transuranic waste characterization facilities include the following: drum-loading or receiving unit(s); equilibration units(s); gas mobile characterization unit(s); mobile repack units; and nondestructive radioassay unit(s). External containment is provided by the trailers and transportainers because waste characterization activities take place inside the structures. The characterization provided by the non-destructive assay radioactivity monitoring techniques described does not involve opening the waste containers. Activities at Pad 10 include the following:

TA 54-0498, LANL HENC

The Canberra Facility High Efficiency Neutron Counter (HENC) is designed to provide a passive neutron and gamma measurement of tranuranic waste drums in 55-gal containers. The trailer housing the HENC is Structure #498. The HENC supported the Facility's TWCP and Project 2010 and subsequently CCP operations beginning in 2004 to the present.

TA 54-0365, Office Building, Formerly MTGS

TA 54-0365 formerly housed the Mobile Tomagraphic Gamma System (MTGS). The MTGS was a gamma assay system prototype developed by the Permittees. The instrument was salvaged in 2007 and the trailer in which it was housed (Structure #365) was converted to office space.

TA 54-0457, Super High Efficiency Neutron Coincidence (SuperHENC) counter

Trailer TA-0457 houses a high efficiency neutron counter designed to handle large waste containers. It is designed to provide a passive neutron and gamma measurement of large transuranic waste containers like standard waste boxes. The SuperHENC will support the Facility's TWCP and the CCP operations beginning in 2010.

TA 54-0483, Source Storage

Trailer TA54-0483 serves as a storage repository for calibration sources needed by the NDA systems.

TA 54-0497, RTR2

The Real-Time Radiography (RTR) system #2 is designed to provide X-ray examination of the contents of a waste drum. The unit, RTR2, has been located on Pad 10 in support of the Department of Energy Carlsbad Central Characterization Project (CCP) operations.

TA 54-0506, MCS HENC

The Canberra MCS High Efficiency Neutron Counter (HENC) is functionally identical to the Permittees' HENC and provides passive neutron and gamma assays of 55-gal waste drums.

TA 54-1059, Storage

TA54-1059 has been used to store miscellaneous NDA equipment, such as turn-tables, equipment stands, etc.

TA 54-0545, Storage

Heated transportainer for transuranic and mixed transuranic waste storage prior to characterization

TA 54-0546, Storage

Heated transportainer for transuranic and mixed transuranic waste storage prior to characterization

Pad 10 asphalt

Pad 10 is primarily used for storage of feed stock and empty drums for the transuranic waste characterization activities. Additionally, storage of oversized mixed wastes in transportainers and metal boxes can occur on the pad.

A.4.2.5 Pad 5

This asphalt pad consists of former pads 5, 7, and 8, located on the south-central portion of Area G, has two domes and eight sheds (*see* Figure 32 in Attachment N (*Figures)*) associated with it. Former Pad 5 is approximately 500 feet long, 65 feet-wide, and 4 inches thick. It is sloped approximately 2% from north to south. Former Pad 8 is approximately 150 feet long, 95 feet-wide, and 3 inches thick. It is sloped approximately 1% from west to east. Former Pad 7 is approximately 200 feet long, 64 feet-wide, and 4 inches thick. It is sloped approximately 1% from west to east.

Dome 49

Storage dome 49, located on former Pad 5, is 440 feet long and 60 feet wide and has a peak height of approximately 26 feet (*see* Figure 32 in Attachment N (*Figures)*). The design and materials of construction for Dome 49 are the same as the other domes at TA-54. The dome is equipped with a double-panel rolling door at the north end of the dome and six personnel doors to allow for adequate access both by vehicles and by personnel. The interior perimeter of the dome is surrounded by a 6-inch-high, 8-inch-wide asphalt curb which helps prevent run-on into and runoff from the dome. An asphalt ramp located at the vehicle entrance to Dome 49 allows vehicles and container handling equipment to pass safely over the curb. The dome is anchored to Pad 5 with standard drift pins.

Dome 224

Storage Dome 224, located on former pad 8, is approximately 110 feet long and 60 feet wide, with a peak height of 26 feet (*see* Figure 32 in Attachment N (*Figures)*). The design and materials of construction for dome 224 are the same as other domes at TA-54. This dome is anchored to Pad 8 with anchor bolts. It is equipped with a single-panel roll-up door at the north end and four personnel doors to allow adequate access by vehicles and by personnel. A 1-foot, 8-inch wide by 2-feet, 4-inch deep concrete ring wall surrounds the interior of dome 224. A high-density polyethylene (HDPE) liner exists below the asphaltic pad within the dome. Storage sheds 144, 145, 146, and 177 are prefabricated sheds constructed of steel.

Each shed measures 6 feet long, 5 feet-wide, and 9 feet high. Access to each shed is obtained through a single door. The sheds are elevated by design, which prevents run-on and each shed is constructed with a liquid-tight sump to ensure containment of any potential leaks or spills and to prevent runoff. The floor of each shed is constructed of steel and has a metal grate that covers the entire sump area. Containers are placed directly on the metal grates, which prevent contact with liquids that may have accumulated in the sumps. The designed sump storage capacity of each shed is 120 gallons which exceeds the amount necessary to hold 10% of the total storage capacity of each shed (330 gallons).

Storage sheds 1027, 1028, 1029, and 1041 are equipped with three sets of double doors on one side of the shed for ease of access. Sheds 1027, 1028, 1030, and 1041 contain a single compartment and sump within each shed (*see* Figure 32 in Attachment N (*Figures)*). The designed storage capacity of each sump is 750 gallons which exceeds the amount necessary to hold 10% of the total capacity of each shed (1,760 gallons).

A.4.2.6 Pad 6

This permitted asphalt pad, approximately 633 ft long, 99 ft wide and 4 inches thick, is sloped approximately 1.2% from west to east and is located in the north-central portion of Area G. Storage domes 153 and 283 are located on Pad 6 (*see* Figure 33 in Attachment N (*Figures)*) and the design and materials of construction for domes 153 and 283 are the same as the other domes at TA-54.

Dome 153

Dome 153 is approximately 326 ft long and 60 ft wide, with a peak height of 26 ft (*see* Figure 33 in Attachment N (*Figures)*). A double-panel rolling door is located at the west end of the dome and 10 personnel doors are located approximately every 40 to 125 ft along the dome's length.

Dome 283

Dome 283 is approximately 250 ft long and 60 ft wide with a peak height of 26 ft (*see* Figure 33 in Attachment N (*Figures)*). A double-panel rolling door is located at the east end of the dome and 10 personnel doors are located approximately every 50 ft along the dome's length. These accesses allow adequate traffic flow of vehicles and personnel into and out of the dome. An asphalt ramp is located at the vehicle entrance of each dome to allow vehicles and container-handling equipment to pass safely over the curb. Domes 153 and 283 are anchored to Pad 6 with standard drift pins.

A.4.2.7 Storage Shed 8

Storage shed 8 is located in the north-central portion of Area G (*see* Figure 34 in Attachment N (*Figures)*). The shed is 40 ft long and 16 ft wide and has a 14-ft-high galvanized steel roof that slopes to the north. The siding of Shed 8 is constructed of galvanized steel and the

foundation is constructed of concrete. Two overhead doors and one personnel door on the south side of the shed allow both vehicles and personnel to access the shed.

A.4.2.8 TA-54-33

TA-54-33 is located in the north-central portion of Area G and consists of a dome attached to a concrete-block building (*see* Figure 34 in Attachment N (*Figures)*). This permitted unit is used for waste storage and potential or future waste characterization activities. The dome and building are located on a concrete foundation surrounded by an asphalt pad. The concrete foundation is 8 inches thick and overlies 6 inches of base course. The concrete-block building attached to the dome is approximately 40 ft long and 34 ft wide. The dome is 157 ft long and 50 ft wide with a peak height of 24 ft. A double-panel rolling door is located at the west end of the dome for vehicle access. A single-panel rolling door is located at the southeast end of the dome for container-handling access. Two personnel doors are located approximately 40 ft apart along the north wall of the dome. Two additional personnel doors are located in the concrete-block building; one on the west side, and one on the east side. In addition, two overhead doors are located on the north side of the building to allow free movement of personnel and container-handling equipment between the building and the dome.

The design and materials of construction for the TA-54-33 dome are the same as the other domes at TA-54. The dome's aluminum frame is directly connected to the building which extends approximately 5 ft into the dome. Inside the dome the concrete foundation is sloped to a 6-inch-wide centralized concrete drainage trench that is covered with 12-inch-wide steel grating. The trench slopes toward a steel sump located at the east end of the dome. Two additional trenches, located in Rooms 100A and 100B, are perpendicular to and feed into the main trench. A floor drain in Room 105 connects with the trench in Room 100A.

The steel sump is located within a concrete basin that has 8-inch-thick walls, a 9-inch-thick base and measures approximately 15 ft long by 7 ft wide by 6 ft deep. The sump is approximately 14 ft long by 6.5 ft wide by 5 ft deep and has a capacity of 3,473 gallons. A primary holding tank associated with the sump is located in a concrete basin that is 15 ft long by 12 ft wide by 5.5 ft deep and has a capacity of approximately 7,405 gallons. A secondary holding tank associated with the sump is located in a separate concrete basin that is 12 ft long by 12 ft wide by 5.5 ft deep and has a capacity of approximately 5,924 gallons. These basins have the capacity to contain any spills or leaks resulting from a potential overflow or breach of the holding tanks.

A.4.2.9 Pad 11

This asphalt pad is approximately 4 inches thick, measures approximately 478 ft long by 137 ft wide, and is sloped approximately 1 to 2% to the southeast. Storage dome 375 is located on the western portion of pad 11 and is used for storage of hazardous, mixed low level, and mixed transuranic waste. It measures approximately 300 ft long by 100 ft wide (*see* Figure 36 in Attachment N (*Figures)*). The building is an aluminum A-frame truss design that is anchored to a concrete ring wall. The dome is of modular construction utilizing a membrane or fabric covering. It is equipped with 14 personnel doors and two roll-up doors, one each at

the east and west ends of the building. Ramped entrances allow for safe movement of container handling equipment and vehicle access. The High Energy Real-Time Radiography (HERTR) Unit is located on the eastern portion of Pad 11. The Unit is placed on a concrete pad with an approximate footprint of 50 by 50 ft. It consists of two structures, a portable control room and a re-locatable X-ray vault constructed of modular concrete walls and blocks for shielding. Waste containers are placed inside the vault on a turntable mounted to a mechanical cart. Once the waste is loaded on to the cart, the RTR operator, from within the control room, will electronically move the cart into the X-ray vault, close the vault door, and perform the RTR. This unit will provide X-ray examination of the contents of waste drums or SWBs. The high energy of the unit will allow more efficient characterization of TRU waste container and minimize the opening and repackaging of waste containers that contain objects that the standard RTR unit could not penetrate.

A.4.3 TA-54 West

The two permitted units at TA-54 West include the indoor low bay and the high bay at TA-54-38 and the outdoor storage pad which surrounds the north, east, and south sides of TA-54-38 and the loading dock at TA-54-38. The permitted units at TA-54 West are used to store solid mixed low level and mixed transuranic waste (*see* Figure 37 in Attachment N (*Figures)).*

A.4.3.1 TA-54 West Building (RANT)

TA-54-38 is a building constructed of 36-ft-high pre-cast concrete panel walls topped by pre-stressed double-T concrete roof sections. Its foundation consists of a 6-inch reinforced concrete slab on compacted fill. The building is divided into several offices and houses the Indoor permitted unit which includes the low bay and the high bay (*see* Figure 37 in Attachment N (*Figures)*). The low bay is approximately 40 ft-wide and 34 ft long. An 8 ft-wide by 12 ft-high roll-up door is located at the east end and opens to an outdoor loading dock. A second 8-ft-wide by 12-ft-high roll-up door is located in the southeast corner and opens into the high bay. The walls and floor of the low bay are coated with industrial grade enamel paint. The high bay, approximately 40 ft wide and 80 ft long, is used for loading transuranic and mixed transuranic waste into Transuranic Package Transporter-II containers. It is equipped with 14-ft-wide by 18-ft-high roll-up doors on the east and west ends to allow convenient, indoor loading of the tractor-trailers that transport shipments of waste to the Waste Isolation Pilot Plant. The high bay floor is not painted and slopes at an angle of 1.5 degrees toward a central trench (which is 5 inches wide, 6 inches deep and 50 ft long) and a sump. The entire length of the trench is covered with a metal grate and is designed to hold precipitation and snow melt from tractor-trailers.

A.4.3.2 TA-54 West Outdoor Pad

The outdoor permitted asphalt pad (which is approximately 4 inches thick and slopes toward the curbed edges to allow for storm water runoff (*see* Figure 37 in Attachment N (*Figures)*) consists of the loading dock at TA-54-38 and the storage pad located on the north, east, and south sides of TA-54-38. The loading dock is 16 ft wide by 38 ft, 10 inches long and is covered by a metal awning. The loading dock is constructed of 6-inch cast-in-place concrete

and is located approximately 4 inches above grade. The boundary of the storage pad is delineated by the fence surrounding the pad and the approximate dimensions of the pad are shown on Figure 37**.** Mobile radioassay trailers and storage sheds for supplies and equipment are also stored on the pad at the outdoor permitted unit (*see* Figure 37 in Attachment N (*Figures)*).

A.4.4 Security and Access Control

The permitted units at TA-54 are provided security by both their locations on top of Mesita del Buey and by 8-foot industrial chain-link fences topped by razor wire or barbed wire. Additional security is provided by a system of facility access controls to ensure that only authorized personnel are granted access. These access controls also ensure that all facility personnel can be identified and located in an emergency. Depending on national security conditions a guard station will be manned west of the TA-54 timed vehicle-access control gate. Guard stations control public access on Pajarito Road east and west of TA-54; only properly identified Facility employees or individuals under their escort will have access to TA-54. During times of low national security, any access to the TA-54 administrative area for Areas L and G is limited by a timed vehicle-access control gate on the entrance road to TA-54. This gate is open during normal working hours from 6:00 a.m. to 6:30 p.m., Monday through Friday (except holidays). Gate hours are subject to change. Access to TA-54 West is by a manually operated gate on the west side of the facility. The gate is also open during normal working hours. Access to any part of TA-54 before or after normal working hours or on weekends requires approval of the appropriate Group Leader or Facility Manager at TA-54. TA-54 is patrolled by security personnel during non-operational hours to ensure that the gates are locked and that unauthorized entry has not occurred. Anyone entering the fenced Area L and Area G waste management areas from the TA-54 administrative area is “badged in” before proceeding. Badging in is the process of identifying the person, assessing his or her security and training status using DOE security badges, and determining the need for an escort. Authorized personnel may enter the fenced portions of Areas L and G only after negotiating additional access controls in the form of walk-through turnstiles and motorized vehicle gates. Each turnstile and vehicle gate is equipped with a badge reader to ensure authorized access only. Resident personnel are required to badge in upon arrival and prior to leaving TA-54. Non-resident personnel and visitors are required to badge or sign in and out at an access control point at the facility operations center. Depending on their level of training, non-resident personnel may be required to be escorted in order to access TA-54 Areas L and G and TA-54 West. Access to the Area L, Area G, and TA-54 West permitted units requires additional controls. Bilingual (*i.e.*, English and Spanish) warning signs are posted on the fence at 50- to 75-ft intervals, are legible from a distance of 25 ft, and can be seen from any approach to this area. The legends on the signs indicate "Danger—Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The security fence is inspected by on-site personnel and repairs are made as necessary. The locations of the security fence, entry gates, and entry stations are shown on Figures 7, 8, and 9, in Attachment N (*Figures)*.

A.4.5 Emergency Equipment

Emergency equipment is located throughout TA-54 and includes internal communications, alarm systems, fire alarms, spill kits, and decontamination equipment. Area L is equipped with an audible alarm system to alert personnel of a fire or the need to evacuate the area. These alarms can be activated by pulling a fire alarm or by pushing the evacuation alarm button. The fire alarm pull boxes are located in Dome 215 and are connected to the Los Alamos Fire Department (LAFD) through the Facility's central alarm system at all times. Evacuation alarms are located adjacent to the fenceline crash gates and other locations in Area L (see Attachment D, Table D-1). In addition to the alarms there are numerous telephones located in and around the structures within Area L. These telephones ensure that personnel can contact on-site and Facility emergency personnel at all times. Many of these telephones also serve as emergency paging phones so that information can be announced throughout the area. Alphanumeric pagers are also distributed to workers at Area L. Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on the emergency alpha-numeric pagers. The emergency paging system can be utilized to alert workers of an emergency situation as well as appropriate response actions. Windsocks are also located at strategic locations to indicate wind direction and strength. Fire control equipment at Area L includes fire extinguishers (*e.g.*, ABC-rated, water, carbon dioxide, dry chemical), a dry-pipe sprinkler system, and dry chemical systems. The fire extinguishers are available at or near most structures within Area L for use by on-site personnel depending on the size and fuel source of a fire. Dome 215 has an automatic dry-pipe sprinkler system that is heat activated in the event of a fire. Storage sheds 68, 69, and 70 have dry chemical systems. Fire hydrants are located near TA-54-37 and the southeast corner of TA-54-62. Personal decontamination equipment at Area L includes emergency eyewash stations and showers. This equipment is for use by personnel in emergencies involving chemical or radiological materials. These stations are generally located near or inside structures where waste is being handled. Emergency shower and eyewash stations are located at or near TA-54-39, TA-54-31, TA-54-215, TA-54-216, and TA-54-35. Waste characterization documentation and MSDS are also available in the event of a chemical exposure. There are several spill kits available at Area L to mitigate small containable spills. These kits typically contain sorbents, neutralizers, PPE, and other equipment essential for containment of small spills. In addition to the spill kits, shovels for cleanup are stored in TA-54-46. Oversized drums and sorbents are also stored at various locations throughout Area L. For larger spills or other unusual hazardous situations, a variety of equipment is available to emergency personnel. This equipment includes forklifts, self-propelled loaders, and other heavy equipment from Area G.

Area G is equipped with an audible alarm system to alert personnel of a fire or the need to evacuate the area. The alarms can be activated by pulling a fire alarm or by pushing the evacuation alarm button. Fire alarms and evacuation alarms are in place at strategic locations to alert personnel of emergency conditions. The fire alarms are located throughout Area G and are connected to the LAFD through the Facility's central alarm system at all times. Flame or smoke detection equipment is located within structures TA-54-226, TA-54-229, TA-54-230, TA-54-231, and TA-54-232. Security personnel and LAFD are notified upon activation of the flame or smoke detectors. Fire control equipment is located throughout Area G. This equipment includes ABC-rated or BC-rated fire extinguishers, dry-chemical fire suppression

systems, and several fire hydrants. Trained personnel can use the fire extinguishers to extinguish small, non-chemical fires. For larger fires, security personnel and the LAFD are alerted. Personnel working in Area G also carry alphanumeric pagers, cellular phones, or two-way radios. Emergency paging telephones are in place so that information can be announced throughout the area. This equipment ensures that personnel can contact on-site and Facility emergency personnel at all times. Windsocks are at strategic locations to indicate wind direction and strength. PPE and emergency equipment supplies are stored a various locations throughout Area G. There are different types of monitoring equipment located at the Area G CSUs that are used to qualitatively and quantitatively evaluate airborne contaminants. Alarms and strobe lights warn personnel when airborne concentrations exceed preset limits. They are for use by personnel in emergencies involving chemical or radiological materials. Waste characterization documentation and MSDSs are available in the event of a chemical exposure. First aid equipment can be used to treat injuries until trained medical personnel arrive at the scene. Spill control equipment is maintained at various structures within Area G. Trained personnel use this equipment to mitigate small, containable spills if they know what has been spilled and are sure their actions will not put themselves or others at risk. PPE is also maintained at various structures within Area G and is available for use during routine and non-routine operations to protect personnel from exposure to chemical and radiological contaminants. Warning tapes and barricades are used to post areas and prevent unauthorized entry into restricted areas. Heavy equipment is also available at Area G to move heavy objects.

TA-54-38 at TA-54 West is equipped with an audible alarm system to alert personnel of fire or the need to evacuate the area. Fire alarm pull stations are located throughout the building and can be activated in the event of a fire. Strobe lights mounted at the fire alarms and at TA-54-34, just north of TA-54-38, flash upon activation of the fire alarms to visually alert personnel. The alarm system can also be activated by using evacuation alarm buttons located near the entrances to the building. Upon activation of the evacuation alarm system, horns sound to alert personnel of emergency conditions. The building's manual fire alarm pull stations at TA-54 West are connected to the LACFD through the Facility's central alarm system at all times. The evacuation alarm system is a local system that notifies occupants in TA-54-38 and TA-54-34 of a local emergency. Additionally, a roll-up door between the high and low bays has heat sensitive links attached to a safety chain that melt at a certain temperature and cause the door to close.

TA-54-38 is also equipped with telephones to provide adequate communication and to summon external emergency assistance, if necessary. Paging telephones are located throughout the building and are used to contact on-site personnel. Paging telephones are also used in the event of an emergency to communicate the nature and location of hazardous conditions to personnel in the area. The alarm system is interrupted when the paging telephone system is activated to allow personnel to hear the announcement. Additionally, an emergency telephone is located outside the main entry area. Personnel working within the building can also use these telephones to summon assistance from local emergency response teams in case of emergency.

Fire control equipment is available for use within TA-54-38 and at the outdoor permitted unit. Portable ABC-rated fire extinguishers are located in the high bay, low bay, and at the outdoor permitted unit. The fire extinguisher located by the east personnel entrance door in the low bay can also be used at the loading dock. Depending on the size of the fire and the fuel source, fire extinguishers can be used by on-site personnel. TA-54-38 is equipped with a smoke-activated dry-pipe sprinkler system in the low bay and with heat-activated dry-pipe fire suppression systems in the high bay and at the loading dock. A fire hydrant installed according to National Fire Protection Association standards is located approximately 220 ft west of TA-54-38 near the west entrance to TA-54 West.

A portable chemical spill center is maintained within TA-54-38. It contains sorbents and PPE. Personnel working anywhere within the building have access to this spill center. Trained personnel use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Personnel decontamination equipment available includes a safety shower and eyewash located in the high bay and a safety shower and eyewash on the loading dock.

A.4.6 Preventing Run-on and Runoff

At TA-54, controlling run-on and runoff at the locations where waste management operations regularly occur is accomplished by appropriate contouring of surface areas and the use of control structures such as drainage channels, berms, and culverts. Canopies, dome structures, and other buildings are used to eliminate or minimize contact between run-on and waste containers. In addition, all stored waste containers are elevated or are placed in areas with sloped floors and sumps to provide protection from liquids that could be introduced through fire-suppression activities. Existing operational controls include inspecting run-on and runoff controls in accordance with Attachment E (*Inspection Plan*) and maintaining the structural run-on and runoff controls, as necessary. Run-on and runoff management methods specific to the Area L, Area G, and TA-54 West permitted units are discussed below.

A.4.6.1 Area L

The Area L permitted unit is maintained so that structural and operational controls divert storm water to a single outfall. These include asphalt channels, a 12-inch corrugated pipe storm drain to convey storm water to a single outfall at the northeast corner of Area L, and a contoured paved surface to direct storm water to the conveyances. Snow removal is performed to minimize run-on and runoff.

A.4.6.2 Area G

In certain drainage areas at Area G, structures are maintained to efficiently channel storm water to the ephemeral streams draining the mesa. These structures include asphalt and concrete drainage channels, a weir, riprap-lined channels, retention dam, berms, and culverts. Roads and drive pads are configured, by grading and paving, to carry storm water away from the areas of active vehicular and loading operations. Silt fences and other erosion control

structures are maintained throughout the drainage areas in locations prone to erosion or affected by heavy runoff during storm events.

A.4.6.3 TA-54 West

The foundation at TA-54-38 is above grade to prevent run-on of storm water. Storm drains and trenches are maintained to collect any precipitation or snowmelt that may enter the Facility through the loading bays. The outdoor permitted unit is maintained to be sloped away from TA-54-38 towards the edges of the pad allowing storm water to flow to the edges of the pad. All containers of waste stored at the TA-54 West permitted units are located in areas with sloped floors and sumps or are elevated by design, on dollies, or on pallets. This prevents the containers from coming into contact with liquids. Positive surface drainage throughout TA-54 West directs potential run-on away from the TA-54 West permitted units. A drainage swale and curbing direct storm water runoff toward an outfall on the northeast side of the storage pad.

A.5 TA-55

TA-55 is located in the north central portion of Los Alamos National Laboratory on a mesa between a branch of Mortandad Canyon on the north and Two Mile Canyon on the south (*see* Figure 38 in Attachment N (*Figures)).* TA-55 is a plutonium processing facility, which began operating in 1978. Hazardous and mixed waste container storage at TA-55 is conducted at seven permitted units. These permitted units are identified as B40, B05, K13, B45, the Vault, the Container Storage Pad, and TA-55-185. The B05, B45, and TA-55-185 permitted units will be used to store containers with only non-liquid bearing waste (*i.e.*, solid form). These permitted units all reside in a building; therefore, run-on and run-off from storm events are not applicable. In the event of a water leak from facility systems, the TA-55-4 basement has sumps to contain the liquid.

A.5.1 B40

The B40 permitted unit is used to store containers of hazardous and mixed waste that may contain liquids. B40 is located in the southwest section of the TA-55-4 basement, as shown on Figure 40 in Attachment N (*Figures)*. The permitted unit is L-shaped and has long dimensions of 61.5 by 55 feet (ft). The maximum storage capacity of this unit is 21,500 gallons (gal), the equivalent of 391 55-gal drums. The types of waste containers holding hazardous or mixed waste that are stored in B40 include: 5-, 10-, 12-, 15-, 30-, 55-, and 85-gal drums; large waste boxes; special order waste boxes; and standard waste boxes (SWB).

A.5.2 B05

The B05 permitted unit is used to store containers of hazardous and mixed waste that do not contain liquids. B05 is located in the southwest section of the TA-55-4 basement, as shown in Figure 42 in Attachment N (*Figures)*. The permitted unit is rectangular shaped and is 26 ft long by 10 ft wide. The maximum storage capacity of this unit is 3,600 gal, the equivalent of 66 55-gal drums. The types of waste containers holding hazardous or mixed

waste that will be stored in B05 include 30-, 55-, and 85-gal drums, large waste boxes; and SWBs.

A.5.3 K13

The K13 permitted unit is used to store containers of hazardous and mixed waste that may contain liquids. K13 is located in the northwest section of the TA-55-4 basement, as shown on Figure 41 in Attachment N (*Figures)*. The permitted unit is rectangular shaped and is 16 ft long by 13 ft wide. The maximum storage capacity of this unit is 2,500 gal, the equivalent of 46 55-gal drums. The types of waste containers holding hazardous or mixed waste that will be stored in K13 include: 0.25-, 0.5-, 0.75-, 1-, 2-, 4-, and 6-liter/quart containers; 5-, 10-, 12-, and 15-gal containers; 30-, 55-, and 85-gal drums; and large waste boxes.

A.5.4 B45

The B45 permitted unit is used to store containers of hazardous and mixed waste that do not contain liquids. B45 is located in the northeast section of the TA-55-4 basement, as shown on Figure 43 in Attachment N (*Figures)*. The permitted unit is rectangular shaped and is 45 ft long by 17.5 ft wide. The maximum storage capacity of this unit is 11,000 gal, the equivalent of 200 55-gal drums. The types of waste containers holding hazardous or mixed waste that will be stored in B45 include: 5-, 10-, 12-, and 15-gal containers; 55- and 85-gal drums; large waste boxes; and SWBs.

A.5.5 Vault

The Vault permitted unit is used to store containers of mixed waste that may contain liquids. The Vault is located along the eastern wall of the basement at TA-55-4, as shown on Figure 42 in Attachment N (*Figures)* and is approximately 79.5 ft long by 50.5 ft wide. The maximum storage capacity of this unit is 4,000 gal, the equivalent of approximately 73 55-gal drums. The types of waste containers holding mixed waste that will be stored in the Vault include: 0.25-, 0.5-, 0.75-, 1-, 2-, 4-, and 6-liter/quart containers; and 5-, 10-, 12-, 15-, 30- and 55-gal drums.

A.5.6 Container Storage Pad

The Container Storage Pad is used to store containers of hazardous and mixed waste that may contain liquids. The pad is located outside and south southwest of TA-55-4, as shown on Figure 45 in Attachment N (*Figures)*. It was installed in the mid-1980s and is constructed of asphaltic-concrete with a variable thickness of 4 to 6 inches (in.). The Container Storage Pad permitted unit is shaped like a trapezoid and measures 102 ft, 86 ft, 156 ft, and 105 ft. It also includes a rectangular strip measuring 70 ft by 10 ft on the southeast side. The pad is sloped, is elevated 2 to 4 in. above ground level, and has a culvert beneath the pad running from the northwest side to the southeast corner to minimize run-on of precipitation. The storage capacity of this area is 135,000 gal, the equivalent of approximately 2,455 55-gal drums. The types of waste containers holding hazardous or mixed waste that will be stored on the container storage pad include: 0.25-, 0.5-, 0.75-, 1-, 2-, 4-, and 6-liter/quart containers; 30-, 55-, and 85-gal drums; SWBs; large waste boxes; and 5-, 10-, 12-, and 15-gal containers.

A.5.7 TA-55-185

TA-55-185 is used to store containers of hazardous and mixed waste that do not contain liquids. TA-55-185 is located west of TA-55-4, as shown on Figure 46 in Attachment N (*Figures)*. The building was constructed in 1991 and consists of a steel frame with fiberglass insulation, metal walls, and a concrete floor. The TA-55-185 permitted unit will be approximately 60 ft long by 40 ft wide, and will have a maximum storage capacity of 30,000 gal, the equivalent of 546 55-gal drums. The types of waste containers holding hazardous or mixed waste that will be stored at TA-55-185 include: 30-, 55-, and 85-gal drums; large waste boxes; and SWBs.

A.5.8 Storage Tank System

There is one storage tank unit at TA-55 that is comprised of two tank components, the evaporator glovebox tank and the stabilization unit pencil tanks. The two tank components share a common piping and pumping system.

The evaporator glovebox tank was constructed in 1986. The stabilization unit pencil tanks were constructed in 1985, installed from 1987-88, and were considered existing tanks until new components were installed in 1996. These new components were determined to be a major, non-routine modification; therefore, the stabilization unit pencil tanks are subject to the new tank system regulations and are addressed as new tanks in accordance with the requirements of 40 CFR § 264.192, which is incorporated herein by reference.

The TA-55 storage tank unit is located at TA-55, Building 4, in Room 401 and has a maximum capacity of 560 Liters (L) (137 gallons [gal]). The storage tank system consists of two components, with six tanks, that are used to store evaporator bottoms solutions prior to stabilization.

Liquid waste comes primarily from the evaporator as evaporator bottoms in approximately 25-L batches. Unrecyclable evaporator distillate waste (corrosive only) is also cemented when the low-level acid waste line to the TA-50 Radioactive Liquid Waste Treatment Facility is closed. Liquid waste generated from a source other than the evaporator (such as C-AAC analytical residues) is transferred to the Cementation Unit glovebox in plastic bottles up to 2L in volume via the trolley system.

The evaporator bottoms solutions are initially stored in the evaporator glovebox tank component, where they are sampled for radionuclides, oxides, and metals. They remain in the evaporator glovebox tank component until the radionuclide content is known. If the sampling results show radionuclide concentrations below the discard limit, the solutions are transferred to the stabilization unit pencil tanks component for storage pending the remaining analytical results. Upon completion of the remaining analyses, the solutions are transferred directly to the stabilization unit for treatment. If the sampling results show concentrations above the discard limit, the solutions are recirculated. Figure 47 in Attachment N (*Figures*) provides a general arrangement diagram and a process flow diagram for the TA-55 storage tank system.

The storage tank unit is connected to three main piping systems, which include the solution feed, ventilation, and vacuum piping systems. Each tank component has a separate header that connects to each of the piping systems. The wet-vacuum piping system is used for all transfers; and the vent-piping system is used to break vacuum. The wet-vacuum and vent-piping systems use vacuum traps to capture carryover liquid and prevent contamination of the lines downstream. One vacuum pump serves the storage tank system for liquid transfers and for vacuum sparging. The following attachment subsections provide descriptions of each of the tank system components and associated ancillary equipment.

A.5.8.1 Evaporator Glovebox Tank Component

The evaporator glovebox tank component is located in the northwest corner of TA-55-4, Room 401. It is approximately 8 feet (ft) high, 4-ft wide, and 13-ft long and consists of two welded-steel trays, eight glass columns, and associated ancillary equipment. The overall capacity of the evaporator glovebox tank component is approximately 270 L (71 gal). The evaporator glovebox tank component is fabricated from 0.1875-inch (in.), 316 stainless steel with a 2B finish conforming to the American Society for Testing and Materials (ASTM) "A240-Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels," hereinafter referred to as ASTM A240 (ASTM, 1998). The lower half of the tank is fabricated with additional layers of materials welded to the outside of the 0.1875-in.-thick stainless-steel enclosure. These materials consist of 0.25-in.-thick lead shielding, conforming to ASTM "B29-Standard Specification for Refined Lead" (ASTM, 1997a), and an outer layer of 0.0625-in. 316 stainless steel cladding. The tank component is of welded construction with all welds blended, ground, and polished to blend with adjacent material. All joints are vacuum tight.

The support frame and legs of the evaporator glovebox tank component are constructed of carbon steel and conform to ASTM "A36-Standard Specification for Structural Steel for Welding" (ASTM, 1987). The support frame is bolted to the base of the tank component for stabilization. In addition, the legs of the tank component are bolted to the support frame and secured to the 10-in.-thick concrete floor of Room 401 with anchor bolts. The 10-in.-thick concrete floor was constructed to conform to the reinforced concrete building code requirements of the American Concrete Institute (ACI) "318-71-Building Code Requirements for Structural Concrete and Commentary," hereinafter referred to as ACI 318-71 (ACI, 1995). The reinforcing steel was detailed and fabricated in accordance with ACI "315-Details and Detailing of Concrete Reinforcement," hereinafter referred to as ACI 315 (ACI, 1992). The design construction and tolerance of the framework around the concrete is in accordance with ACI "347-Guide to Formwork for Concrete," hereinafter referred to as ACI 347 (ACI, 1994). The window portions of the evaporator glovebox tank component are constructed of 0.25-in. leaded glass, laminated on both sides with 0.125-in. clear glass, and installed with a neoprene gasket. Additionally, each window is backed with 0.25-in. safety glass installed with a neoprene gasket/seal that provides airtight containment. The dual glass configuration is secured to the tank component with a welded frame consisting of a 0.25-in.-thick lead shielding and a 0.0625-in. 316 stainless steel cladding similar to the additional layers of materials welded to the outside of the lower half of the tank component. The welded window

frames are bolted to the tank component. Replacement windows and gaskets, if and when needed, shall be made of the same or similar materials.

The glove portions of the evaporator glovebox tank component are constructed of neoprene and Hypalon®. Each glove is tested for material continuity by the manufacturer before acceptance and installation in the evaporator glovebox tank component. Each glove is selected for its resistance to nitric acid. Replacement gloves, when needed, are made of the same or similar materials.

The evaporator bottoms solutions are vacuum-transferred from the steel trays to the glass columns. Each glass column is individually filled and visually monitored during transfer from the steel trays to a glass column. To prevent overfill, the evaporator bottoms are automatically directed to a vacuum trap when the maximum capacity of a column is reached. The maximum capacity of the vacuum trap is approximately 5.5 L. The glass columns and the vacuum trap are constructed of PYREX® glass, manufactured by Corning, with stainless steel end plates. Replacement parts for the columns and vacuum trap will be of the same or similar materials. The glass columns are equipped with a vacuum sparging system designed to homogeneously mix the evaporator bottoms prior to sampling or transfer.

The piping associated with the evaporator glovebox tank component includes the transfer line from the evaporator, the wet-vacuum line, the lean-residue transfer line, and the ventilation lines entering and exiting the evaporator glovebox tank component. All piping and associated valves are constructed of single-walled, 316 stainless steel. The transfer line from the evaporator is 1.0-in. pipe, the wet-vacuum line and the lean-residue transfer line are 0.75-in. pipe, and the ventilation lines are 2.0-in. pipe. Pipe diameters may change in the event that a portion of the piping requires replacement. The evaporator glovebox tank component's ancillary equipment is supported by a steel channel Uni-strut® support frame. The Uni-strut® support frame is secured to the concrete ceiling with anchor bolts and provides the component's ancillary equipment with support and protection against physical damage and excessive stress that could potentially result from settlement, vibration, expansion, or contraction. Replacement supports are made of the same or similar materials.

The evaporator glovebox tank component does not operate under pressure; therefore, excessive stress due to expansion and contraction is not anticipated.

A helium leak-test using a mass spectrometer was performed on the evaporator glovebox tank component upon fabrication at Silver Engineering and again after it was installed and made operational at its present location in TA-55-4, Room 401. Because secondary containment is provided for this tank, the requirements in 40 CFR § 264.193(i), incorporated herein by reference, are not applicable.

A.5.8.2 Stabilization Unit Pencil Tanks Component

The stabilization unit pencil tanks component consists of five vertical tanks located perpendicular to the west wall of TA-55-4 in Room 401. Each of the pencil tanks has a working capacity of 50 L (13 gal), an outside diameter of 6.625 in., a straight side height of 10

ft, a wall thickness of 0.28 in., and a conical bottom. The pencil tanks are constructed of 316 stainless steel. The stainless steel materials are corrosion-resistant and are compatible with the liquid waste stored in the tanks. The vent trap and the vacuum trap operating within the stabilization unit pencil tanks component have an outside diameter of 6.625 in. The vent trap has a straight side height of 9 in. and a maximum capacity of approximately 4 L. The vacuum trap has a straight side height of 37 in., a conical bottom, and a maximum capacity of approximately 17 L. The vent trap and the vacuum trap are constructed of 316 stainless steel for corrosion resistance and materials compatibility with the waste. All of the pencil tanks were designed in accordance with the standards applicable at the time of construction, including American Society of Mechanical Engineers (ASME) "Boiler and Pressure Vessel Code" (BPVC) (ASME, 1998), hereinafter referred to as ASME BPVC, Section VIII, Division 1. The pencil tanks are installed such that, if necessary, they can be replaced.

A.5.8.3 Ancillary Equipment

The piping associated with the stabilization unit pencil tanks component includes the header/manifold, vacuum manifold, and lower manifold for the stabilization unit pencil tanks component; the vent trap, vent line, and drain line; the transfer line from the evaporator glovebox tank component to the stabilization unit pencil tanks component header/manifold; and the transfer line from the lower manifold to the stabilization unit. All inter-tank piping and transfer piping is single-walled 0.75-in., Schedule 40, stainless steel pipe. All tank-to-piping connections are flanged.

The stabilization unit pencil tanks component is equipped with a vacuum trap that is designed to collect any mists or carryover liquid that might accumulate in the vacuum or vent lines. The vacuum trap is equipped with a sight glass for local level indication and is normally empty. Each stabilization unit pencil tank is equipped with three sight glasses located on the side of each tank for overfill protection.

The stabilization unit pencil tanks component is erected upon a 10-in.-thick concrete floor in TA-55-4, Room 401. The 10-in.-thick concrete floor provides a foundation that will maintain the load of the tank component when full. The concrete floor and ceiling were constructed to conform to the building code requirements of ACI 318-71 for reinforced concrete (ACI, 1995). The reinforcing steel was detailed and fabricated in accordance with ACI 315 (ACI, 1992). The design, construction, and tolerance of the framework around the concrete is in accordance with ACI 347 (ACI, 1994). The stabilization unit pencil tanks component and its ancillary equipment are elevated and supported by a steel channel, Uni-strut® support frame. The Uni-strut® support frame is secured to the concrete floor with anchor bolts and provides the ancillary equipment with support and protection against physical damage and excessive stress due to settlement and vibration.

In accordance with 40 CFR § 264.192(a), incorporated herein by reference, a written assessment has been prepared attesting that the stabilization unit pencil tanks component has sufficient structural integrity and is acceptable for handling mixed waste. The written assessment was reviewed and certified by an independent, qualified, registered professional engineer.

A.5.8.4 Secondary Containment

The storage tank unit is located at TA-55-4, inside Room 401. This room has a floor and walls that completely surround the tank system and serve as secondary containment, therefore, the secondary containment meets the requirements of 40 CFR § 264.193(1)(iv), incorporated herein by reference, for an external liner system. The walls and floor of Room 401 prevent the migration of wastes or accumulated liquids to any soil, groundwater, or surface water and are capable of collecting releases and accumulated liquids until the material is removed. Because the storage tank system and secondary containment are inside a building, run-on or precipitation will not affect the containment capacity. The capacity of the containment area is sufficient to contain 100 percent of the capacity of the largest liquid-bearing tank within its boundary.

The floor of Room 401 consists of 10-in.-thick reinforced concrete slab that is compatible with the wastes stored in the storage tank system and will effectively prevent migration of waste. The concrete in Room 401 is sealed with an epoxy or similar coating to aid in decontamination should a spill occur. In addition, tertiary containment is provided by the floor of the basement level of TA-55-4, which also consists of 10 in. of concrete. The construction joints in the floor slab and exterior walls are all constructed with chemical-resistant water stops in place. The conduit piping penetrating the floor of the room is secured with rubber boots, bushings, and flanges. All penetrations (*i.e.*, holes for conduit) in the floor have been sealed to prevent liquids from entering the penetrations.

Additional leak detection will be provided by continuous air monitors (CAM) at various locations throughout Room 401. CAMs will detect any airborne alpha contamination that would be present if a leak were to occur at any point in the system. Additionally, radiological control technicians periodically monitor for radioactive contamination and would detect any leaks during monitoring.

A.5.9 Stabilization Unit

The stabilization unit treats homogeneous liquid and solid mixed waste generated primarily from R&D and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. The liquid wastes (Summary Category Group L1000) generally consist of evaporator bottoms solutions and laboratory solutions that may exhibit the hazardous characteristics of corrosivity and toxicity for metals (including arsenic, barium, cadmium, chromium, lead, mercury, and silver), as defined in 40 CFR §§ 261.22 and 261.24, respectively. The homogeneous solid process wastes (Summary Category Group S3000) generally consist of process residue from the evaporator, process leached solids, filter cake, and other miscellaneous solids. This waste stream typically exhibits the hazardous characteristics of toxic metals. These waste streams are mixed with cement in 55-gallon drums and allowed to cure into a non-corrosive solid matrix.

The stabilization unit is located in Glovebox GB-454 along the west wall of TA-55-4, Room 401. The unit has been in operation since 1991 and has a maximum capacity of 568 liters (L)

(approximately 150 gallons [gal]). It consists of a pH adjustment column, a vacuum trap, two motor-driven mixers, four impellers, associated support structures, a glovebox, and piping.

The pH column has a straight side height of 5 feet (ft) and an outside diameter of 6.66 inches (in.). The maximum capacity of the column is approximately 27 L. The column is raised above the glovebox floor approximately 3 in. by three steel legs and is secured to one wall of the glovebox with a steel bracket that binds the column approximately 3 ft up from the base of the column. The vacuum trap associated with the column has a straight side height of 2 ft and an inside diameter of 6 in. The maximum capacity of the vacuum trap is approximately 11 L. The pH column and the vacuum trap are constructed of PYREX® glass with stainless steel end plates similar to the glass columns in the evaporator glovebox tank component. The glass and stainless steel materials are corrosion-resistant and compatible with the waste received in the column. The pH column is used to adjust the pH of approximately 5 L of waste to ensure compatibility with the cement used for solidification. A compressed-air line enters the glovebox and is connected to two pressurized air tanks outside of the glovebox. The compressed-air line is used for remote valve operation.

The two mixers within the unit are high-flow, gear-driven, fixed-mount mixers. All couplings, shafts, and impellers are constructed of 316 stainless steel. The shafts are 5 ft long. Two impellers are mounted to each shaft. Each impeller has a diameter of approximately 11 in. The mixers are driven by 3.5-horsepower motors encased within the mixer housing. The mixer housing is approximately 2.5 ft long. The maximum weight of each mixer is 225 pounds. Each mixer is mounted on steel plates and supported by two steel guides on either side of each mixer. Each guide is bolted to a 6-in. steel flange at either end and is secured to the glovebox floor and ceiling. Each motor is mounted to a center screw drive that allows the mixers to be independently raised and lowered within the glovebox.

The glovebox is constructed of a section of 0.75 in. lead between two sections of approximately 0.188-in.-thick low-carbon grade, 316 stainless steel. The floor of the glovebox contains two circular openings with removable covers that allow the shafts and impellers of each mixer to be lowered into drums attached beneath the glovebox.

During stabilization operations, two 55-gal steel drums are positioned under the glovebox directly under the openings in the floor of the glovebox. A “bag-out” bag extends from the glovebox into each drum between the drum and the drum liner. This liner is fastened at the bottom of the glovebox with an elastic cord and clamped into place to prevent hazardous constituents from escaping the confinement of the glovebox and the drums during treatment operations. The cement and the waste to be solidified are transferred into the drums and homogeneously mixed inside the drums. Each drum is positioned on a steel platform/scale that is secured in a steel track. The platform allows the drums to be safely and easily removed from the unit after the cement has hardened.

The majority of the piping associated with the stabilization unit is 316 stainless steel. Tygon® tubing is used to transfer sodium hydroxide and the contents of the pH column to the drums. The cement is transferred into the glovebox and drums from a hopper/screw feeder through rubber tubing.

The homogeneous solid process wastes generated at TA-55 is delivered to the Cementation Unit in a closed container from the generator glovebox through a trolley system. The generator is instructed to size reduce the waste to minus 8 mesh. The Stabilization Unit personnel confirm this and do the size reduction if necessary. The particulate waste is poured into the waste drum just before or during the addition of cement to the drum and homogeneously mixed with the cement paste.

The stabilization unit is located in a vacuum-pressurized glovebox at TA-55-4 inside Room 401. Room 401 provides secondary containment for the stabilization unit. The floor of the room is recessed approximately 2.5 in. The room itself is approximately 60 ft long by 75 ft wide. The capacity of the secondary containment area is greater than 100 percent of the volume of waste that is treated in the stabilization unit at any one time. The entire floor is constructed of a 10-in.-thick reinforced concrete slab. Eight continuous air monitors installed at various locations throughout TA-55-4, Room 401 detect any airborne alpha contamination that would be present if a leak were to occur resulting in a release outside of glovebox GB-454.

The stabilization unit is located within a negative pressure glovebox that is connected to the TA-55-4 facility ventilation system. The high-efficiency particulate air filters on the glovebox are on the air intake side of the ventilation and are designed to prevent escape of contamination from the glovebox in the event of a power failure. TA-55-4 is equipped with a backup generator that re-establishes power to all vital systems, providing exhaust to the glovebox. The unit is a batch waste treatment system. If a power failure occurs, all operations cease inside the glovebox until power is restored. In addition, the glovebox is located within three succeedingly greater pressure zones. These zones are (in order of increasing pressure) the glovebox, Room 401, and the main corridor outside of Room 401. These pressure zones are designed to create airflow into Room 401 and the glovebox and limit the potential for hazardous constituents to migrate to the atmosphere. Figure 48 in Permit Attachment N (*Figures)* provides a general arrangement diagram and a process flow diagram for the TA-55 stabilization unit.

A.5.10 Security and Access Control

Security at TA-55 is maintained with both manmade and natural barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into TA-55. Two 12-foot (ft) high chain-link security fences with razor wire at the top surround the entire perimeter of TA-55. Three entry gates allow access to TA-55. One entry gate is located at the main entrance to TA-55 on the southeast side of the facility, one entry gate is located on the road to TA-48 at the northwest end of TA-55, and one entry gate is located at the northeast corner of TA-55 (for access to TA-55, Building 28 [TA-55-28] only). An entry station is located adjacent to the entry gate at the main entrance to the facility. The entry station is manned 24 hours a day by security personnel. Unescorted access to TA-55 is granted only to persons possessing appropriate security clearance and meeting specific training requirements.

TA-55 is patrolled by security personnel during both operational and nonoperational hours to ensure that the gates are locked and that unauthorized entry has not occurred. The entire length of both security fences is also inspected several times each day by on-site security personnel. The locations of the security fences, entry gates, and entry stations are shown on Figure 10 in Attachment N (*Figures)*.

In addition to the fence and entry gates, cliffs and canyons surrounding TA-55 provide natural barriers to discourage unauthorized entry.

Warning signs are posted on the perimeter fences at approximately 40 to 110-ft intervals and can be seen from any approach to TA-55. Warning signs are also posted at each access to the waste management units in sufficient numbers to be seen from any approach. The legends on the signs are bilingual (*i.e.*, English and Spanish) and indicate "No Trespassing by Order of the United States Department of Energy." The signs are legible from a distance of 25 ft.

A.5.11 Emergency Equipment

Buildings at TA-55 are equipped with multiple audible and visual safety-alarm systems to alert personnel in the event of an emergency and to evacuate the area. These alarm systems are located both inside and outside buildings at TA-55 and are monitored and controlled by the facility monitor and control system (FMCS). The FMCS is in operation 24 hours a day and is located in the Operations Center at TA-55-4 with access through TA-55-3. Specific FMCS alarm systems at TA-55 are discussed below.

A TA-55 computer system monitors the smoke and heat sensors, fire-alarm pull boxes, and drop box push-button alarms located throughout TA-55. Fire-alarm pull boxes and/or drop box push-button alarms are located in the vicinity of the waste management units addressed in this permit application. Fire-alarm pull boxes may be used by personnel to activate a local fire alarm when a fire or other emergency is discovered. Fire-alarm pull boxes are located in TA-55-4, Room 401, and throughout the basement in the vicinity of the container storage management units. The equipment includes portable eyewash stations and safety showers. Eyewash stations and safety showers are located in Room 401 and throughout the basement of TA-55-4. Eyewash stations are also located on the Container Storage Pad and outside on the south side of TA-55-4 near TA-55-185. Safety showers are readily available in the following locations: TA-55-4, Room 401; in the basement of TA-55-4; on the Container Storage Pad; and outside on the south side of TA-55-4. TA-55-185 is equipped with a portable safety shower prior to wastes being managed there. Material Safety Data Sheets (MSDS) provide useful exposure information and are available in Room 401 and in the basement of TA-55-4. The MSDS will also be located in TA-55-185 prior to wastes being managed there.

ATTACHMENT B

PART A APPLICATION

LA-UR- 09-04027

Approved for public release; distribution is unlimited.

Title:	Los Alamos National Laboratory General Part A Permit Application Revision 6.0
Author(s):	ENV-RCRA Group
Intended for:	New Mexico Environment Department- Hazardous Waste Bureau

Los Alamos
NATIONAL LABORATORY
EST. 1943

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Form 836 (7/06)

SEND COMPLETED FORM TO: The Appropriate State or EPA Regional Office.	United States Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION FORM**	
1. Reason for Submittal (See instructions on page 14.) MARK ALL BOX(ES) THAT APPLY	**Reason for Submittal:** ☐ To provide Initial Notification of Regulated Waste Activity (to obtain an EPA ID Number for hazardous waste, universal waste, or used oil activities) ☐ To provide Subsequent Notification of Regulated Waste Activity (to update site identification information) ☐ As a component of a First RCRA Hazardous Waste Part A Permit Application ☒ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # 6.0 June 2009) ☐ As a component of the Hazardous Waste Report	
2. Site EPA ID Number (page 15)	**EPA ID Number** |_N_| M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|	
3. Site Name (page 15)	**Name:** Los Alamos National Laboratory	
4. Site Location Information (page 15)	**Street Address:** 4200 West Jemez Road, Suite 200 B	
	City, Town, or Village: Los Alamos	**State:** NM
	County Name: Los Alamos	**Zip Code:** 87544
5. Site Land Type (page 15)	**Site Land Type:** ☐ Private ☐ County ☐ District ☒ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other	
6. North American Industry Classification System (NAICS) Code(s) for the Site (page 15)	**A.** |_9_|_2_|_8_|_1_|_1_|___|	**B.** |__5_|_4__|_1__|_7__|__1_|___|
	C. |__5_|_6__|__2_|__2_|_1__|___|	**D.** |_5__|__6_|__2_|__2_|_1__|_2__|
7. Site Mailing Address (page 16)	**Street or P. O. Box:** P.O. Box 1663	
	City, Town, or Village: Los Alamos	
	State: NM	
	Country: United States	**Zip Code:** 87545
8. Site Contact Person (page 16)	**First Name:** Donald **MI:** L	**Last Name:** Winchell, Jr.
	Phone Number: 505-667-5105 **Extension:**	**Email address:** dwinchell@doeal.gov
9. Operator and Legal Owner of the Site (pages 16 and 17)	**A. Name of Site's Operator:** Los Alamos National Security, LLC.	**Date Became Operator (mm/dd/yyyy):** **06/01/2006**
	Operator Type: ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other	
	A. Name of Site's Legal Owner: Department of Energy, National Nuclear Security Administration	**Date Became Owner (mm/dd/yyyy):** **01/01/1943**

Owner Type: ☐ Private ☐ County ☐ District ☒ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other

9. Legal Owner (Continued) Address	**Street or P. O. Box:** 3747 West Jemez Road	
	City, Town, or Village: Los Alamos	
	State: NM	
	Country: USA	**Zip Code:** 87544

10. Type of Regulated Waste Activity

Mark "Yes" or "No" for all activities; complete any additional boxes as instructed. (See instructions on pages 18 to 21.)

A. Hazardous Waste Activities

Complete all parts for 1 through 6.

Y ☒ N ☐ **1. Generator of Hazardous Waste**

If "Yes", choose only one of the following – a, b, or c.

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

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

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

In addition, indicate other generator activities.

Y ☐ N ☒ d. United States Importer of Hazardous Waste

Y ☒ N ☐ e. Mixed Waste (hazardous and radioactive) Generator

Y ☒ N ☐ **2. Transporter of Hazardous Waste**

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

Y ☐ N ☒ **4. Recycler of Hazardous Waste (at your site)**

Y ☐ N ☒ **5. Exempt Boiler and/or Industrial Furnace**

If "Yes", mark each that applies.

☐ a. Small Quantity On-site Burner Exemption

☐ b. Smelting, Melting, and Refining Furnace Exemption

Y ☐ N ☒ **6. Underground Injection Control**

B. Universal Waste Activities

Y ☒ N ☐ **1. Large Quantity Handler of Universal Waste (accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste generated and/or accumulated at your site. If "Yes", mark all boxes that apply:**

	Generate	Accumulate
a. Batteries	☒	☒
b. Pesticides	☒	☒
c. Thermostats	☒	☒
d. Lamps	☒	☒
e. Other (specify) _____	☐	☐
f. Other (specify) _____	☐	☐
g. Other (specify) _____	☐	☐

C. Used Oil Activities

Mark all boxes that apply.

Y ☐ N ☒ **1. Used Oil Transporter**

If "Yes", mark each that applies.

☐ a. Transporter

☐ b. Transfer Facility

Y ☐ N ☒ **2. Used Oil Processor and/or Re-refiner**

If "Yes", mark each that applies.

☐ a. Processor

☐ b. Re-refiner

Y ☐ N ☒ **3. Off-Specification Used Oil Burner**

Y ☐ N ☒ **1. Used Oil Fuel Marketer**

If "Yes", mark each that applies.

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

Y ☐ N ☒ **2. Destination Facility for Universal Waste** Note: A hazardous waste permit may be required for this activity.	Specification Used Oil Burner ☐ b. Marketer who First Claims the Used Oil Meets Specifications

11. Description of Hazardous Wastes (See instructions on page 22.)

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

See attached.						

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

12. Comments (See instructions on page 22.)

13. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who 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.

For the RCRA Hazardous Waste Part A Permit Application, all operator(s) and owner(s) must sign (see 40 CFR 270.10(b) and 270.11) **(See instructions on page 22.)**

Signature of operator, owner, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
Cindy Dutro	James C. Cantwell, Associate Director for Environment, Safety, Health and Quality	06/29/2009
DLWinchell Jr	Donald L. Winchell, Jr., DOE/LASO Manager	6/30/09

11. Description of Hazardous Wastes

A. Waste Codes for Federally Regulated Hazardous Wastes.

D001	D002	D003	D004	D005	D006	D007
D008	D009	D010	D011	D012	D013	D014
D015	D016	D017	D018	D019	D020	D021
D022	D023	D024	D025	D026	D027	D028
D029	D030	D031	D032	D033	D034	D035
D036	D037	D038	D039	D040	D041	D042
D043	F001	F002	F003	F004	F005	F006
F007	F008	F009	F010	F011	F012	F019
F020	F021	F022	F023	F024	F025	F026
F027	F028	F032	F034	F035	F037	F038
F039	K044	K045	K046	K047	K084	K101
K102	P001	P002	P003	P004	P005	P006
P007	P008	P009	P010	P011	P012	P013
P014	P015	P016	P017	P018	P020	P021
P022	P023	P024	P026	P027	P028	P029
P030	P031	P033	P034	P036	P037	P038
P039	P040	P041	P042	P043	P044	P045
P046	P047	P048	P049	P050	P051	P054
P056	P057	P058	P059	P060	P062	P063
P064	P065	P066	P067	P068	P069	P070
P071	P072	P073	P074	P075	P076	P077
P078	P081	P082	P084	P085	P087	P088
P089	P092	P093	P094	P095	P096	P097
P098	P099	P101	P102	P103	P104	P105
P106	P108	P109	P110	P111	P112	P113
P114	P115	P116	P118	P119	P120	P121
P122	P123	P127	P128	P185	P188	P189
P190	P191	P192	P194	P196	P197	P198
P199	P201	P202	P203	P204	P205	U001
U002	U003	U004	U005	U006	U007	U008
U009	U010	U011	U012	U014	U015	U016
U017	U018	U019	U020	U021	U022	U023
U024	U025	U026	U027	U028	U029	U030
U031	U032	U033	U034	U035	U036	U037
U038	U039	U041	U042	U043	U044	U045
U046	U047	U048	U049	U050	U051	U052
U053	U055	U056	U057	U058	U059	U060
U061	U062	U063	U064	U066	U067	U068
U069	U070	U071	U072	U073	U074	U075

11. Description of Hazardous Wastes
A. Waste Codes for Federally Regulated Hazardous Wastes. (Continued)

U076	U077	U078	U079	U080	U081	U082
U083	U084	U085	U086	U087	U088	U089
U090	U091	U092	U093	U094	U095	U096
U097	U098	U099	U101	U102	U103	U105
U106	U107	U108	U109	U110	U111	U112
U113	U114	U115	U116	U117	U118	U119
U120	U121	U122	U123	U124	U125	U126
U127	U128	U129	U130	U131	U132	U133
U134	U135	U136	U137	U138	U140	U141
U142	U143	U144	U145	U146	U147	U148
U149	U150	U151	U152	U153	U154	U155
U156	U157	U158	U159	U160	U161	U162
U163	U164	U165	U166	U167	U168	U169
U170	U171	U172	U173	U174	U176	U177
U178	U179	U180	U181	U182	U183	U184
U185	U186	U187	U188	U189	U190	U191
U192	U193	U194	U196	U197	U200	U201
U202	U203	U204	U205	U206	U207	U208
U209	U210	U211	U213	U214	U215	U216
U217	U218	U219	U220	U221	U222	U223
U225	U226	U227	U228	U234	U235	U236
U237	U238	U239	U240	U243	U244	U246
U247	U248	U249	U271	U278	U279	U280
U328	U353	U359	U364	U367	U372	U373
U387	U389	U394	U395	U404	U409	U410
U411						

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact (See instructions on page 23)	First Name: Donald	MI: L	Last Name: Winchell, Jr.
	Phone Number: 505-667-5105		Phone Number Extension:
2. Facility Permit Contact Mailing Address (See instructions on page 23)	Street or P. O. Box: 3747 West Jemez Road		
	City, Town, or Village: Los Alamos		
	State: NM		
	Country: USA		Zip Code: 87544
3. Operator Mailing Address and Telephone Number (See instructions on page 23)	Street or P. O. Box: P.O. Box 1663		
	City, Town, or Village: Los Alamos		
	State: NM		
	Country: USA	Zip Code: 87545	Phone Number: 505-667-4218
4. Legal Owner Mailing Address and Telephone Number (See instructions on page 23)	Street or P. O. Box: 3747 West Jemez Road		
	City, Town, or Village: Los Alamos		
	State: NM		
	Country: USA	Zip Code: 87544	Phone Number: 505-667-5105
5. Facility Existence Date (See instructions on page 24)	Facility Existence Date (mm/dd/yyyy): 01/01/1943		

6. Other Environmental Permits (See instructions on page 24)

A. Permit Type (*Enter code*)	B. Permit Number	C. Description
See attached		

7. Nature of Business (Provide a brief description; see instructions on page 24)

LANLs central mission is the reduction of global nuclear danger supported by research that also contributes to conventional defense, civilian, and industrial needs. This includes programs in nuclear,medium energy, and space physics; hydrodynamics; conventional explosives; chemistry; metallurgy;radiochemistry; space nuclear systems; controlled thermonuclear fusion; laser research; environmental technology; geothermal, solar, and fossil energy research; nuclear safeguards; biomedicine; health and biotechnology; and industrial partnerships.

8. Process Codes and Design Capacities (See instructions on page 24) – Enter information in the Sections on Form Page 3.

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

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

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

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

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Disposal:	
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet; Hectare-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Application	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Storage	Any Unit of Measure in Code Table
	Storage:	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Acres; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Disposal	Any Unit of Measure in Code Table
	Treatment:	
T01	Tank Treatment	Gallons Per Day; Liters Per Day
T02	Surface Impoundment Treatment	Gallons Per Day; Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million Btu Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Gallons Per Day; Liters Per Hour; or Million Btu Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; Btu Per Hour; or Million Btu Per Hour

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Treatment (continued):	
T81 T82 T83 T84 T85 T86	Cement Kiln Lime Kiln Aggregate Kiln Phosphate Kiln Coke Oven Blast Furnace	For T81-T93: Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; Liters Per Hour; Kilograms Per Hour; or Million Btu Per Hour
T87	Smelting, Melting, Or Refining Furnace	
T88	Titanium Dioxide Chloride Oxidation Reactor	
T89	Methane Reforming Furnace	
T90	Pulping Liquor Recovery Furnace	
T91	Combustion Device Used In The Recovery Of Sulfur Values From Spent Sulfuric Acid	
T92	Halogen Acid Furnaces	
T93	Other Industrial Furnaces Listed in 40 CFR §260.10	
T94	Containment Building - Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; Btu Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day, Metric Tons Per Hour, or Million Btu Per Hour
	Miscellaneous (Subpart X):	
X01	Open Burning/Open Detonation	Any Unit of Measure in Code Table Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; or Million Btu Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit Measure Listed Below

UNIT OF MEASURE	UNIT OF MEASURE CODE
Gallons	G
Gallons Per Hour	E
Gallons Per Day	U
Liters	L
Liters Per Hour	H
Liters Per Day	V

UNIT OF MEASURE	UNIT OF MEASURE CODE
Short Tons Per Hour	D
Metric Tons Per Hour	W
Short Tons Per Day	N
Metric Tons Per Day	S
Pounds Per Hour	J
Kilograms Per Hour	R
Million Btu Per Hour	X

UNIT OF MEASURE	UNIT OF MEASURE CODE
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu Per Hour	I

X. Other Environmental Permits

A. Permit Type	B. Permit Number	C. Description
National Pollutant Discharge Elimination System (NPDES):		
NPDES Construction General Permit:		Construction Project Title
N	NMLEWG855	Los Alamos National Laboratory
N	NMR15FG67	Regional Wells Project
N	NMR15EZ86	TA-50 Pumphouse
N	NMR15EZ89	TA-55 Construction
N	NMR15FB75	Ski Hill By[ass Road
N	NMR15EZ87	TA-50 RLWTF
N	NMR15EZ75	DX Strategic Plan
N	NMR15EZ85	TA-33 Constructin Activities
N	NMR15EZ98	Deactivation and Decommission
Industrial Point Source Permit:		
N	NMR05GB21	Industrial point source discharges
NPDES Storm Water Multi-Sector General Permit (MSGP) for Industrial Activities:		
N	NMR05GB21	Los Alamos National Security, LLC
N	NMR05GK10	U.S. Department of Energy
Dredge and Fill Permits with the U.S. Army Corps of Engineers:		
	N/A	
Resource Conservation and Recovery Act (RCRA):		
R	NM0890010515-1	RCRA Hazardous Waste Facility Operating Permit
Groundwater Discharge Plans (GDP):		
E	DP-857	TA-46, SWWS Plant, Approved July 1992
E	DP-1132	TA-50, Radioactive Liquid Waste Treatment Facility (New Mexico Environment Department [NMED] approval pending)
E	DP-1589	Domestic Wastewater Septic Systems, Groundwater Discharge Permit Application, April 2006 (NMED approval pending)
Air Quality Permits:		
E	P100 M2	Air Quality Operating Permit (20.2.70 NMAC) LANL Air Emissions
E	2195	Air Quality (20.2.72 NMAC) Portable Rock Crusher
E	2195B-M1-R2	Air Quality (20.2.72 NMAC) TA-3 Steam Plant – Flue Gas Recirculation
E	2195F-R3	Air Quality (20.2.72 NMAC) TA-33 Generator
E	GCP3-2195-G-R1	Air Quality (20.2.72 NMAC) TA-60 Asphalt Plant
E	2195-H	Air Quality (20.2.72 NMAC) Data disintegrator
E	#634-M-2 #632 #1081-M-1-R7	Air Quality (National Emission Standards for Hazardous Air Pollutants) Beryllium Machining: TA-3-141 TA-35-213 TA-55-4
E	2195-N	Air Quality (20.2.72 NMAC) Chemistry and Metallurgy Research Replacement Facility
E	NSR 2195-P	TA-33 1-225 kW/2-20 kW Diesel Generators
Septic Tank Permits:		
E	LA-12	TA-69-10, Seepage Pit
E	LA-13	TA-11-43, Leach Field

Septic Tank Permits (Continued):		
E	LA-21	TA-15-205, Leach Field
E	LA-24	TA-16-371, Holding Tank
E	LA-32	TA-33-31, Seepage Pit
E	LA-34	TA-33-87 Leach Field
E	LA-38	TA-16-175, Leach Field, tank replaced with new tanks 1194 & 1195
E	LA-39	TA-16-210, Leach Field
E	LA-44	TA-39-104, Evaporation Bed, replaced with TA-33-161
E	LA-45	TA-40-24, Leach Field
E	LA-46	TA-40-11 Leach Field
E	LA-49	TA-49-113, Evapotranspiration Bed
E	LA-50	TA-49-115, Evapotranspiration Bed
E	LA-59	TA-52-99, Seepage Pit
E	SF880258	TA-66-0001, Seepage Pit
E	SF890024	TA-39-111, Leach Field
E	SF890025	TA-72-8,39 Leach Field
E	SF89032R	TA-33-178, Leach Field
E	ES030243	TA-36-78, Leach Field
E	SF890589	TA-25-312, Leach Field
E	Unknown	TA-39-89, Leach Field
E	Unknown	TA-58-0049, Leach Field

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
Technical Area 3						
	1	S 0 1	18,500	G	0 0 1	
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4	1 0 0 . 0 0 0	U	0 0 1	In-situ Vitrification

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
			Technical Area 14			
	1	X 0 1	50/20	See Line 2	0 0 2	
	2		Units near TA-14-23 used for open burning/open detonation of explosive hazardous waste. Maximum amount treated by open burning is 50 pounds per burn; maximum amount treated by open detonation is 20 pounds per detonation.			
	3					
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4	1 0 0 . 0 0 0	U	0 0 1	*In-situ Vitrification*

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
			Technical Area 16			
	1	X 0 1	1,000 50/1,000	See Line 2	0 0 2	
	2		Pounds per burn Gallons per burn/pounds per burn			
	3					
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4	1 0 0 . 0 0 0	U	0 0 1	In-situ Vitrification

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
			Technical Area 36			
	1	X 0 1	2,000	See Line 2	0 0 1	
	2		Pounds per detonation			
	3					
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4	1 0 0 . 0 0 0	U	0 0 1	In-situ Vitrification

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
			Technical Area 39			
	1	X 0 1	2,000	See Line 2	0 0 2	
	2		1, 000 pounds per detonation at each unit.			
	3					
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4	1 0 0 . 0 0 0	U	0 0 1	In-situ Vitrification

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
			Technical Area 50			
	1	S 0 1	31,500	G	0 0 2	
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4	1 0 0 . 0 0 0	U	0 0 1	In-situ Vitrification

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
			Technical Area 54, Area L			
	1	S 0 1	407,880	G	0 0 1	
	2	D 8 0	1,200	See Lines 3-5	0 0 1	
	3		To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested. The unit of measure for capacity is cubic yards.			
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	1	T 0 4	1 0 0 . 0 0 0	U	0 0 1	*In-situ Vitrification*
	1	S99	600	See Line 2	001	Shaft Storage
	2		To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G . Permitted status is not requested. The unit of measure for capacity is gallons.			

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
			Technical Area 54, Area G			
	1	S 0 1	3,664,150	G	0 0 8	
	2	S 0 1	4,950	See Line 4	0 0 1	
	3	D 8 0	14	See Line 5	0 0 1	
	4		To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested. The unit of measure for capacity is gallons.			
	5		To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested. The unit of measure for capacity is cubic yards.			
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4	1 0 0 . 0 0 0	U	0 0 1	*In-situ Vitrification*

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
Technical Area 54 West						
	1	S 0 1	11,600	G	0 0 2	
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number(Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4	1 0 0 . 0 0 0	U	0 0 1	*In-situ Vitrification*

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
			Technical Area, 54 Material Disposal Area H			
	1	D 8 0	6 3	See Line 2	0 0 1	
	2		To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested. The unit of measure for capacity is cubic yards.			
	3					
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4	1 0 0 . 0 0 0	U	0 0 1	In-situ Vitrification

8. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 8 (Shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S 0 2	5 3 3 . 7 8 8	G	0 0 1	
			Technical Area 55			
	1	S 0 1	178,500	G	0 0 6	
	2	S 0 2	137	G	0 0 1	
	3					
	4					
	5					
	6					
	7					
	8					
	9					
1	0					
1	1					
1	2					
1	3					
1	4					
1	5					

NOTE: If you need to list more than 15 process codes, attach an additional sheet(s) with the information in the same format as above. Number the lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 9.

9. Other Processes (See instructions on page 25 and follow instructions from Item 8 for D99, S99, T04 and X99 process codes)

Line Number (Enter #s in sequence with Item 8)		A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T 0 4				*In-situ Vitrification*
	1	T 0 4	150	G	0 0 1	Solidification

10. Descriptions of Hazardous Wastes (see instructions on page 25) – Enter information in the Sections on Form Page 5.

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

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

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

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

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

D. PROCESSES

1. PROCESS CODES:

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

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

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

1. Enter the first two as described above.

2. Enter "000" in the extreme right box of Item 10.D(1).

3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 10.E.

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

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

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

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

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

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

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

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
	A.	*B.*	*C.*	*D. PROCESSES*			
Line Number	*EPA Hazardous Waste No. (Enter code)*	*Estimated Annual Quantity of Waste*	*Unit of Measure (Enter code)*	*(1) PROCESS CODES (Enter code)*			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
Technical Area 3							
1	D 0 0 1	7,000	P	S 0 1			
2	D 0 0 2	21,000	P	S 0 1			
3	D 0 0 3	2,500	P	S 0 1			
4	D 0 0 4	3,000	P	S 0 1			
5	D 0 0 5	3,000	P	S 0 1			
6	D 0 0 6	2,500	P	S 0 1			
7	D 0 0 7	7,000	P	S 0 1			
8	D 0 0 8	27,000	P	S 0 1			
9	D 0 0 9	4,000	P	S 0 1			
1 0	D 0 1 0	2,500	P	S 0 1			
1 1	D 0 1 1	3,000	P	S 0 1			
1 2	D 0 1 2	1,000	P	S 0 1			
1 3	D 0 1 8	1,500	P	S 0 1			
1 4	D 0 1 9	2,000	P	S 0 1			
1 5	D 0 2 1	2,000	P	S 0 1			
1 6	D 0 2 2	2,000	P	S 0 1			
1 7	D 0 2 3	2,000	P	S 0 1			
1 8	D 0 2 4	2,000	P	S 0 1			
1 9	D 0 2 5	2,000	P	S 0 1			
2 0	D 0 2 6	2,000	P	S 0 1			
2 1	D 0 2 7	1,500	P	S 0 1			
2 2	D 0 2 8	2,000	P	S 0 1			
2 3	D 0 2 9	1,000	P	S 0 1			
2 4	D 0 3 0	1,500	P	S 0 1			
2 5	D 0 3 2	1,500	P	S 0 1			
2 6	D 0 3 3	1,500	P	S 0 1			
2 7	D 0 3 4	1,500	P	S 0 1			
2 8	D 0 3 5	3,500	P	S 0 1			
2 9	D 0 3 6	1,500	P	S 0 1			
3 0	D 0 3 7	1,000	P	S 0 1			
3 1	D 0 3 8	1,500	P	S 0 1			
3 2	D 0 3 9	2,500	P	S 0 1			
3 3	D 0 4 0	2,500	P	S 0 1			
3 4	D 0 4 2	1,500	P	S 0 1			
3 5	D 0 4 3	1,500	P	S 0 1			
3 6	F 0 0 1	21,000	P	S 0 1			
3 7	F 0 0 2	21,000	P	S 0 1			
3 8	F 0 0 3	21,000	P	S 0 1			
3 9	F 0 0 4	2,500	P	S 0 1			

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 3 (Continued)							
40	F005	21,000	P	S01			
41	F006	500	P	S01			
42	F007	500	P	S01			
43	F009	500	P	S01			
44	P003	1,000	P	S01			
45	P012	1,000	P	S01			
46	P015	1,000	P	S01			
47	P029	1,000	P	S01			
48	P030	1,000	P	S01			
49	P031	1,000	P	S01			
50	P038	1,000	P	S01			
51	P056	1,000	P	S01			
52	P063	1,000	P	S01			
53	P068	1,000	P	S01			
54	P073	1,000	P	S01			
55	P076	1,000	P	S01			
56	P078	1,000	P	S01			
57	P095	1,000	P	S01			
58	P096	1,000	P	S01			
59	P098	1,000	P	S01			
60	P099	500	P	S01			
61	P106	1,000	P	S01			
62	P113	1,000	P	S01			
63	P120	1,000	P	S01			
64	U001	1,000	P	S01			
65	U002	1,000	P	S01			
66	U003	1,000	P	S01			
67	U012	1,000	P	S01			
68	U019	1,000	P	S01			
69	U022	1,000	P	S01			
70	U029	1,000	P	S01			
71	U031	1,000	P	S01			
72	U037	1,000	P	S01			
73	U044	1,000	P	S01			
74	U045	1,000	P	S01			
75	U052	1,000	P	S01			
76	U056	1,000	P	S01			
77	U057	1,000	P	S01			
78	U075	1,000	P	S01			

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
	A.	B.	C.	D. PROCESSES			
Line Number	EPA Hazardous Waste No. (Enter code)	Estimated Annual Quantity of Waste	Unit of Measure (Enter code)	(1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 3 (Continued)							
79	U077	1,000	P	S01			
80	U080	1,000	P	S01			
81	U108	1,000	P	S01			
82	U103	500	P	S01			
83	U112	1,000	P	S01			
84	U115	1,000	P	S01			
85	U117	1,000	P	S01			
86	U121	1,000	P	S01			
87	U122	1,000	P	S01			
88	U123	1,000	P	S01			
89	U131	1,000	P	S01			
90	U133	1,000	P	S01			
91	U134	1,000	P	S01			
92	U135	1,000	P	S01			
93	U140	1,000	P	S01			
94	U144	1,000	P	S01			
95	U151	1,000	P	S01			
96	U154	1,000	P	S01			
97	U159	1,000	P	S01			
98	U160	1,000	P	S01			
99	U161	1,000	P	S01			
100	U165	1,000	P	S01			
101	U169	1,000	P	S01			
102	U188	1,000	P	S01			
103	U190	1,000	P	S01			
104	U196	1,000	P	S01			
105	U204	1,000	P	S01			
106	U210	1,000	P	S01			
107	U211	1,000	P	S01			
108	U213	1,000	P	S01			
109	U216	1,000	P	S01			
110	U218	1,000	P	S01			
111	U219	1,000	P	S01			
112	U220	1,000	P	S01			
113	U225	500	P	S01			
114	U226	1,000	P	S01			
115	U227	500	P	S01			
116	U228	1,000	P	S01			
117	U239	500	P	S01			

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	*A. EPA Hazardous Waste No. (Enter code)*	*B. Estimated Annual Quantity of Waste*	*C. Unit of Measure (Enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (Enter code)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
Technical Area 3 (Continued)							
1 1 8	U 2 4 6	500	P	S 0 1			

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	*A. EPA Hazardous Waste No. (Enter code)*	*B. Estimated Annual Quantity of Waste*	*C. Unit of Measure (Enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (Enter code)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
Technical Area 14							
1	D 0 0 1	2,000	P	X 0 1			
2	D 0 0 3						Included with above.
3	D 0 0 5						Included with above.
4	D 0 0 6						Included with above.
5	D 0 0 7						Included with above.
6	D 0 0 8						Included with above.
7	D 0 0 9						Included with above.
8	D 0 1 1						Included with above.
9	D 0 1 8						Included with above.
1 0	D 0 2 2						Included with above.
1 1	D 0 2 8						Included with above.
1 2	D 0 2 9						Included with above.
1 3	D 0 3 0						Included with above.
1 4	D 0 3 5						Included with above.
1 5	D 0 3 6						Included with above.
1 6	D 0 3 8						Included with above.
1 7	D 0 4 0						Included with above.
1 8	F 0 0 1						Included with above.
1 9	F 0 0 2						Included with above.
2 0	F 0 0 3						Included with above.
2 1	F 0 0 4						Included with above.
2 2	F 0 0 5						Included with above.
2 3							
2 4							
2 5							
2 6							
2 7							
2 8							
2 9							
3 0							
3 1							
3 2							
3 3							
3 4							
3 5							
3 6							
3 7							
3 8							
3 9							

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	*A. EPA Hazardous Waste No. (Enter code)*	*B. Estimated Annual Quantity of Waste*	*C. Unit of Measure (Enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (Enter code)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
Technical Area 16							
1	D 0 0 1	20,000	P	X 0 1			
2	D 0 0 2						Included with above.
3	D 0 0 3						Included with above.
4	D 0 0 5						Included with above.
5	D 0 0 6						Included with above.
6	D 0 0 7						Included with above.
7	D 0 0 8						Included with above.
8	D 0 0 9						Included with above.
9	D 0 1 1						Included with above.
1 0	D 0 1 8						Included with above.
1 1	D 0 2 2						Included with above.
1 2	D 0 2 8						Included with above.
1 3	D 0 2 9						Included with above.
1 4	D 0 3 0						Included with above.
1 5	D 0 3 5						Included with above.
1 6	D 0 3 6						Included with above.
1 7	D 0 3 8						Included with above.
1 8	D 0 4 0						Included with above.
1 9	F 0 0 1						Included with above.
2 0	F 0 0 2						Included with above.
2 1	F 0 0 3						Included with above.
2 2	F 0 0 4						Included with above.
2 3	F 0 0 5						Included with above.
2 4	K 0 4 4						Included with above.
2 5	K 0 4 5						Included with above.
2 6	U 0 1 9						Included with above.
2 7	U 0 2 2						Included with above.
2 8	U 0 4 4						Included with above.
2 9	U 1 1 2						Included with above.
3 0	U 1 5 4						Included with above.
3 1	U 1 5 9						Included with above.
3 2	U 1 6 9						Included with above.
3 3	U 1 9 6						Included with above.
3 4	U 2 2 0						Included with above.
3 5	U 2 3 9						Included with above.
3 6							
3 7							
3 8							
3 9							

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 36							
1	D 0 0 1	15,000	P	X 0 1			
2	D 0 0 3						Included with above.
3	D 0 0 5						Included with above.
4	D 0 0 6						Included with above.
5	D 0 0 7						Included with above.
6	D 0 0 8						Included with above.
7	D 0 0 9						Included with above.
8	D 0 1 1						Included with above.
9	D 0 1 8						Included with above.
1 0	D 0 2 2						Included with above.
1 1	D 0 2 8						Included with above.
1 2	D 0 2 9						Included with above.
1 3	D 0 3 0						Included with above.
1 4	D 0 3 5						Included with above.
1 5	D 0 3 6						Included with above.
1 6	D 0 3 8						Included with above.
1 7	D 0 4 0						Included with above.
1 8	F 0 0 1						Included with above.
1 9	F 0 0 2						Included with above.
2 0	F 0 0 3						Included with above.
2 1	F 0 0 4						Included with above.
2 2	F 0 0 5						Included with above.
2 3							
2 4							
2 5							
2 6							
2 7							
2 8							
2 9							
3 0							
3 1							
3 2							
3 3							
3 4							
3 5							
3 6							
3 7							
3 8							
3 9							

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	*A. EPA Hazardous Waste No. (Enter code)*	*B. Estimated Annual Quantity of Waste*	*C. Unit of Measure (Enter code)*	*D. PROCESSES*			
				(1) PROCESS CODES (Enter code)			*(2) PROCESS DESCRIPTION (If a code is not entered in D(1))*
Technical Area 39							
1	D 0 0 1	15,000	P	X 0 1			
2	D 0 0 3						Included with above.
3	D 0 0 5						Included with above.
4	D 0 0 6						Included with above.
5	D 0 0 7						Included with above.
6	D 0 0 8						Included with above.
7	D 0 0 9						Included with above.
8	D 0 1 1						Included with above.
9	D 0 1 8						Included with above.
1 0	D 0 2 2						Included with above.
1 1	D 0 2 8						Included with above.
1 2	D 0 2 9						Included with above.
1 3	D 0 3 0						Included with above.
1 4	D 0 3 5						Included with above.
1 5	D 0 3 6						Included with above.
1 6	D 0 3 8						Included with above.
1 7	D 0 4 0						Included with above.
1 8	F 0 0 1						Included with above.
1 9	F 0 0 2						Included with above.
2 0	F 0 0 3						Included with above.
2 1	F 0 0 4						Included with above.
2 2	F 0 0 5						Included with above.
2 3							
2 4							
2 5							
2 6							
2 7							
2 8							
2 9							
3 0							
3 1							
3 2							
3 3							
3 4							
3 5							
3 6							
3 7							
3 8							
3 9							

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50							
1	D 0 0 1	69,696	P	S 0 1			
2	D 0 0 2	52,734	P	S 0 1			
3	D 0 0 3	3,444	P	S 0 1			
4	D 0 0 4	7,531	P	S 0 1			
5	D 0 0 5	7,740	P	S 0 1			
6	D 0 0 6	535, 451	P	S 0 1			
7	D 0 0 7	567, 226	P	S 0 1			
8	D 0 0 8	1,405,439	P	S 0 1			
9	D 0 0 9	75,666	P	S 0 1			
1 0	D 0 1 0	8,922	P	S 0 1			
1 1	D 0 1 1	31,255	P	S 0 1			
1 2	D 0 1 2	100	P	S 0 1			
1 3	D 0 1 3	100	P	S 0 1			
1 4	D 0 1 4	100	P	S 0 1			
1 5	D 0 1 5	100	P	S 0 1			
1 6	D 0 1 6	44	P	S 0 1			
1 7	D 0 1 7	66	P	S 0 1			
1 8	D 0 1 8	5,535	P	S 0 1			
1 9	D 0 1 9	4,261	P	S 0 1			
2 0	D 0 2 0	100	P	S 0 1			
2 1	D 0 2 1	100	P	S 0 1			
2 2	D 0 2 2	100	P	S 0 1			
2 3	D 0 2 3	100	P	S 0 1			
2 4	D 0 2 4	100	P	S 0 1			
2 5	D 0 2 5	100	P	S 0 1			
2 6	D 0 2 6	518	P	S 0 1			
2 7	D 0 2 7	972	P	S 0 1			
2 8	D 0 2 8	216,783	P	S 0 1			
2 9	D 0 2 9	215,184	P	S 0 1			
3 0	D 0 3 0	5,491	P	S 0 1			
3 1	D 0 3 1	293	P	S 0 1			
3 2	D 0 3 2	3,135	P	S 0 1			
3 3	D 0 3 3	2,222	P	S 0 1			
3 4	D 0 3 4	1,228	P	S 0 1			
3 5	D 0 3 5	1,792	P	S 0 1			
3 6	D 0 3 6	549	P	S 0 1			
3 7	D 0 3 7	761	P	S 0 1			
3 8	D 0 3 8	1,549	P	S 0 1			
3 9	D 0 3 9	1,675	P	S 0 1			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
40	D 0 4 0	3,942	P	S 0 1			
41	D 0 4 1	293	P	S 0 1			
42	D 0 4 2	1,182	P	S 0 1			
43	D 0 4 3	655	P	S 0 1			
44	F 0 0 1	442,263	P	S 0 1			
45	F 0 0 2	147,347	P	S 0 1			
46	F 0 0 3	50,980	P	S 0 1			
47	F 0 0 4	2,817	P	S 0 1			
48	F 0 0 5	334,821	P	S 0 1			
49	F 0 0 6	100	P	S 0 1			
50	F 0 0 7	100	P	S 0 1			
51	F 0 0 8	100	P	S 0 1			
52	F 0 0 9	165	P	S 0 1			
53	F 0 1 0	100	P	S 0 1			
54	F 0 1 1	100	P	S 0 1			
55	F 0 1 2	100	P	S 0 1			
56	F 0 1 9	100	P	S 0 1			
57	F 0 2 0	100	P	S 0 1			
58	F 0 2 1	100	P	S 0 1			
59	F 0 2 2	100	P	S 0 1			
60	F 0 2 3	100	P	S 0 1			
61	F 0 2 4	100	P	S 0 1			
62	F 0 2 5	100	P	S 0 1			
63	F 0 2 6	100	P	S 0 1			
64	F 0 2 7	165	P	S 0 1			
65	F 0 2 8	100	P	S 0 1			
66	F 0 3 2	100	P	S 0 1			
67	F 0 3 4	100	P	S 0 1			
68	F 0 3 5	100	P	S 0 1			
69	F 0 3 7	100	P	S 0 1			
70	F 0 3 8	100	P	S 0 1			
71	F 0 3 9	100	P	S 0 1			
72	K 0 4 4	100	P	S 0 1			
73	K 0 4 5	100	P	S 0 1			
74	K 0 4 6	100	P	S 0 1			
75	K 0 4 7	100	P	S 0 1			
76	K 0 8 4	100	P	S 0 1			
77	K 1 0 1	100	P	S 0 1			
78	K 1 0 2	100	P	S 0 1			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
79	P001	100	P	S01			
80	P002	100	P	S01			
81	P003	293	P	S01			
82	P004	100	P	S01			
83	P005	100	P	S01			
84	P006	143	P	S01			
85	P007	100	P	S01			
86	P008	100	P	S01			
87	P009	100	P	S01			
88	P010	100	P	S01			
89	P011	143	P	S01			
90	P012	293	P	S01			
91	P013	100	P	S01			
92	P014	100	P	S01			
93	P015	293	P	S01			
94	P016	100	P	S01			
95	P017	100	P	S01			
96	P018	100	P	S01			
97	P020	100	P	S01			
98	P021	100	P	S01			
99	P022	100	P	S01			
100	P023	100	P	S01			
101	P024	100	P	S01			
102	P026	100	P	S01			
103	P027	100	P	S01			
104	P028	100	P	S01			
105	P029	293	P	S01			
106	P030	485	P	S01			
107	P031	485	P	S01			
108	P033	143	P	S01			
109	P034	100	P	S01			
110	P036	100	P	S01			
111	P037	100	P	S01			
112	P038	227	P	S01			
113	P039	100	P	S01			
114	P040	100	P	S01			
115	P041	100	P	S01			
116	P042	100	P	S01			
117	P043	143	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
118	P 044	100	P	S 01			
119	P 045	100	P	S 01			
120	P 046	100	P	S 01			
121	P 047	100	P	S 01			
122	P 048	143	P	S 01			
123	P 049	100	P	S 01			
124	P 050	100	P	S 01			
125	P 051	100	P	S 01			
126	P 054	100	P	S 01			
127	P 056	2,624	P	S 01			
128	P 057	100	P	S 01			
129	P 058	100	P	S 01			
130	P 059	100	P	S 01			
131	P 060	100	P	S 01			
132	P 062	100	P	S 01			
133	P 063	293	P	S 01			
134	P 064	100	P	S 01			
135	P 065	100	P	S 01			
136	P 066	100	P	S 01			
137	P 067	100	P	S 01			
138	P 068	293	P	S 01			
139	P 069	100	P	S 01			
140	P 070	100	P	S 01			
141	P 071	100	P	S 01			
142	P 072	100	P	S 01			
143	P 073	293	P	S 01			
144	P 074	100	P	S 01			
145	P 075	100	P	S 01			
146	P 076	403	P	S 01			
147	P 077	100	P	S 01			
148	P 078	425	P	S 01			
149	P 081	100	P	S 01			
150	P 082	100	P	S 01			
151	P 084	100	P	S 01			
152	P 085	100	P	S 01			
153	P 087	100	P	S 01			
154	P 088	100	P	S 01			
155	P 089	100	P	S 01			
156	P 092	143	P	S 01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
157	P093	100	P	S01			
158	P094	100	P	S01			
159	P095	293	P	S01			
160	P096	293	P	S01			
161	P097	100	P	S01			
162	P098	293	P	S01			
163	P099	100	P	S01			
164	P101	100	P	S01			
165	P102	100	P	S01			
166	P103	100	P	S01			
167	P104	143	P	S01			
168	P105	143	P	S01			
169	P106	293	P	S01			
170	P108	100	P	S01			
171	P109	100	P	S01			
172	P110	100	P	S01			
173	P111	100	P	S01			
174	P112	143	P	S01			
175	P113	293	P	S01			
176	P114	100	P	S01			
177	P115	100	P	S01			
178	P116	100	P	S01			
179	P118	100	P	S01			
180	P119	143	P	S01			
181	P120	293	P	S01			
182	P121	100	P	S01			
183	P122	100	P	S01			
184	P123	100	P	S01			
185	P127	100	P	S01			
186	P128	100	P	S01			
187	P185	100	P	S01			
188	P188	100	P	S01			
189	P189	100	P	S01			
190	P190	100	P	S01			
191	P191	100	P	S01			
192	P192	100	P	S01			
193	P194	100	P	S01			
194	P196	100	P	S01			
195	P197	100	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
196	P198	100	P	S01			
197	P199	100	P	S01			
198	P201	100	P	S01			
199	P202	100	P	S01			
200	P203	100	P	S01			
201	P204	100	P	S01			
202	P205	100	P	S01			
203	U001	293	P	S01			
204	U002	954	P	S01			
205	U003	485	P	S01			
206	U004	100	P	S01			
207	U005	100	P	S01			
208	U006	100	P	S01			
209	U007	143	P	S01			
210	U008	143	P	S01			
211	U009	143	P	S01			
212	U010	100	P	S01			
213	U011	100	P	S01			
214	U012	293	P	S01			
215	U014	100	P	S01			
216	U015	100	P	S01			
217	U016	100	P	S01			
218	U017	100	P	S01			
219	U018	143	P	S01			
220	U019	470	P	S01			
221	U020	100	P	S01			
222	U021	100	P	S01			
223	U022	293	P	S01			
224	U023	100	P	S01			
225	U024	100	P	S01			
226	U025	100	P	S01			
227	U026	100	P	S01			
228	U027	100	P	S01			
229	U028	100	P	S01			
230	U029	293	P	S01			
231	U030	100	P	S01			
232	U031	293	P	S01			
233	U032	100	P	S01			
234	U033	143	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
235	U034	100	P	S01			
236	U035	100	P	S01			
237	U036	100	P	S01			
238	U037	143	P	S01			
239	U038	100	P	S01			
240	U039	100	P	S01			
241	U041	143	P	S01			
242	U042	100	P	S01			
243	U043	100	P	S01			
244	U044	293	P	S01			
245	U045	293	P	S01			
246	U046	100	P	S01			
247	U047	100	P	S01			
248	U048	100	P	S01			
249	U049	100	P	S01			
250	U050	100	P	S01			
251	U051	100	P	S01			
252	U052	293	P	S01			
253	U053	100	P	S01			
254	U055	143	P	S01			
255	U056	293	P	S01			
256	U057	293	P	S01			
257	U058	100	P	S01			
258	U059	100	P	S01			
259	U060	100	P	S01			
260	U061	100	P	S01			
261	U062	100	P	S01			
262	U063	100	P	S01			
263	U064	100	P	S01			
264	U066	100	P	S01			
265	U067	143	P	S01			
266	U068	143	P	S01			
267	U069	100	P	S01			
268	U070	165	P	S01			
269	U071	100	P	S01			
270	U072	100	P	S01			
271	U073	100	P	S01			
272	U074	100	P	S01			
273	U075	381	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
274	U076	100	P	S01			
275	U077	293	P	S01			
276	U078	100	P	S01			
277	U079	100	P	S01			
278	U080	4,129	P	S01			
279	U081	100	P	S01			
280	U082	100	P	S01			
281	U083	100	P	S01			
282	U084	100	P	S01			
283	U085	143	P	S01			
284	U086	100	P	S01			
285	U087	100	P	S01			
286	U088	100	P	S01			
287	U089	100	P	S01			
288	U090	100	P	S01			
289	U091	518	P	S01			
290	U092	143	P	S01			
291	U093	100	P	S01			
292	U094	100	P	S01			
293	U095	100	P	S01			
294	U096	100	P	S01			
295	U097	100	P	S01			
296	U098	100	P	S01			
297	U099	100	P	S01			
298	U101	100	P	S01			
299	U102	100	P	S01			
300	U103	143	P	S01			
301	U105	100	P	S01			
302	U106	100	P	S01			
303	U107	100	P	S01			
304	U108	293	P	S01			
305	U109	143	P	S01			
306	U110	100	P	S01			
307	U111	100	P	S01			
308	U112	293	P	S01			
309	U113	100	P	S01			
310	U114	100	P	S01			
311	U115	293	P	S01			
312	U116	100	P	S01			

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
313	U117	293	P	S01			
314	U118	100	P	S01			
315	U119	100	P	S01			
316	U120	100	P	S01			
317	U121	293	P	S01			
318	U122	778	P	S01			
319	U123	293	P	S01			
320	U124	143	P	S01			
321	U125	100	P	S01			
322	U126	100	P	S01			
323	U127	100	P	S01			
324	U128	100	P	S01			
325	U129	100	P	S01			
326	U130	100	P	S01			
327	U131	293	P	S01			
328	U132	100	P	S01			
329	U133	293	P	S01			
330	U134	667	P	S01			
331	U135	447	P	S01			
332	U136	143	P	S01			
333	U137	100	P	S01			
334	U138	100	P	S01			
335	U140	293	P	S01			
336	U141	100	P	S01			
337	U142	100	P	S01			
338	U143	100	P	S01			
339	U144	293	P	S01			
340	U145	293	P	S01			
341	U146	100	P	S01			
342	U147	100	P	S01			
343	U148	100	P	S01			
344	U149	100	P	S01			
345	U150	100	P	S01			
346	U151	884	P	S01			
347	U152	100	P	S01			
348	U153	143	P	S01			
349	U154	359	P	S01			
350	U155	100	P	S01			
351	U156	100	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
352	U157	100	P	S01			
353	U158	100	P	S01			
354	U159	315	P	S01			
355	U160	293	P	S01			
356	U161	470	P	S01			
357	U162	143	P	S01			
358	U163	143	P	S01			
359	U164	100	P	S01			
360	U165	293	P	S01			
361	U166	100	P	S01			
362	U167	143	P	S01			
363	U168	143	P	S01			
364	U169	293	P	S01			
365	U170	143	P	S01			
366	U171	100	P	S01			
367	U172	100	P	S01			
368	U173	100	P	S01			
369	U174	100	P	S01			
370	U176	100	P	S01			
371	U177	100	P	S01			
372	U178	100	P	S01			
373	U179	100	P	S01			
374	U180	100	P	S01			
375	U181	100	P	S01			
376	U182	100	P	S01			
377	U183	100	P	S01			
378	U184	100	P	S01			
379	U185	100	P	S01			
380	U186	100	P	S01			
381	U187	100	P	S01			
382	U188	293	P	S01			
383	U189	100	P	S01			
384	U190	293	P	S01			
385	U191	100	P	S01			
386	U192	100	P	S01			
387	U193	100	P	S01			
388	U194	100	P	S01			
389	U196	293	P	S01			
390	U197	100	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
391	U200	100	P	S01			
392	U201	100	P	S01			
393	U202	100	P	S01			
394	U203	100	P	S01			
395	U204	293	P	S01			
396	U205	100	P	S01			
397	U206	100	P	S01			
398	U207	100	P	S01			
399	U208	100	P	S01			
400	U209	100	P	S01			
401	U210	513	P	S01			
402	U211	359	P	S01			
403	U213	293	P	S01			
404	U214	100	P	S01			
405	U215	100	P	S01			
406	U216	293	P	S01			
407	U217	100	P	S01			
408	U218	293	P	S01			
409	U219	293	P	S01			
410	U220	491	P	S01			
411	U221	100	P	S01			
412	U222	100	P	S01			
413	U223	143	P	S01			
414	U225	293	P	S01			
415	U226	6,594	P	S01			
416	U227	293	P	S01			
417	U228	1,219	P	S01			
418	U234	100	P	S01			
419	U235	100	P	S01			
420	U236	100	P	S01			
421	U237	100	P	S01			
422	U238	100	P	S01			
423	U239	646	P	S01			
424	U240	143	P	S01			
425	U243	100	P	S01			
426	U244	100	P	S01			
427	U246	231	P	S01			
428	U247	100	P	S01			
429	U248	100	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50 (Continued)							
430	U249	100	P	S01			
431	U271	100	P	S01			
432	U278	100	P	S01			
433	U279	100	P	S01			
434	U280	100	P	S01			
435	U328	100	P	S01			
436	U353	100	P	S01			
437	U359	100	P	S01			
438	U364	100	P	S01			
439	U367	100	P	S01			
440	U372	100	P	S01			
441	U373	100	P	S01			
442	U387	100	P	S01			
443	U389	100	P	S01			
444	U394	100	P	S01			
445	U395	100	P	S01			
446	U404	100	P	S01			
447	U409	100	P	S01			
448	U410	100	P	S01			
449	U411	100	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L							
1	D 0 0 1	220,000	P	S 0 1			
2	D 0 0 2	365,000	P	S 0 1			
3	D 0 0 3	100,000	P	S 0 1			
4	D 0 0 4	25,000	P	S 0 1			
5	D 0 0 5	80,000	P	S 0 1			
6	D 0 0 6	65,000	P	S 0 1			
7	D 0 0 7	75,000	P	S 0 1			
8	D 0 0 8	800,000	P	S 0 1			
9	D 0 0 9	65,000	P	S 0 1			
1 0	D 0 1 0	30,000	P	S 0 1			
1 1	D 0 1 1	40,000	P	S 0 1			
1 2	D 0 1 2	12,000	P	S 0 1			
1 3	D 0 1 3	4,000	P	S 0 1			
1 4	D 0 1 4	4,000	P	S 0 1			
1 5	D 0 1 5	7,000	P	S 0 1			
1 6	D 0 1 6	4,000	P	S 0 1			
1 7	D 0 1 7	4,000	P	S 0 1			
1 8	D 0 1 8	20,000	P	S 0 1			
1 9	D 0 1 9	20,000	P	S 0 1			
2 0	D 0 2 0	30,000	P	S 0 1			
2 1	D 0 2 1	10,000	P	S 0 1			
2 2	D 0 2 2	23,000	P	S 0 1			
2 3	D 0 2 3	4,000	P	S 0 1			
2 4	D 0 2 4	4,000	P	S 0 1			
2 5	D 0 2 5	4,000	P	S 0 1			
2 6	D 0 2 6	4,000	P	S 0 1			
2 7	D 0 2 7	12,000	P	S 0 1			
2 8	D 0 2 8	30,000	P	S 0 1			
2 9	D 0 2 9	7,000	P	S 0 1			
3 0	D 0 3 0	20000	P	S 0 1			
3 1	D 0 3 1	12000	P	S 0 1			
3 2	D 0 3 2	19000	P	S 0 1			
3 3	D 0 3 3	19000	P	S 0 1			
3 4	D 0 3 4	19000	P	S 0 1			
3 5	D 0 3 5	20000	P	S 0 1			
3 6	D 0 3 6	9000	P	S 0 1			
3 7	D 0 3 7	7000	P	S 0 1			
3 8	D 0 3 8	4000	P	S 0 1			
3 9	D 0 3 9	10000	P	S 0 1			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
40	D 0 4 0	15000	P	S 0 1			
41	D 0 4 1	7000	P	S 0 1			
42	D 0 4 2	12000	P	S 0 1			
43	D 0 4 3	15000	P	S 0 1			
44	F 0 0 1	660000	P	S 0 1			
45	F 0 0 2	350000	P	S 0 1			
46	F 0 0 3	250000	P	S 0 1			
47	F 0 0 4	30000	P	S 0 1			
48	F 0 0 5	250000	P	S 0 1			
49	F 0 0 6	7000	P	S 0 1			
50	F 0 0 7	28000	P	S 0 1			
51	F 0 0 8	7000	P	S 0 1			
52	F 0 0 9	8000	P	S 0 1			
53	F 0 1 0	4000	P	S 0 1			
54	F 0 1 1	4000	P	S 0 1			
55	F 0 1 2	4000	P	S 0 1			
56	F 0 1 9	500	P	S 0 1			
57	F 0 2 0	500	P	S 0 1			
58	F 0 2 1	500	P	S 0 1			
59	F 0 2 2	500	P	S 0 1			
60	F 0 2 3	500	P	S 0 1			
61	F 0 2 4	500	P	S 0 1			
62	F 0 2 5	500	P	S 0 1			
63	F 0 2 6	500	P	S 0 1			
64	F 0 2 7	4000	P	S 0 1			
65	F 0 2 8	4000	P	S 0 1			
66	F 0 3 2	500	P	S 0 1			
67	F 0 3 4	500	P	S 0 1			
68	F 0 3 5	500	P	S 0 1			
69	F 0 3 7	500	P	S 0 1			
70	F 0 3 8	500	P	S 0 1			
71	F 0 3 9	4000	P	S 0 1			
72	K 0 4 4	22000	P	S 0 1			
73	K 0 4 5	4000	P	S 0 1			
74	K 0 4 6	4000	P	S 0 1			
75	K 0 4 7	4000	P	S 0 1			
76	K 0 8 4	500	P	S 0 1			
77	K 1 0 1	500	P	S 0 1			
78	K 1 0 2	500	P	S 0 1			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
79	P001	4,000	P	S01			
80	P002	4,000	P	S01			
81	P003	4,000	P	S01			
82	P004	4,000	P	S01			
83	P005	4,000	P	S01			
84	P006	4,000	P	S01			
85	P007	4,000	P	S01			
86	P008	4,000	P	S01			
87	P009	4,000	P	S01			
88	P010	4,000	P	S01			
89	P011	4,000	P	S01			
90	P012	4,000	P	S01			
91	P013	4,000	P	S01			
92	P014	4,000	P	S01			
93	P015	4,000	P	S01			
94	P016	4,000	P	S01			
95	P017	4,000	P	S01			
96	P018	4,000	P	S01			
97	P020	4,000	P	S01			
98	P021	4,000	P	S01			
99	P022	4,000	P	S01			
100	P023	4,000	P	S01			
101	P024	4,000	P	S01			
102	P026	4,000	P	S01			
103	P027	4,000	P	S01			
104	P028	4,000	P	S01			
105	P029	4,000	P	S01			
106	P030	4,000	P	S01			
107	P031	4,000	P	S01			
108	P033	4,000	P	S01			
109	P034	4,000	P	S01			
110	P036	4,000	P	S01			
111	P037	4,000	P	S01			
112	P038	4,000	P	S01			
113	P039	4,000	P	S01			
114	P040	4,000	P	S01			
115	P041	4,000	P	S01			
116	P042	4,000	P	S01			
117	P043	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
118	P044	4,000	P	S01			
119	P045	4,000	P	S01			
120	P046	4,000	P	S01			
121	P047	4,000	P	S01			
122	P048	4,000	P	S01			
123	P049	4,000	P	S01			
124	P050	4,000	P	S01			
125	P051	4,000	P	S01			
126	P054	4,000	P	S01			
127	P056	4,000	P	S01			
128	P057	4,000	P	S01			
129	P058	4,000	P	S01			
130	P059	4,000	P	S01			
131	P060	4,000	P	S01			
132	P062	4,000	P	S01			
133	P063	4,000	P	S01			
134	P064	4,000	P	S01			
135	P065	4,000	P	S01			
136	P066	4,000	P	S01			
137	P067	4,000	P	S01			
138	P068	4,000	P	S01			
139	P069	4,000	P	S01			
140	P070	4,000	P	S01			
141	P071	4,000	P	S01			
142	P072	4,000	P	S01			
143	P073	4,000	P	S01			
144	P074	4,000	P	S01			
145	P075	4,000	P	S01			
146	P076	4,000	P	S01			
147	P077	4,000	P	S01			
148	P078	4,000	P	S01			
149	P081	4,000	P	S01			
150	P082	4,000	P	S01			
151	P084	4,000	P	S01			
152	P085	4,000	P	S01			
153	P087	4,000	P	S01			
154	P088	4,000	P	S01			
155	P089	4,000	P	S01			
156	P092	4,000	P	S01			

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
157	P093	4,000	P	S01			
158	P094	4,000	P	S01			
159	P095	4,000	P	S01			
160	P096	4,000	P	S01			
161	P097	4,000	P	S01			
162	P098	4,000	P	S01			
163	P099	4,000	P	S01			
164	P101	4,000	P	S01			
165	P102	4,000	P	S01			
166	P103	4,000	P	S01			
167	P104	4,000	P	S01			
168	P105	4,000	P	S01			
169	P106	4,000	P	S01			
170	P108	4,000	P	S01			
171	P109	4,000	P	S01			
172	P110	4,000	P	S01			
173	P111	4,000	P	S01			
174	P112	4,000	P	S01			
175	P113	4,000	P	S01			
176	P114	4,000	P	S01			
177	P115	4,000	P	S01			
178	P116	4,000	P	S01			
179	P118	4,000	P	S01			
180	P119	4,000	P	S01			
181	P120	4,000	P	S01			
182	P121	4,000	P	S01			
183	P122	4,000	P	S01			
184	P123	4,000	P	S01			
185	P127	4,000	P	S01			
186	P128	4,000	P	S01			
187	P185	4,000	P	S01			
188	P188	4,000	P	S01			
189	P189	4,000	P	S01			
190	P190	4,000	P	S01			
191	P191	4,000	P	S01			
192	P192	4,000	P	S01			
193	P194	4,000	P	S01			
194	P196	4,000	P	S01			
195	P197	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
196	P 1 9 8	4,000	P	S 0 1			
197	P 1 9 9	4,000	P	S 0 1			
198	P 2 0 1	4,000	P	S 0 1			
199	P 2 0 2	4,000	P	S 0 1			
200	P 2 0 3	4,000	P	S 0 1			
201	P 2 0 4	4,000	P	S 0 1			
202	P 2 0 5	4,000	P	S 0 1			
203	U 0 0 1	4,000	P	S 0 1			
204	U 0 0 2	4,000	P	S 0 1			
205	U 0 0 3	4,000	P	S 0 1			
206	U 0 0 4	4,000	P	S 0 1			
207	U 0 0 5	4,000	P	S 0 1			
208	U 0 0 6	4,000	P	S 0 1			
209	U 0 0 7	4,000	P	S 0 1			
210	U 0 0 8	4,000	P	S 0 1			
211	U 0 0 9	4,000	P	S 0 1			
212	U 0 1 0	4,000	P	S 0 1			
213	U 0 1 1	4,000	P	S 0 1			
214	U 0 1 2	4,000	P	S 0 1			
215	U 0 1 4	4,000	P	S 0 1			
216	U 0 1 5	4,000	P	S 0 1			
217	U 0 1 6	4,000	P	S 0 1			
218	U 0 1 7	4,000	P	S 0 1			
219	U 0 1 8	4,000	P	S 0 1			
220	U 0 1 9	4,000	P	S 0 1			
221	U 0 2 0	4,000	P	S 0 1			
222	U 0 2 1	4,000	P	S 0 1			
223	U 0 2 2	4,000	P	S 0 1			
224	U 0 2 3	4,000	P	S 0 1			
225	U 0 2 4	4,000	P	S 0 1			
226	U 0 2 5	4,000	P	S 0 1			
227	U 0 2 6	4,000	P	S 0 1			
228	U 0 2 7	4,000	P	S 0 1			
229	U 0 2 8	4,000	P	S 0 1			
230	U 0 2 9	4,000	P	S 0 1			
231	U 0 3 0	4,000	P	S 0 1			
232	U 0 3 1	4,000	P	S 0 1			
233	U 0 3 2	4,000	P	S 0 1			
234	U 0 3 3	4,000	P	S 0 1			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
235	U034	4,000	P	S01			
236	U035	4,000	P	S01			
237	U036	4,000	P	S01			
238	U037	4,000	P	S01			
239	U038	4,000	P	S01			
240	U039	4,000	P	S01			
241	U041	4,000	P	S01			
242	U042	4,000	P	S01			
243	U043	4,000	P	S01			
244	U044	4,000	P	S01			
245	U045	4,000	P	S01			
246	U046	4,000	P	S01			
247	U047	4,000	P	S01			
248	U048	4,000	P	S01			
249	U049	4,000	P	S01			
250	U050	4,000	P	S01			
251	U051	4,000	P	S01			
252	U052	4,000	P	S01			
253	U053	4,000	P	S01			
254	U055	4,000	P	S01			
255	U056	4,000	P	S01			
256	U057	4,000	P	S01			
257	U058	4,000	P	S01			
258	U059	4,000	P	S01			
259	U060	4,000	P	S01			
260	U061	4,000	P	S01			
261	U062	4,000	P	S01			
262	U063	4,000	P	S01			
263	U064	4,000	P	S01			
264	U066	4,000	P	S01			
265	U067	4,000	P	S01			
266	U068	4,000	P	S01			
267	U069	4,000	P	S01			
268	U070	4,000	P	S01			
269	U071	4,000	P	S01			
270	U072	4,000	P	S01			
271	U073	4,000	P	S01			
272	U074	4,000	P	S01			
273	U075	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
274	U076	4,000	P	S01			
275	U077	4,000	P	S01			
276	U078	4,000	P	S01			
277	U079	4,000	P	S01			
278	U080	4,000	P	S01			
279	U081	4,000	P	S01			
280	U082	4,000	P	S01			
281	U083	4,000	P	S01			
282	U084	4,000	P	S01			
283	U085	4,000	P	S01			
284	U086	4,000	P	S01			
285	U087	4,000	P	S01			
286	U088	4,000	P	S01			
287	U089	4,000	P	S01			
288	U090	4,000	P	S01			
289	U091	4,000	P	S01			
290	U092	4,000	P	S01			
291	U093	4,000	P	S01			
292	U094	4,000	P	S01			
293	U095	4,000	P	S01			
294	U096	4,000	P	S01			
295	U097	4,000	P	S01			
296	U098	4,000	P	S01			
297	U099	4,000	P	S01			
298	U101	4,000	P	S01			
299	U102	4,000	P	S01			
300	U103	4,000	P	S01			
301	U105	4,000	P	S01			
302	U106	4,000	P	S01			
303	U107	4,000	P	S01			
304	U108	4,000	P	S01			
305	U109	4,000	P	S01			
306	U110	4,000	P	S01			
307	U111	4,000	P	S01			
308	U112	4,000	P	S01			
309	U113	4,000	P	S01			
310	U114	4,000	P	S01			
311	U115	4,000	P	S01			
312	U116	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
313	U117	4,000	P	S01			
314	U118	4,000	P	S01			
315	U119	4,000	P	S01			
316	U120	4,000	P	S01			
317	U121	4,000	P	S01			
318	U122	4,000	P	S01			
319	U123	4,000	P	S01			
320	U124	4,000	P	S01			
321	U125	4,000	P	S01			
322	U126	4,000	P	S01			
323	U127	4,000	P	S01			
324	U128	4,000	P	S01			
325	U129	4,000	P	S01			
326	U130	4,000	P	S01			
327	U131	4,000	P	S01			
328	U132	4,000	P	S01			
329	U133	4,000	P	S01			
330	U134	4,000	P	S01			
331	U135	4,000	P	S01			
332	U136	4,000	P	S01			
333	U137	4,000	P	S01			
334	U138	4,000	P	S01			
335	U140	4,000	P	S01			
336	U141	4,000	P	S01			
337	U142	4,000	P	S01			
338	U143	4,000	P	S01			
339	U144	4,000	P	S01			
340	U145	4,000	P	S01			
341	U146	4,000	P	S01			
342	U147	4,000	P	S01			
343	U148	4,000	P	S01			
344	U149	4,000	P	S01			
345	U150	4,000	P	S01			
346	U151	4,000	P	S01			
347	U152	4,000	P	S01			
348	U153	4,000	P	S01			
349	U154	4,000	P	S01			
350	U155	4,000	P	S01			
351	U156	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
352	U157	4,000	P	S01			
353	U158	4,000	P	S01			
354	U159	4,000	P	S01			
355	U160	4,000	P	S01			
356	U161	4,000	P	S01			
357	U162	4,000	P	S01			
358	U163	4,000	P	S01			
359	U164	4,000	P	S01			
360	U165	4,000	P	S01			
361	U166	4,000	P	S01			
362	U167	4,000	P	S01			
363	U168	4,000	P	S01			
364	U169	4,000	P	S01			
365	U170	4,000	P	S01			
366	U171	4,000	P	S01			
367	U172	4,000	P	S01			
368	U173	4,000	P	S01			
369	U174	4,000	P	S01			
370	U176	4,000	P	S01			
371	U177	4,000	P	S01			
372	U178	4,000	P	S01			
373	U179	4,000	P	S01			
374	U180	4,000	P	S01			
375	U181	4,000	P	S01			
376	U182	4,000	P	S01			
377	U183	4,000	P	S01			
378	U184	4,000	P	S01			
379	U185	4,000	P	S01			
380	U186	4,000	P	S01			
381	U187	4,000	P	S01			
382	U188	4,000	P	S01			
383	U189	4,000	P	S01			
384	U190	4,000	P	S01			
385	U191	4,000	P	S01			
386	U192	4,000	P	S01			
387	U193	4,000	P	S01			
388	U194	4,000	P	S01			
389	U196	4,000	P	S01			
390	U197	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
391	U200	4,000	P	S01			
392	U201	4,000	P	S01			
393	U202	4,000	P	S01			
394	U203	4,000	P	S01			
395	U204	4,000	P	S01			
396	U205	4,000	P	S01			
397	U206	4,000	P	S01			
398	U207	4,000	P	S01			
399	U208	4,000	P	S01			
400	U209	4,000	P	S01			
401	U210	4,000	P	S01			
402	U211	4,000	P	S01			
403	U213	4,000	P	S01			
404	U214	4,000	P	S01			
405	U215	4,000	P	S01			
406	U216	4,000	P	S01			
407	U217	4,000	P	S01			
408	U218	4,000	P	S01			
409	U219	4,000	P	S01			
410	U220	7,000	P	S01			
411	U221	4,000	P	S01			
412	U222	4,000	P	S01			
413	U223	4,000	P	S01			
414	U225	4,000	P	S01			
415	U226	7,000	P	S01			
416	U227	4,000	P	S01			
417	U228	7,000	P	S01			
418	U234	4,000	P	S01			
419	U235	4,000	P	S01			
420	U236	4,000	P	S01			
421	U237	4,000	P	S01			
422	U238	4,000	P	S01			
423	U239	7,000	P	S01			
424	U240	4,000	P	S01			
425	U243	4,000	P	S01			
426	U244	4,000	P	S01			
427	U246	4,000	P	S01			
428	U247	4,000	P	S01			
429	U248	4,000	P	S01			

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area L (Continued)							
430	U249	4,000	P	S01			
431	U271	4,000	P	S01			
432	U278	4,000	P	S01			
433	U279	4,000	P	S01			
434	U280	4,000	P	S01			
435	U328	4,000	P	S01			
436	U353	4,000	P	S01			
437	U359	4,000	P	S01			
438	U364	4,000	P	S01			
439	U367	4,000	P	S01			
440	U372	4,000	P	S01			
441	U373	4,000	P	S01			
442	U387	4,000	P	S01			
443	U389	4,000	P	S01			
444	U394	4,000	P	S01			
445	U395	4,000	P	S01			
446	U404	4,000	P	S01			
447	U409	4,000	P	S01			
448	U410	4,000	P	S01			
449	U411	4,000	P	S01			

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Material Disposal Area L (Impoundments B and D/Shafts 1, 13-17, and 19-34)[a,b]							
1	D 0 0 1	82,000	P	D 8 0			
2	D 0 0 2	17,200	P	D 8 0			
3	D 0 0 3	750	P	D 8 0			
4	D 0 0 4	1,700	P	D 8 0			
5	D 0 0 6	650	P	D 8 0			
6	D 0 0 7	1,000	P	D 8 0			
7	D 0 0 8	1,250	P	D 8 0			
8	D 0 0 9	2,200	P	D 8 0			
9	D 0 1 1	100	P	D 8 0			
1 0	D 0 1 6	600	P	D 8 0			
1 1	F 0 0 2	1,400	P	D 8 0			
1 2	P 0 1 5	4,000	P	D 8 0			
1 3	P 0 8 7	15	P	D 8 0			
1 4	U 0 0 2	5,000	P	D 8 0			
1 5	U 0 1 9	200	P	D 8 0			
1 6	U 0 6 9	500	P	D 8 0			
1 7	U 0 8 0	2,000	P	D 8 0			
1 8	U 1 2 2	550	P	D 8 0			
1 9	U 1 5 1	35	P	D 8 0			
2 0	U 1 5 4	550	P	D 8 0			
2 1	U 1 5 9	300	P	D 8 0			
2 2	U 1 6 1	500	P	D 8 0			
2 3	U 1 6 5	140	P	D 8 0			
2 4	U 2 2 0	620	P	D 8 0			
2 5	U 2 2 6	10,000	P	D 8 0			
2 6	U 2 2 8	4,400	P	D 8 0			
2 7	U 2 3 9	345	P	D 8 0			
2 8							
2 9							
3 0							
3 1							
3 2							
3 3							
3 4							
3 5							
3 6							
3 7							
3 8							
3 9							

[a] Based on historical data from waste operations personnel.

[b] To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G							
1	D 0 0 1	330,000	P	S 0 1			
2	D 0 0 2	395,000	P	S 0 1			
3	D 0 0 3	185,000	P	S 0 1			
4	D 0 0 4	2,525,000	P	S 0 1			
5	D 0 0 5	82,000	P	S 0 1			
6	D 0 0 6	515,000	P	S 0 1			
7	D 0 0 7	3,775,000	P	S 0 1			
8	D 0 0 8	5,400,000	P	S 0 1			
9	D 0 0 9	100,000	P	S 0 1			
1 0	D 0 1 0	45,000	P	S 0 1			
1 1	D 0 1 1	2,540,000	P	S 0 1			
1 2	D 0 1 2	18,000	P	S 0 1			
1 3	D 0 1 3	4,000	P	S 0 1			
1 4	D 0 1 4	4,000	P	S 0 1			
1 5	D 0 1 5	7,000	P	S 0 1			
1 6	D 0 1 6	4,000	P	S 0 1			
1 7	D 0 1 7	4,000	P	S 0 1			
1 8	D 0 1 8	30,000	P	S 0 1			
1 9	D 0 1 9	25,000	P	S 0 1			
2 0	D 0 2 0	30,000	P	S 0 1			
2 1	D 0 2 1	15,000	P	S 0 1			
2 2	D 0 2 2	33,000	P	S 0 1			
2 3	D 0 2 3	4,000	P	S 0 1			
2 4	D 0 2 4	4,000	P	S 0 1			
2 5	D 0 2 5	4,000	P	S 0 1			
2 6	D 0 2 6	4,000	P	S 0 1			
2 7	D 0 2 7	22,000	P	S 0 1			
2 8	D 0 2 8	40,000	P	S 0 1			
2 9	D 0 2 9	7,000	P	S 0 1			
3 0	D 0 3 0	30,000	P	S 0 1			
3 1	D 0 3 1	22,000	P	S 0 1			
3 2	D 0 3 2	29,000	P	S 0 1			
3 3	D 0 3 3	29,000	P	S 0 1			
3 4	D 0 3 4	29,000	P	S 0 1			
3 5	D 0 3 5	30,000	P	S 0 1			
3 6	D 0 3 6	19,000	P	S 0 1			
3 7	D 0 3 7	7,000	P	S 0 1			
3 8	D 0 3 8	14,000	P	S 0 1			
3 9	D 0 3 9	20,000	P	S 0 1			

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
40	D040	25,000	P	S01			
41	D041	17,000	P	S01			
42	D042	22,000	P	S01			
43	D043	25,000	P	S01			
44	F001	6,410,000	P	S01			
45	F002	3,450,000	P	S01			
46	F003	2,850,000	P	S01			
47	F004	35,000	P	S01			
48	F005	3,250,000	P	S01			
49	F006	7,000	P	S01			
50	F007	18,000	P	S01			
51	F008	7,000	P	S01			
52	F009	8,000	P	S01			
53	F010	4,000	P	S01			
54	F011	4,000	P	S01			
55	F012	4,000	P	S01			
56	F019	4,000	P	S01			
57	F020	4,000	P	S01			
58	F021	4,000	P	S01			
59	F022	4,000	P	S01			
60	F023	4,000	P	S01			
61	F024	4,000	P	S01			
62	F025	4,000	P	S01			
63	F026	4,000	P	S01			
64	F027	4,000	P	S01			
65	F028	4,000	P	S01			
66	F032	4,000	P	S01			
67	F034	4,000	P	S01			
68	F035	4,000	P	S01			
69	F037	4,000	P	S01			
70	F038	4,000	P	S01			
71	F039	4,000	P	S01			
72	K044	22,000	P	S01			
73	K045	4,000	P	S01			
74	K046	4,000	P	S01			
75	K047	4,000	P	S01			
76	K084	500	P	S01			
77	K101	500	P	S01			
78	K102	500	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
79	P001	4000	P	S01			
80	P002	4000	P	S01			
81	P003	4100	P	S01			
82	P004	4000	P	S01			
83	P005	4000	P	S01			
84	P006	4000	P	S01			
85	P007	4000	P	S01			
86	P008	4000	P	S01			
87	P009	4000	P	S01			
88	P010	4000	P	S01			
89	P011	4000	P	S01			
90	P012	4100	P	S01			
91	P013	4000	P	S01			
92	P014	4000	P	S01			
93	P015	4100	P	S01			
94	P016	4000	P	S01			
95	P017	4000	P	S01			
96	P018	4000	P	S01			
97	P020	4000	P	S01			
98	P021	4000	P	S01			
99	P022	4000	P	S01			
100	P023	4000	P	S01			
101	P024	4000	P	S01			
102	P026	4000	P	S01			
103	P027	4000	P	S01			
104	P028	4000	P	S01			
105	P029	4100	P	S01			
106	P030	4100	P	S01			
107	P031	4100	P	S01			
108	P033	4000	P	S01			
109	P034	4000	P	S01			
110	P036	4000	P	S01			
111	P037	4000	P	S01			
112	P038	4100	P	S01			
113	P039	4000	P	S01			
114	P040	4000	P	S01			
115	P041	4000	P	S01			
116	P042	4000	P	S01			
117	P043	4000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
118	P044	4000	P	S01			
119	P045	4000	P	S01			
120	P046	4000	P	S01			
121	P047	4000	P	S01			
122	P048	4000	P	S01			
123	P049	4000	P	S01			
124	P050	4000	P	S01			
125	P051	4000	P	S01			
126	P054	4000	P	S01			
127	P056	4100	P	S01			
128	P057	4000	P	S01			
129	P058	4000	P	S01			
130	P059	4000	P	S01			
131	P060	4000	P	S01			
132	P062	4000	P	S01			
133	P063	4100	P	S01			
134	P064	4000	P	S01			
135	P065	4000	P	S01			
136	P066	4000	P	S01			
137	P067	4000	P	S01			
138	P068	4100	P	S01			
139	P069	4000	P	S01			
140	P070	4000	P	S01			
141	P071	4000	P	S01			
142	P072	4000	P	S01			
143	P073	4100	P	S01			
144	P074	4000	P	S01			
145	P075	4000	P	S01			
146	P076	4000	P	S01			
147	P077	4000	P	S01			
148	P078	4000	P	S01			
149	P081	4000	P	S01			
150	P082	4000	P	S01			
151	P084	4000	P	S01			
152	P085	4000	P	S01			
153	P087	4000	P	S01			
154	P088	4000	P	S01			
155	P089	4000	P	S01			
156	P092	4000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
157	P093	4,000	P	S01			
158	P094	4,000	P	S01			
159	P095	4,100	P	S01			
160	P096	4,100	P	S01			
161	P097	4,000	P	S01			
162	P098	4,100	P	S01			
163	P099	4,000	P	S01			
164	P101	4,000	P	S01			
165	P102	4,000	P	S01			
166	P103	4,000	P	S01			
167	P104	4,000	P	S01			
168	P105	4,000	P	S01			
169	P106	4,100	P	S01			
170	P108	4,000	P	S01			
171	P109	4,000	P	S01			
172	P110	4,000	P	S01			
173	P111	4,000	P	S01			
174	P112	4,000	P	S01			
175	P113	4,000	P	S01			
176	P114	4,000	P	S01			
177	P115	4,000	P	S01			
178	P116	4,000	P	S01			
179	P118	4,000	P	S01			
180	P119	4,000	P	S01			
181	P120	4,100	P	S01			
182	P121	4,000	P	S01			
183	P122	4,000	P	S01			
184	P123	4,000	P	S01			
185	P127	4,000	P	S01			
186	P128	4,000	P	S01			
187	P185	4,000	P	S01			
188	P188	4,000	P	S01			
189	P189	4,000	P	S01			
190	P190	4,000	P	S01			
191	P191	4,000	P	S01			
192	P192	4,000	P	S01			
193	P194	4,000	P	S01			
194	P196	4,000	P	S01			
195	P197	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
196	P198	4,000	P	S01			
197	P199	4,000	P	S01			
198	P201	4,000	P	S01			
199	P202	4,000	P	S01			
200	P203	4,000	P	S01			
201	P204	4,000	P	S01			
202	P205	4,000	P	S01			
203	U001	4,100	P	S01			
204	U002	7,100	P	S01			
205	U003	4,100	P	S01			
206	U004	4,000	P	S01			
207	U005	4,000	P	S01			
208	U006	4,000	P	S01			
209	U007	4,000	P	S01			
210	U008	4,000	P	S01			
211	U009	4,000	P	S01			
212	U010	4,000	P	S01			
213	U011	4,000	P	S01			
214	U012	4,100	P	S01			
215	U014	4,000	P	S01			
216	U015	4,000	P	S01			
217	U016	4,000	P	S01			
218	U017	4,000	P	S01			
219	U018	4,000	P	S01			
220	U019	4,100	P	S01			
221	U020	4,000	P	S01			
222	U021	4,000	P	S01			
223	U022	4,100	P	S01			
224	U023	4,000	P	S01			
225	U024	4,000	P	S01			
226	U025	4,000	P	S01			
227	U026	4,000	P	S01			
228	U027	4,000	P	S01			
229	U028	4,000	P	S01			
230	U029	4,100	P	S01			
231	U030	4,000	P	S01			
232	U031	4,100	P	S01			
233	U032	4,000	P	S01			
234	U033	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
235	U034	4,000	P	S01			
236	U035	4,000	P	S01			
237	U036	4,000	P	S01			
238	U037	4,100	P	S01			
239	U038	4,000	P	S01			
240	U039	4,000	P	S01			
241	U041	4,000	P	S01			
242	U042	4,000	P	S01			
243	U043	4,000	P	S01			
244	U044	4,100	P	S01			
245	U045	4,100	P	S01			
246	U046	4,000	P	S01			
247	U047	4,000	P	S01			
248	U048	4,000	P	S01			
249	U049	4,000	P	S01			
250	U050	4,000	P	S01			
251	U051	4,000	P	S01			
252	U052	4,100	P	S01			
253	U053	4,000	P	S01			
254	U055	4,000	P	S01			
255	U056	4,100	P	S01			
256	U057	4,100	P	S01			
257	U058	4,000	P	S01			
258	U059	4,000	P	S01			
259	U060	4,000	P	S01			
260	U061	4,000	P	S01			
261	U062	4,000	P	S01			
262	U063	4,000	P	S01			
263	U064	4,000	P	S01			
264	U066	4,000	P	S01			
265	U067	4,000	P	S01			
266	U068	4,000	P	S01			
267	U069	4,000	P	S01			
268	U070	4,000	P	S01			
269	U071	4,000	P	S01			
270	U072	4,000	P	S01			
271	U073	4,000	P	S01			
272	U074	4,000	P	S01			
273	U075	4,100	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
274	U076	4,000	P	S01			
275	U077	4,100	P	S01			
276	U078	4,000	P	S01			
277	U079	4,000	P	S01			
278	U080	12,000	P	S01			
279	U081	4,000	P	S01			
280	U082	4,000	P	S01			
281	U083	4,000	P	S01			
282	U084	4,000	P	S01			
283	U085	4,000	P	S01			
284	U086	4,000	P	S01			
285	U087	4,000	P	S01			
286	U088	4,000	P	S01			
287	U089	4,000	P	S01			
288	U090	4,000	P	S01			
289	U091	4,000	P	S01			
290	U092	4,000	P	S01			
291	U093	4,000	P	S01			
292	U094	4,000	P	S01			
293	U095	4,000	P	S01			
294	U096	4,000	P	S01			
295	U097	4,000	P	S01			
296	U098	4,000	P	S01			
297	U099	4,000	P	S01			
298	U101	4,000	P	S01			
299	U102	4,000	P	S01			
300	U103	4,000	P	S01			
301	U105	4,000	P	S01			
302	U106	4,000	P	S01			
303	U107	4,000	P	S01			
304	U108	4,100	P	S01			
305	U109	4,000	P	S01			
306	U110	4,000	P	S01			
307	U111	4,000	P	S01			
308	U112	4,100	P	S01			
309	U113	4,000	P	S01			
310	U114	4,000	P	S01			
311	U115	4,100	P	S01			
312	U116	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
3 1 3	U 1 1 7	4,100	P	S 0 1			
3 1 4	U 1 1 8	4,000	P	S 0 1			
3 1 5	U 1 1 9	4,000	P	S 0 1			
3 1 6	U 1 2 0	4,000	P	S 0 1			
3 1 7	U 1 2 1	4,100	P	S 0 1			
3 1 8	U 1 2 2	7,100	P	S 0 1			
3 1 9	U 1 2 3	4,100	P	S 0 1			
3 2 0	U 1 2 4	4,000	P	S 0 1			
3 2 1	U 1 2 5	4,000	P	S 0 1			
3 2 2	U 1 2 6	4,000	P	S 0 1			
3 2 3	U 1 2 7	4,000	P	S 0 1			
3 2 4	U 1 2 8	4,000	P	S 0 1			
3 2 5	U 1 2 9	4,000	P	S 0 1			
3 2 6	U 1 3 0	4,000	P	S 0 1			
3 2 7	U 1 3 1	4,100	P	S 0 1			
3 2 8	U 1 3 2	4,000	P	S 0 1			
3 2 9	U 1 3 3	4,100	P	S 0 1			
3 3 0	U 1 3 4	12,100	P	S 0 1			
3 3 1	U 1 3 5	4,100	P	S 0 1			
3 3 2	U 1 3 6	4,000	P	S 0 1			
3 3 3	U 1 3 7	4,000	P	S 0 1			
3 3 4	U 1 3 8	4,000	P	S 0 1			
3 3 5	U 1 4 0	4,100	P	S 0 1			
3 3 6	U 1 4 1	4,000	P	S 0 1			
3 3 7	U 1 4 2	4,000	P	S 0 1			
3 3 8	U 1 4 3	4,000	P	S 0 1			
3 3 9	U 1 4 4	4,100	P	S 0 1			
3 4 0	U 1 4 5	4,000	P	S 0 1			
3 4 1	U 1 4 6	4,000	P	S 0 1			
3 4 2	U 1 4 7	4,000	P	S 0 1			
3 4 3	U 1 4 8	4,000	P	S 0 1			
3 4 4	U 1 4 9	4,000	P	S 0 1			
3 4 5	U 1 5 0	4,000	P	S 0 1			
3 4 6	U 1 5 1	7,100	P	S 0 1			
3 4 7	U 1 5 2	4,000	P	S 0 1			
3 4 8	U 1 5 3	4,000	P	S 0 1			
3 4 9	U 1 5 4	4,100	P	S 0 1			
3 5 0	U 1 5 5	4,000	P	S 0 1			
3 5 1	U 1 5 6	4,000	P	S 0 1			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
352	U157	4,000	P	S01			
353	U158	4,000	P	S01			
354	U159	4,100	P	S01			
355	U160	4,100	P	S01			
356	U161	4,100	P	S01			
357	U162	4,000	P	S01			
358	U163	4,000	P	S01			
359	U164	4,000	P	S01			
360	U165	4,100	P	S01			
361	U166	4,000	P	S01			
362	U167	4,000	P	S01			
363	U168	4,000	P	S01			
364	U169	4,100	P	S01			
365	U170	4,000	P	S01			
366	U171	4,000	P	S01			
367	U172	4,000	P	S01			
368	U173	4,000	P	S01			
369	U174	4,000	P	S01			
370	U176	4,000	P	S01			
371	U177	4,000	P	S01			
372	U178	4,000	P	S01			
373	U179	4,000	P	S01			
374	U180	4,000	P	S01			
375	U181	4,000	P	S01			
376	U182	4,000	P	S01			
377	U183	4,000	P	S01			
378	U184	4,000	P	S01			
379	U185	4,000	P	S01			
380	U186	4,000	P	S01			
381	U187	4,000	P	S01			
382	U188	4,100	P	S01			
383	U189	4,000	P	S01			
384	U190	4,100	P	S01			
385	U191	4,000	P	S01			
386	U192	4,000	P	S01			
387	U193	4,000	P	S01			
388	U194	4,000	P	S01			
389	U196	4,100	P	S01			
390	U197	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
391	U200	4,000	P	S01			
392	U201	4,000	P	S01			
393	U202	4,000	P	S01			
394	U203	4,000	P	S01			
395	U204	4,100	P	S01			
396	U205	4,000	P	S01			
397	U206	4,000	P	S01			
398	U207	4,000	P	S01			
399	U208	4,000	P	S01			
400	U209	4,000	P	S01			
401	U210	4,100	P	S01			
402	U211	4,100	P	S01			
403	U213	4,100	P	S01			
404	U214	4,000	P	S01			
405	U215	4,000	P	S01			
406	U216	4,100	P	S01			
407	U217	4,000	P	S01			
408	U218	4,100	P	S01			
409	U219	4,100	P	S01			
410	U220	7,100	P	S01			
411	U221	4,000	P	S01			
412	U222	4,000	P	S01			
413	U223	4,000	P	S01			
414	U225	4,100	P	S01			
415	U226	7,100	P	S01			
416	U227	4,100	P	S01			
417	U228	7,100	P	S01			
418	U234	4,000	P	S01			
419	U235	4,000	P	S01			
420	U236	4,000	P	S01			
421	U237	4,000	P	S01			
422	U238	4,000	P	S01			
423	U239	7,100	P	S01			
424	U240	4,000	P	S01			
425	U243	4,000	P	S01			
426	U244	4,000	P	S01			
427	U246	4,100	P	S01			
428	U247	4,000	P	S01			
429	U248	4,000	P	S01			

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10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Area G (Continued)							
430	U249	4,000	P	S01			
431	U271	4,000	P	S01			
432	U278	4,000	P	S01			
433	U279	4,000	P	S01			
434	U280	4,000	P	S01			
435	U328	4,000	P	S01			
436	U353	4,000	P	S01			
437	U359	4,000	P	S01			
438	U364	4,000	P	S01			
439	U367	4,000	P	S01			
440	U372	4,000	P	S01			
441	U373	4,000	P	S01			
442	U387	4,000	P	S01			
443	U389	4,000	P	S01			
444	U394	4,000	P	S01			
445	U395	4,000	P	S01			
446	U404	4,000	P	S01			
447	U409	4,000	P	S01			
448	U410	4,000	P	S01			
449	U411	4,000	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Material Dispsoal Area G (Shaft 124 and Pit 29) [a, b]							
1	D 0 0 4	850	P	D 8 0			
2	D 0 0 5	2,100	P	D 8 0			
3	D 0 0 6	4,250	P	D 8 0			
4	D 0 0 7	4,450	P	D 8 0			
5	D 0 0 8	507,100	P	D 8 0			
6	D 0 0 9	850	P	D 8 0			
7	D 0 1 0	15	P	D 8 0			
8	D 0 1 1	530	P	D 8 0			
9							
1 0							
1 1							
1 2							
1 3							
1 4							
1 5							
1 6							
1 7							
1 8							
1 9							
2 0							
2 1							
2 2							
2 3							
2 4							
2 5							
2 6							
2 7							
2 8							
2 9							
3 0							
3 1							
3 2							
3 3							
3 4							
3 5							
3 6							
3 7							
3 8							
3 9							

[a] Based on total estimated hazardous waste chemical inventory from the TA-54 RFI Report, Los Alamos National Laboratory, Los Alamos, New Mexico, March 2000.

[b] To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.

EPA ID NO: |_N_|_M_|_0_| |_8_|_9_|_0_| |_0_|_1_|_0_| |_5_|_1_|_5_|

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West							
1	D 0 0 1	18,563	P	S 0 1			
2	D 0 0 2	9,612	P	S 0 1			
3	D 0 0 3	882	P	S 0 1			
4	D 0 0 4	6,173	P	S 0 1			
5	D 0 0 5	5,644	P	S 0 1			
6	D 0 0 6	906,805	P	S 0 1			
7	D 0 0 7	946,136	P	S 0 1			
8	D 0 0 8	2,147,302	P	S 0 1			
9	D 0 0 9	65,433	P	S 0 1			
1 0	D 0 1 0	6,790	P	S 0 1			
1 1	D 0 1 1	7,584	P	S 0 1			
1 2	D 0 1 2	9,000	P	S 0 1			
1 3	D 0 1 3	2,000	P	S 0 1			
1 4	D 0 1 4	2,000	P	S 0 1			
1 5	D 0 1 5	3,500	P	S 0 1			
1 6	D 0 1 6	2,000	P	S 0 1			
1 7	D 0 1 7	2,000	P	S 0 1			
1 8	D 0 1 8	353	P	S 0 1			
1 9	D 0 1 9	7,055	P	S 0 1			
2 0	D 0 2 0	15,000	P	S 0 1			
2 1	D 0 2 1	1,220	P	S 0 1			
2 2	D 0 2 2	1,676	P	S 0 1			
2 3	D 0 2 3	2,000	P	S 0 1			
2 4	D 0 2 4	2,000	P	S 0 1			
2 5	D 0 2 5	2,000	P	S 0 1			
2 6	D 0 2 6	2,000	P	S 0 1			
2 7	D 0 2 7	1,014	P	S 0 1			
2 8	D 0 2 8	289,600	P	S 0 1			
2 9	D 0 2 9	288,144	P	S 0 1			
3 0	D 0 3 0	6,525	P	S 0 1			
3 1	D 0 3 1	88	P	S 0 1			
3 2	D 0 3 2	4,145	P	S 0 1			
3 3	D 0 3 3	2,778	P	S 0 1			
3 4	D 0 3 4	1,455	P	S 0 1			
3 5	D 0 3 5	132	P	S 0 1			
3 6	D 0 3 6	441	P	S 0 1			
3 7	D 0 3 7	705	P	S 0 1			
3 8	D 0 3 8	88	P	S 0 1			
3 9	D 0 3 9	1,940	P	S 0 1			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
40	D040	4,365	P	S01			
41	D041	88	P	S01			
42	D042	1,411	P	S01			
43	D043	529	P	S01			
44	F001	556,402	P	S01			
45	F002	72,003	P	S01			
46	F003	34,464	P	S01			
47	F004	2,160	P	S01			
48	F005	324,211	P	S01			
49	F006	3,500	P	S01			
50	F007	9,000	P	S01			
51	F008	3,500	P	S01			
52	F009	2,000	P	S01			
53	F010	2,000	P	S01			
54	F011	2,000	P	S01			
55	F012	2,000	P	S01			
56	F019	2,000	P	S01			
57	F020	2,000	P	S01			
58	F021	2,000	P	S01			
59	F022	2,000	P	S01			
60	F023	2,000	P	S01			
61	F024	2,000	P	S01			
62	F025	2,000	P	S01			
63	F026	2,000	P	S01			
64	F027	2,000	P	S01			
65	F028	2,000	P	S01			
66	F032	2,000	P	S01			
67	F034	2,000	P	S01			
68	F035	2,000	P	S01			
69	F037	2,000	P	S01			
70	F038	2,000	P	S01			
71	F039	2,000	P	S01			
72	K044	1,000	P	S01			
73	K045	2,000	P	S01			
74	K046	2,000	P	S01			
75	K047	2,000	P	S01			
76	K084	250	P	S01			
77	K101	250	P	S01			
78	K102	250	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
79	P001	44	P	S01			
80	P002	44	P	S01			
81	P003	44	P	S01			
82	P004	44	P	S01			
83	P005	44	P	S01			
84	P006	44	P	S01			
85	P007	44	P	S01			
86	P008	44	P	S01			
87	P009	44	P	S01			
88	P010	44	P	S01			
89	P011	44	P	S01			
90	P012	44	P	S01			
91	P013	44	P	S01			
92	P014	44	P	S01			
93	P015	44	P	S01			
94	P016	44	P	S01			
95	P017	44	P	S01			
96	P018	44	P	S01			
97	P020	44	P	S01			
98	P021	44	P	S01			
99	P022	44	P	S01			
100	P023	44	P	S01			
101	P024	44	P	S01			
102	P026	44	P	S01			
103	P027	44	P	S01			
104	P028	44	P	S01			
105	P029	44	P	S01			
106	P030	44	P	S01			
107	P031	44	P	S01			
108	P033	44	P	S01			
109	P034	44	P	S01			
110	P036	44	P	S01			
111	P037	44	P	S01			
112	P038	44	P	S01			
113	P039	44	P	S01			
114	P040	44	P	S01			
115	P041	44	P	S01			
116	P042	44	P	S01			
117	P043	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
118	P044	44	P	S01			
119	P045	44	P	S01			
120	P046	44	P	S01			
121	P047	44	P	S01			
122	P048	44	P	S01			
123	P049	44	P	S01			
124	P050	44	P	S01			
125	P051	44	P	S01			
126	P054	44	P	S01			
127	P056	44	P	S01			
128	P057	44	P	S01			
129	P058	44	P	S01			
130	P059	44	P	S01			
131	P060	44	P	S01			
132	P062	44	P	S01			
133	P063	44	P	S01			
134	P064	44	P	S01			
135	P065	44	P	S01			
136	P066	44	P	S01			
137	P067	44	P	S01			
138	P068	44	P	S01			
139	P069	44	P	S01			
140	P070	44	P	S01			
141	P071	44	P	S01			
142	P072	44	P	S01			
143	P073	44	P	S01			
144	P074	44	P	S01			
145	P075	44	P	S01			
146	P076	44	P	S01			
147	P077	44	P	S01			
148	P078	44	P	S01			
149	P081	44	P	S01			
150	P082	44	P	S01			
151	P084	44	P	S01			
152	P085	44	P	S01			
153	P087	44	P	S01			
154	P088	44	P	S01			
155	P089	44	P	S01			
156	P092	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
157	P093	44	P	S01			
158	P094	44	P	S01			
159	P095	44	P	S01			
160	P096	44	P	S01			
161	P097	44	P	S01			
162	P098	44	P	S01			
163	P099	44	P	S01			
164	P101	44	P	S01			
165	P102	44	P	S01			
166	P103	44	P	S01			
167	P104	44	P	S01			
168	P105	44	P	S01			
169	P106	44	P	S01			
170	P108	44	P	S01			
171	P109	44	P	S01			
172	P110	44	P	S01			
173	P111	44	P	S01			
174	P112	44	P	S01			
175	P113	44	P	S01			
176	P114	44	P	S01			
177	P115	44	P	S01			
178	P116	44	P	S01			
179	P118	44	P	S01			
180	P119	44	P	S01			
181	P120	44	P	S01			
182	P121	44	P	S01			
183	P122	44	P	S01			
184	P123	44	P	S01			
185	P127	44	P	S01			
186	P128	44	P	S01			
187	P185	44	P	S01			
188	P188	44	P	S01			
189	P189	44	P	S01			
190	P190	44	P	S01			
191	P191	44	P	S01			
192	P192	44	P	S01			
193	P194	44	P	S01			
194	P196	44	P	S01			
195	P197	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
196	P198	44	P	S01			
197	P199	44	P	S01			
198	P201	44	P	S01			
199	P202	44	P	S01			
200	P203	44	P	S01			
201	P204	44	P	S01			
202	P205	44	P	S01			
203	U001	44	P	S01			
204	U002	44	P	S01			
205	U003	44	P	S01			
206	U004	44	P	S01			
207	U005	44	P	S01			
208	U006	44	P	S01			
209	U007	44	P	S01			
210	U008	44	P	S01			
211	U009	44	P	S01			
212	U010	44	P	S01			
213	U011	44	P	S01			
214	U012	44	P	S01			
215	U014	44	P	S01			
216	U015	44	P	S01			
217	U016	44	P	S01			
218	U017	44	P	S01			
219	U018	44	P	S01			
220	U019	44	P	S01			
221	U020	44	P	S01			
222	U021	44	P	S01			
223	U022	44	P	S01			
224	U023	44	P	S01			
225	U024	44	P	S01			
226	U025	44	P	S01			
227	U026	44	P	S01			
228	U027	44	P	S01			
229	U028	44	P	S01			
230	U029	44	P	S01			
231	U030	44	P	S01			
232	U031	44	P	S01			
233	U032	44	P	S01			
234	U033	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
235	U034	44	P	S01			
236	U035	44	P	S01			
237	U036	44	P	S01			
238	U037	44	P	S01			
239	U038	44	P	S01			
240	U039	44	P	S01			
241	U041	44	P	S01			
242	U042	44	P	S01			
243	U043	44	P	S01			
244	U044	44	P	S01			
245	U045	44	P	S01			
246	U046	44	P	S01			
247	U047	44	P	S01			
248	U048	44	P	S01			
249	U049	44	P	S01			
250	U050	44	P	S01			
251	U051	44	P	S01			
252	U052	44	P	S01			
253	U053	44	P	S01			
254	U055	44	P	S01			
255	U056	44	P	S01			
256	U057	44	P	S01			
257	U058	44	P	S01			
258	U059	44	P	S01			
259	U060	44	P	S01			
260	U061	44	P	S01			
261	U062	44	P	S01			
262	U063	44	P	S01			
263	U064	44	P	S01			
264	U066	44	P	S01			
265	U067	44	P	S01			
266	U068	44	P	S01			
267	U069	44	P	S01			
268	U070	44	P	S01			
269	U071	44	P	S01			
270	U072	44	P	S01			
271	U073	44	P	S01			
272	U074	44	P	S01			
273	U075	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
274	U076	44	P	S01			
275	U077	44	P	S01			
276	U078	44	P	S01			
277	U079	44	P	S01			
278	U080	132	P	S01			
279	U081	44	P	S01			
280	U082	44	P	S01			
281	U083	44	P	S01			
282	U084	44	P	S01			
283	U085	44	P	S01			
284	U086	44	P	S01			
285	U087	44	P	S01			
286	U088	44	P	S01			
287	U089	44	P	S01			
288	U090	44	P	S01			
289	U091	44	P	S01			
290	U092	44	P	S01			
291	U093	44	P	S01			
292	U094	44	P	S01			
293	U095	44	P	S01			
294	U096	44	P	S01			
295	U097	44	P	S01			
296	U098	44	P	S01			
297	U099	44	P	S01			
298	U101	44	P	S01			
299	U102	44	P	S01			
300	U103	44	P	S01			
301	U105	44	P	S01			
302	U106	44	P	S01			
303	U107	44	P	S01			
304	U108	44	P	S01			
305	U109	44	P	S01			
306	U110	44	P	S01			
307	U111	44	P	S01			
308	U112	44	P	S01			
309	U113	44	P	S01			
310	U114	44	P	S01			
311	U115	44	P	S01			
312	U116	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
313	U117	44	P	S01			
314	U118	44	P	S01			
315	U119	44	P	S01			
316	U120	44	P	S01			
317	U121	44	P	S01			
318	U122	44	P	S01			
319	U123	44	P	S01			
320	U124	44	P	S01			
321	U125	44	P	S01			
322	U126	44	P	S01			
323	U127	44	P	S01			
324	U128	44	P	S01			
325	U129	44	P	S01			
326	U130	44	P	S01			
327	U131	44	P	S01			
328	U132	44	P	S01			
329	U133	44	P	S01			
330	U134	44	P	S01			
331	U135	44	P	S01			
332	U136	44	P	S01			
333	U137	44	P	S01			
334	U138	44	P	S01			
335	U140	44	P	S01			
336	U141	44	P	S01			
337	U142	44	P	S01			
338	U143	44	P	S01			
339	U144	44	P	S01			
340	U145	44	P	S01			
341	U146	44	P	S01			
342	U147	44	P	S01			
343	U148	44	P	S01			
344	U149	44	P	S01			
345	U150	44	P	S01			
346	U151	265	P	S01			
347	U152	44	P	S01			
348	U153	44	P	S01			
349	U154	44	P	S01			
350	U155	44	P	S01			
351	U156	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
352	U157	44	P	S01			
353	U158	44	P	S01			
354	U159	132	P	S01			
355	U160	44	P	S01			
356	U161	44	P	S01			
357	U162	44	P	S01			
358	U163	44	P	S01			
359	U164	44	P	S01			
360	U165	44	P	S01			
361	U166	44	P	S01			
362	U167	44	P	S01			
363	U168	44	P	S01			
364	U169	44	P	S01			
365	U170	44	P	S01			
366	U171	44	P	S01			
367	U172	44	P	S01			
368	U173	44	P	S01			
369	U174	44	P	S01			
370	U176	44	P	S01			
371	U177	44	P	S01			
372	U178	44	P	S01			
373	U179	44	P	S01			
374	U180	44	P	S01			
375	U181	44	P	S01			
376	U182	44	P	S01			
377	U183	44	P	S01			
378	U184	44	P	S01			
379	U185	44	P	S01			
380	U186	44	P	S01			
381	U187	44	P	S01			
382	U188	44	P	S01			
383	U189	44	P	S01			
384	U190	44	P	S01			
385	U191	44	P	S01			
386	U192	44	P	S01			
387	U193	44	P	S01			
388	U194	44	P	S01			
389	U196	44	P	S01			
390	U197	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
391	U200	44	P	S01			
392	U201	44	P	S01			
393	U202	44	P	S01			
394	U203	44	P	S01			
395	U204	44	P	S01			
396	U205	44	P	S01			
397	U206	44	P	S01			
398	U207	44	P	S01			
399	U208	44	P	S01			
400	U209	44	P	S01			
401	U210	44	P	S01			
402	U211	44	P	S01			
403	U213	44	P	S01			
404	U214	44	P	S01			
405	U215	44	P	S01			
406	U216	44	P	S01			
407	U217	44	P	S01			
408	U218	44	P	S01			
409	U219	44	P	S01			
410	U220	44	P	S01			
411	U221	44	P	S01			
412	U222	44	P	S01			
413	U223	44	P	S01			
414	U225	44	P	S01			
415	U226	1,146	P	S01			
416	U227	44	P	S01			
417	U228	44	P	S01			
418	U234	44	P	S01			
419	U235	44	P	S01			
420	U236	44	P	S01			
421	U237	44	P	S01			
422	U238	44	P	S01			
423	U239	88	P	S01			
424	U240	44	P	S01			
425	U243	44	P	S01			
426	U244	44	P	S01			
427	U246	44	P	S01			
428	U247	44	P	S01			
429	U248	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, West (Continued)							
430	U249	44	P	S01			
431	U271	44	P	S01			
432	U278	44	P	S01			
433	U279	44	P	S01			
434	U280	44	P	S01			
435	U328	44	P	S01			
436	U353	44	P	S01			
437	U359	44	P	S01			
438	U364	44	P	S01			
439	U367	44	P	S01			
440	U372	44	P	S01			
441	U373	44	P	S01			
442	U387	44	P	S01			
443	U389	44	P	S01			
444	U394	44	P	S01			
445	U395	44	P	S01			
446	U404	44	P	S01			
447	U409	44	P	S01			
448	U410	44	P	S01			
449	U411	44	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 54, Material Disposal Area H (Shaft 9) [a]							
1	D 0 0 3	0	P	D 8 0			
2							
3							
4							
5							
6							
7							
8							
9							
1 0							
1 1							
1 2							
1 3							
1 4							
1 5							
1 6							
1 7							
1 8							
1 9							
2 0							
2 1							
2 2							
2 3							
2 4							
2 5							
2 6							
2 7							
2 8							
2 9							
3 0							
3 1							
3 2							
3 3							
3 4							
3 5							
3 6							
3 7							
3 8							
3 9							

[b] To be closed in accordance with Code of Federal Regulations (CFR), Title 40, Part 265, Subpart G. Permitted status is not requested.

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 55							
1	D 0 0 1	75,000	P	S 0 1			
2	D 0 0 2	150,000	P	S 0 1	S 0 2	T 0 4	
3	D 0 0 3	42,000	P	S 0 1			
4	D 0 0 4	5,000	P	S 0 1	S 0 2	T 0 4	
5	D 0 0 5	11,000	P	S 0 1	S 0 2	T 0 4	
6	D 0 0 6	400,500	P	S 0 1	S 0 2	T 0 4	
7	D 0 0 7	605,000	P	S 0 1	S 0 2	T 0 4	
8	D 0 0 8	900,000	P	S 0 1	S 0 2	T 0 4	
9	D 0 0 9	26,000	P	S 0 1	S 0 2	T 0 4	
1 0	D 0 1 0	2,500	P	S 0 1	S 0 2	T 0 4	
1 1	D 0 1 1	11,000	P	S 0 1	S 0 2	T 0 4	
1 2	D 0 1 2	1,000	P	S 0 1		T 0 4	
1 3	D 0 1 8	4,500	P	S 0 1		T 0 4	
1 4	D 0 1 9	4,500	P	S 0 1		T 0 4	
1 5	D 0 2 1	4,500	P	S 0 1		T 0 4	
1 6	D 0 2 2	1,500	P	S 0 1		T 0 4	
1 7	D 0 2 7	1,500	P	S 0 1		T 0 4	
1 8	D 0 2 8	2,500	P	S 0 1		T 0 4	
1 9	D 0 3 0	1,500	P	S 0 1		T 0 4	
2 0	D 0 3 2	1,500	P	S 0 1		T 0 4	
2 1	D 0 3 3	1,500	P	S 0 1		T 0 4	
2 2	D 0 3 4	1,500	P	S 0 1		T 0 4	
2 3	D 0 3 5	12,000	P	S 0 1		T 0 4	
2 4	D 0 3 6	1,500	P	S 0 1		T 0 4	
2 5	D 0 3 7	1,500	P	S 0 1		T 0 4	
2 6	D 0 3 8	1,500	P	S 0 1		T 0 4	
2 7	D 0 3 9	11,000	P	S 0 1		T 0 4	
2 8	D 0 4 0	11,000	P	S 0 1		T 0 4	
2 9	D 0 4 2	1,500	P	S 0 1		T 0 4	
3 0	D 0 4 3	1,500	P	S 0 1		T 0 4	
3 1	F 0 0 1	110,000	P	S 0 1			
3 2	F 0 0 2	110,000	P	S 0 1			
3 3	F 0 0 3	110,000	P	S 0 1			
3 4	F 0 0 5	110,000	P	S 0 1			
3 5	F 0 0 6	500	P	S 0 1			
3 6	F 0 0 7	500	P	S 0 1			
3 7	F 0 0 9	500	P	S 0 1			
3 8	P 0 0 3	1,500	P	S 0 1			
3 9	P 0 1 2	1,500	P	S 0 1			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 55 (Continued)							
40	P015	6,000	P	S01			
41	P029	1,500	P	S01			
42	P030	1,500	P	S01			
43	P031	1,500	P	S01			
44	P038	1,500	P	S01			
45	P056	3,000	P	S01			
46	P063	1,500	P	S01			
47	P068	1,500	P	S01			
48	P073	1,500	P	S01			
49	P076	1,500	P	S01			
50	P078	1,500	P	S01			
51	P095	1,500	P	S01			
52	P096	1,500	P	S01			
53	P098	1,500	P	S01			
54	P099	500	P	S01			
55	P106	1,500	P	S01			
56	P113	1,500	P	S01			
57	P120	1,500	P	S01			
58	U001	3,000	P	S01			
59	U002	1,500	P	S01			
60	U003	1,500	P	S01			
61	U012	1,500	P	S01			
62	U019	3,000	P	S01			
63	U022	1,500	P	S01			
64	U029	1,500	P	S01			
65	U031	1,500	P	S01			
66	U037	1,500	P	S01			
67	U044	1,500	P	S01			
68	U045	1,500	P	S01			
69	U052	1,500	P	S01			
70	U056	1,500	P	S01			
71	U057	1,500	P	S01			
72	U075	1,500	P	S01			
73	U077	1,500	P	S01			
74	U080	6,000	P	S01			
75	U103	500	P	S01			
76	U108	1,500	P	S01			
77	U112	1,500	P	S01			
78	U115	1,500	P	S01			

10. Descriptions of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5 a, etc.)							
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 55 (Continued)							
79	U117	1,500	P	S01			
80	U121	1,500	P	S01			
81	U122	1,500	P	S01			
82	U123	1,500	P	S01			
83	U131	1,500	P	S01			
84	U133	1,500	P	S01			
85	U134	6,000	P	S01			
86	U135	1,500	P	S01			
87	U140	1,500	P	S01			
88	U144	1,500	P	S01			
89	U151	6,000	P	S01			
90	U154	6,000	P	S01			
91	U159	6,000	P	S01			
92	U160	1,500	P	S01			
93	U161	1,500	P	S01			
94	U165	1,500	P	S01			
95	U169	1,500	P	S01			
96	U188	1,500	P	S01			
97	U190	1,500	P	S01			
98	U196	1,500	P	S01			
99	U204	1,500	P	S01			
100	U210	6,000	P	S01			
101	U211	6,000	P	S01			
102	U213	1,500	P	S01			
103	U216	1,500	P	S01			
104	U218	1,500	P	S01			
105	U219	1,500	P	S01			
106	U220	6,000	P	S01			
107	U225	1,500	P	S01			
108	U226	6,000	P	S01			
109	U227	1,500	P	S01			
110	U228	1,500	P	S01			
111	U239	1,500	P	S01			
112	U246	1,500	P	S01			
113							
114							
115							
116							
117							

11. Map (See instructions on pages 25 and 26)

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

12. Facility Drawing (See instructions on page 26)

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

13. Photographs (See instructions on page 26)

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

14. Comments (See instructions on page 26)

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ATTACHMENT C

WASTE ANALYSIS PLAN

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ATTACHMENT C
WASTE ANALYSIS PLAN

This Waste Analysis Plan (WAP) presents the characterization procedures used to determine the chemical and physical nature of non-mixed hazardous waste, the hazardous component of mixed low-level waste (MLLW), and the hazardous component of mixed transuranic waste (MTRUW) stored and treated at the Facility in accordance with 40 CFR § 264.13. The waste characterization requirements contained in this WAP are used for characterization of wastes stored in containers and tanks, and to support treatment the stabilization processes. Waste analysis regulatory requirements are specified in 40 CFR §§ 264.13, 270.14(b) and 268.7. Waste analysis permit requirements are specified in Permit Section 2.4. This WAP discusses how the waste characterization data prepared by generators are reviewed, supplemented, and used by the Permittees to comply with 40 CFR Part 264 and Part 268 regulatory requirements.

This WAP is organized as follows:

Section C.1 Facility Description: Includes a general description of the Facility; general descriptions of the wastes stored and treated and the activities that generate waste.

Section C.2 Waste Analysis Parameters: Includes a discussion of the proposed analytical parameters and methods used by the Permittees and the criteria/rationale for parameter selection.

Section C.3 Characterization Procedures: Includes the characterization approach (*e.g.*, acceptable knowledge, sampling and analysis) for each waste classification stored and treated at the Facility.

Section C.4 Off-Site Waste: Includes a discussion of procedures in place for acceptance of waste from off-site facilities.

Section C.5 Special Procedural Requirements: Includes a discussion of the procedures in place for ignitable, reactive, and incompatible wastes; procedures to ensure compliance with land disposal restrictions (LDR); and procedures to ensure compliance with Subpart CC requirements.

Section C.6 References.

C.1 FACILITY DESCRIPTION

LANL (the *Facility*) is located in Los Alamos County in north-central New Mexico. It is approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The Facility and the associated residential and commercial areas of Los Alamos County are situated on the Pajarito Plateau. The Facility is owned by the U.S. Department of Energy (DOE) and is operated jointly by DOE and Los Alamos National Security, LLC (collectively the *Permittees*). A more complete Facility description is provided in Attachment A.

C.1.1 Facility Waste-Generating Processes and Activities

Wastes are generated at the Facility primarily from research and development (R&D) activities, processing and recovery operations, decontamination and decommissioning (D&D) projects, and environmental restoration (ER) activities. Wastes generated from these types of processes and activities may also be received from off-site facilities (*see* Attachment L (*Listing of Off-Site Facilities*)). Tables C-2 through C-5 present descriptive information on non-mixed hazardous wastes, MLLW, and MTRUW potentially generated at the Facility. Wastes generated at off-site facilities that may be received at the Facility are described in Table C-8. These tables include brief waste descriptions, brief descriptions of the waste-generating process or activity, the characterization basis for waste designation, potential EPA Hazardous Waste Number(s), the hazardous constituent(s) listed in Appendix VIII of 40 CFR Part 261 and/or the characteristic(s) defined at 40 CFR Part 261, Subpart C that make the waste hazardous, and the regulatory limits, as appropriate.

C.1.2 Stored Waste

Non-mixed hazardous waste, MLLW, and MTRUW are stored at various container storage units throughout the Facility. The following sections contain general descriptions of these wastes and the processes that generate them.

C.1.2.1 Non-Mixed Hazardous Waste

Non-mixed hazardous wastes are generated at the Facility primarily from R&D activities, general facility operations, D&D projects, and ER activities. Non-mixed hazardous waste streams may be of uniform physical composition (*i.e.*, homogeneous) or of diverse composition (*i.e.*, heterogeneous). Homogeneous waste is defined as waste that contains only one material or substance or waste that has its components mixed so that representative samples can be drawn throughout. Homogeneous waste streams can be either solids or liquids.

Heterogeneous waste is defined as waste that contains multiple components that are separate because of density or specific gravity, are located in different places within the mixture, or are discrete and different articles. Heterogeneous wastes (*e.g.*, debris) do not lend themselves to representative sampling and analysis.

Routinely managed non-mixed hazardous wastes and their waste-generating processes are provided below and summarized in Table C-2.

Spent Solvents

Spent solvents and spent solvent mixtures may contain organic or inorganic compounds, heavy metals, oils, and other contaminants. Waste-generating activities include R&D, laser research, organic and inorganic chemistry research, cleaning, and degreasing.

Contaminated Solid Wastes

Contaminated solid wastes (*i.e.*, wastes of a solid physical form) include mixtures of rags, spill cleanup materials, Kimwipes™, gloves, filters, plastic and paper products, and personal protective equipment. These wastes may also consist of disposable equipment contaminated with organic or inorganic compounds, heavy metals, oils, and other contaminants. Waste-generating activities include machining operations, chemistry research, D&D projects, metal finishing operations, and general maintenance operations.

Paint and Related Wastes

Paint and paint-related wastes consist of excess paint, paint strippers and thinners, and sludges of paints and thinners. Possible contaminants include heavy metals used as paint pigments and solvents contained in thinners and lacquers. Waste-generating activities include painting and finishing operations and general facility maintenance.

Photographic and Photocopier Wastes

Photographic wastes include spent or excess film developers, fixer solutions, and bleach solutions that may be contaminated with heavy metals. Photocopier wastes include kerosene-based toners and dispersants. These wastes are generated from photographic processing and photocopier operations.

Corrosive Liquid Wastes

These wastes consist of acidic or alkaline solutions that may contain organics, inorganics, metals, oils, and other contaminants. Waste-generating activities include analytical chemistry research, electro-etching, and electro-polishing.

Solid Metals and Metallic Compounds

These wastes consist of metal chips and turnings from machining and cutting operations. They also consist of metal powders; metal salts; metal sheets; reactive metals used in synthesis reactions; solders from electronic manufacturing, repair, and brazing operations; and grinding operations. Other solid metals and metallic compounds include lead shot, bricks, plate, and shielding.

Contaminated Non-Corrosive Aqueous and Non-Aqueous Solutions and Sludges

These wastes are non-corrosive aqueous and non-aqueous solutions and sludges that are contaminated with non-mixed hazardous wastes or hazardous residues. Waste-generating

activities include vacuum pump maintenance, analytical spectrometry, equipment cleaning and maintenance, vehicle maintenance, synthesis reactions, metal-polishing operations, and chemical research.

Mercury Wastes

Mercury wastes include free elemental mercury, mercuric compounds, articles and instruments containing mercury, fluorescent light fixtures, and gels containing mercuric compounds. Waste-generating activities include lamp replacement, chemical research, mercury spill cleanup, and equipment cleaning and maintenance.

Used Batteries and Battery Fluids

Used batteries and battery fluids contain heavy metals such as cadmium, lead, mercury, and silver. Waste-generating activities include routine equipment maintenance.

Unused and Off-Specification Commercial Chemical Products

These wastes consist of discarded solid and liquid chemical reagents that are off-specification, unused, outdated or are spill residues.

Gas Cylinder Waste

These wastes include pressurized gas cylinders, including aerosol cans, which may contain regulated hazardous metals, organic compounds, or exhibit the hazardous characteristics of ignitability, corrosivity, and reactivity.

Soils and Sludges

These wastes consist of environmental media and sludges generated through various activities, including site decommissioning, site characterization, and site remediation. Waste-generating activities include septic tank and detention basin closure, removal actions, and other remedial actions and site closures.

Aqueous Liquids

These wastes consist of liquids generated during various activities, including decontamination of remedial equipment, drilling fluids and well development fluids, septic tank liquids, and contaminated stormwater runoff.

Debris

These wastes consist of debris (such as concrete, vitrified clay pipe, steel baffles, and building materials) generated through various activities, including site decommissioning, site characterization, and site remediation. Waste-generating activities include septic tank and detention basin closure, removal actions, and other remedial actions and site closures.

C.1.2.2 Mixed Low-Level Waste

Low-level waste is defined in DOE Order 435.1, "Radioactive Waste Management" (DOE, 1999), as "radioactive waste that is not classified as high-level waste, spent nuclear fuel, transuranic waste, by-product material [as defined in § 11(e)(2) of the Atomic Energy Act, as amended], or naturally occurring radioactive material". MLLW is any low-level waste that has a hazardous waste component.

MLLW is generated at the Facility primarily from R&D activities, processing and recovery operations, D&D projects, and ER activities. MLLW waste streams may be homogeneous or heterogeneous, as defined in Attachment Section C.1.2.1. Descriptions of the MLLW and their waste-generating processes are provided below and summarized in Table C-3.

Soils with Heavy Metals

Soil waste contaminated with heavy metals is generated during D&D and ER activities. This waste consists of soils contaminated with varying concentrations of lead or other heavy metals.

Environmental Restoration Soils

This waste consists of soils contaminated with heavy metals and organic compounds. They are generated by activities such as the remediation of spill and release sites and D&D activities.

Inorganic Solid Oxidizers

These wastes are discarded reagent powders and crystalline materials. Most of these items are in the original manufacturer's containers, some of which may be hydrated. Many of these containers are unopened but are suspected to have radioactive surface contamination. Waste-generating activities include D&D of research laboratories and R&D.

Lead Waste

Lead waste consists of contaminated and activated lead shielding used as radiation shielding, inseparable lead, lead blankets, and lead requiring sorting. It is generated primarily from radioisotope experiments and other reactor, accelerator, laser, and x-ray activities. The lead may be in the form of sheets, pigs, bricks, shot, shavings, slag, dross, and other shapes.

Noncombustible Debris

Noncombustible debris consists of discarded hazardous and contaminated scrap metals that are generated by maintenance, D&D of research laboratories or equipment, R&D, and ER activities. Additionally, discarded bricks and glass are generated through dismantling of Facility buildings, including plating shops and machine sheds. The waste may be considered hazardous due to the metal content or by virtue of contamination during use.

Combustible Debris

Maintenance, D&D, R&D, and ER activities generate rags and combustible debris with heavy metals and possibly organics, some of which contain residual liquids. Examples include solvents and lubricants that are used in metal-cutting operations. Much of this waste is generated during the processing of lead and barium resulting in heavy metal contamination.

Organic-Contaminated Noncombustible Solids

These wastes include absorbed oils, laboratory trash, and discarded equipment. Absorbed oil waste is comprised of drums containing vermiculite or other inorganic sorbents used to absorb oil from spills and routine maintenance operations. Some of the oil originates from vacuum pumps and may be contaminated by mercury, lead, or cadmium. Laboratory trash consists of noncombustible solid materials with residual solvent contamination. The laboratory debris includes reagent bottles, broken glassware, and disposable lab ware. Large quantities of chemicals are not placed in this trash; however, residual liquids or powders may have remained on some of the discarded material. Discarded equipment may have contained residual solvents.

Organic-Contaminated Combustible Solids

These wastes are similar to combustible debris waste and include rags, cardboard, protective clothing, and paint-stripper trash. They are potentially contaminated with methyl ethyl ketone and other solvents. Waste-generating activities include maintenance, D&D, and ER activities.

Water-Reactive Wastes

Water-reactive wastes consist of reactive metal debris generated through the cleanup of HE firing-site debris and from machining and disassembly of test components. They include calcium, lithium hydride, lithium metal, and magnesium.

Mercury Wastes

Mercury-contaminated instruments and equipment consist of discarded or broken equipment containing liquid mercury such as broken thermometers, vacuum tubes, vacuum pumps with residual mercury, activated or contaminated fluorescent light bulbs, and mercury absorbed into a paper or solid matrix. Most of this waste is generated by cleanup operations.

Unused Solid Reagent Chemical Wastes

Many different types of discardable off-specification unused solid reagent chemical wastes are generated at the Facility by R&D programs. Most of these items are in their original containers.

Spent Solvents and Contaminated Solvent Mixtures

These are spent solvents and spent solvent mixtures that contain organic or inorganic compounds, heavy metals, oils, and other contaminants. Waste-generating activities include a wide variety of maintenance, cleaning and degreasing, R&D, and processing operations, such as extraction, bench-scale experimental inorganic chemistry, environmental analysis, and radiochemistry.

Corrosive Liquid Wastes

These wastes are acidic or alkaline solutions that contain organics, inorganics, metals, oils, and/or other contaminants. Waste-generating activities include radiochemistry research, plutonium processing, and analytical chemistry.

Aqueous and Non-aqueous Liquids Contaminated with Heavy Metals and/or Organics

These wastes consist of aqueous and non-aqueous solutions that contain heavy metals and possibly organics. Waste-generating activities include metal-polishing operations, radiochemistry research, and ER activities.

Oil Wastes

Oil wastes at the Facility are generated during equipment maintenance operations. Possible contaminants include heavy metals and solvents.

Unused Liquid Reagent Chemical Wastes

Many different types of discarded off-specification unused liquid reagent chemical wastes are generated at the Facility by R&D programs. Most of these items are in their original containers.

Gas Cylinder Waste

These wastes consist of pressurized gas cylinders, including aerosol cans, which contain regulated hazardous metals, organic compounds, or exhibit the hazardous characteristics of ignitability, corrosivity, and reactivity.

C.1.2.3 Mixed Transuranic Waste

Transuranic isotopes are those with atomic numbers greater than 92. MTRUW contains both a hazardous waste component and a TRU waste component.

MTRUW is generated at the Facility primarily from R&D activities, processing and recovery operations, and D&D projects. Limited quantities of MTRUW from off-site facilities will be accepted at LANL for additional characterization and management. (*see* Table C-8). MTRUW at the Facility includes four broad categories that can be described by a Summary Category Group, which is further subdivided into Waste Matrix Codes.

Summary Category Groups are used to define waste characterization groupings for the Federal Facility Compliance Order (Los Alamos National Laboratory) (New Mexico Environment Department [NMED], 1995) requirements and are based on the physical and chemical forms of the waste. Complete descriptions of the Summary Category Groups are contained in DOE Waste Treatability Groups Guidance (DOE, 1995).

The Summary Category Groups applicable to the MTRUW stored and treated at the Facility are listed as follows:

1. *Summary Category Group S3000 (Homogeneous Solids)*: defined as solid waste materials, excluding soil and gravel, that do not meet the EPA LDR criteria for classification as debris;
2. *Summary Category Group S4000 (Soil/Gravel)*: defined as solid waste materials that are at least 50 percent by volume soil and gravel;
3. *Summary Category Group S5000 (Debris)*: defined as heterogeneous waste materials that are at least 50 percent by volume solid materials exceeding a 2.36-inch particle size that are intended for disposal and include manufactured objects, plant or animal matter, or natural geologic material. Particle sizes smaller than 2.36 inches in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material; and
4. *Summary Category Group L1000 (Aqueous Liquids/Slurries)*: defined as aqueous liquids and slurries that meet the EPA LDR criteria for wastewaters (*i.e.*, <1 percent total suspended solids).

Summary Category Groups are applied to MTRUW streams to distinguish between waste types. More specific waste identification systems (*i.e.*, Waste Matrix Codes [WMC] and Facility TRU Waste Stream ID numbers) are used for supplementary purposes as part of waste management operations. The WMCs that are applicable to the solid MTRUW stored at the Facility are:

1. *WMC S3100 (Inorganic Homogeneous Solid Waste)*: includes mixed inorganic homogeneous waste (cemented inorganics, organics on vermiculite, non-cemented, salts, and cemented organics);
2. *WMC S4100 (Soil)*: consists of radioactive contaminated solid waste materials that are at least 50 percent by volume soil/gravel;
3. *WMC S5300 (Organic Debris Waste)*: consists of mixed combustible debris waste (plastic, cellulosics, and rubber); and

4. *WMC S5400 (Heterogeneous Debris Waste)*: includes mixed heterogeneous debris waste (varying amounts of combustible and noncombustible debris, with a small amount of homogeneous waste present).

Solid MTRUW is assigned a WMC and is further identified with a Facility TRU Waste Stream ID number. Using the WMC, waste streams are further delineated based on the following prioritized criteria: 1) waste-generating process (to the degree to which waste has been segregated by process); 2) Summary Category Group (*i.e.*, homogeneous or debris waste); 3) waste matrix; and 4) hazardous chemical content (*i.e.*, organics and/or inorganics).

The following are general descriptions of types of MTRUW waste streams:

1. *Homogeneous Inorganic, Cemented*: includes solidified aqueous or homogeneous inorganic solids, solidified inorganic process solids, leached process residues, evaporator bottoms/salts, and/or cement paste;
2. *Homogeneous Inorganic, Cemented Organics*: major portion of the waste is cement (*i.e.*, inorganic) containing a minor portion of cemented solidified organic process solids;
3. *Homogeneous Inorganic, Non-cemented*: includes solid (non-cemented) inorganic waste, ash, dewatered aqueous sludge, and/or chemical treatment sludge;
4. *Homogeneous Inorganic, Salts*: includes pyrochemical, nitrate, and/or chloride salts; hydroxide cake; and/or other salt waste;
5. *Homogeneous Inorganic, Vermiculite*: includes vermiculite-absorbed hydrocarbon oil, vermiculite-absorbed silicon-based liquid, and solidified (non-cemented) organic waste.
6. *Soil*: includes all radioactive-contaminated soil;
7. *Combustible debris*: includes greater than 50% by volume combustible decontamination waste, cellulosics, plastics, rubber, laboratory trash, building debris, hot cell waste, and/or other combustibles; and
8. *Heterogeneous debris*: includes greater than 50% by volume noncombustible waste, metal scrap, glass, metal waste, metal crucibles and dies, precious metals, filter media and residue, beryllium-contaminated debris, ion-exchange resins, irradiation sources, firing point sources, leaded rubber, graphite waste, high-efficiency particulate air (HEPA) filter waste, skull and oxide, slag and porcelain, and/or other noncombustible waste.

The WMCs correspond to other historical and current waste identification systems used at the Facility. Table C-4 lists the MTRUW streams stored at the Facility by their Summary Category Group, WMC, and general matrix description and provides a cross-reference between past and present waste identification systems.

Facility TRU Waste Stream ID numbers are applied to the MTRUW streams described above. Facility TRU Waste Stream ID numbers are assigned the prefix “LA”, followed by a unique identifier that further specifies the waste stream. MTRUW information is summarized in Table C-5.

The following are some examples of MTRUW waste streams stored, and in some cases treated, at the Facility.

LA-TA-55-19: Mixed Combustible Debris Waste

This waste stream consists of mixed combustible debris waste generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance. The debris waste includes paper, rags, plastic, rubber, wood-based HEPA filters, and other plastic-based and cellulose-based items.

LA-TA-55-30: Mixed Heterogeneous Debris Waste

This waste stream consists of mixed heterogeneous debris waste generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance. The waste includes plutonium-contaminated noncombustible and combustible debris waste.

LA-MIN01-CIN: Mixed Inorganic Homogeneous Waste, Cemented Inorganics

This waste stream consists of mixed inorganic homogeneous waste generated by plutonium recovery, R&D processes, facility and equipment operations and maintenance, and liquid waste treatment operations. The waste includes cemented sludge, solidified aqueous waste, and solidified inorganic process solids.

LA-MIN02-V: Mixed Inorganic Homogeneous Waste, Organics on Vermiculite

This waste stream consists of mixed inorganic homogeneous waste generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance. The waste is comprised of organic liquids (oils and solvents) adsorbed on vermiculite.

LA-MIN03-NC: Mixed Inorganic Homogeneous Waste, Non-cemented

This waste stream consists of mixed inorganic homogeneous waste generated by plutonium recovery, R&D processes, and liquid waste treatment operations. It consists of vacuum filter cake solid waste.

LA-MIN04-S: Mixed Inorganic Homogeneous Waste, Salts

This waste stream consists of mixed inorganic homogeneous waste generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance. It is comprised of non-cemented inorganic process solids (salts).

LA-MIN05-COR: Mixed Inorganic Homogeneous Waste, Cemented Organics

This waste stream consists of mixed inorganic homogeneous solidified (cemented) organic process solids and emulsified solvents and oils generated by plutonium recovery, R&D processes, and facility and equipment operations and maintenance.

LA-MHD02-238: Mixed Heterogeneous Debris Waste, Pu-238

This waste stream consists of mixed heterogeneous debris waste generated by Pu-238 processing operations (primarily heat-source fabrication) and facility and equipment operations and maintenance. The waste includes Pu-238 contaminated noncombustible and combustible debris waste.

LA-MIN06-C238: Mixed Inorganic Homogeneous Waste, Cemented Inorganics, Pu-238

This waste stream consists of mixed inorganic homogeneous waste comprised of solidified (cemented) inorganic process solids. This waste stream is generated by Pu-238 processing operations (primarily heat-source fabrication) and facility and equipment operations and maintenance.

LA-MHD03-DD: Mixed Heterogeneous Debris Waste, D&D

This waste stream consists of mixed heterogeneous debris waste generated from facility and equipment D&D, including associated sectioning, size reduction, and packaging operations. The waste is comprised of plutonium-contaminated noncombustible and combustible debris waste.

LA-MHD05-ITRI: Mixed Heterogeneous Debris Waste, ITRI

This waste stream consists of mixed heterogeneous debris generated between 1975 and 1984 by the Inhalation Toxicology Research Institute, which is currently operated by Lovelace at the Kirtland Air Force Base, New Mexico. The waste is comprised of laboratory waste that may contain rags, tools, and biological waste contaminated with Pu-239.

LA-MHD04-RH: Mixed Heterogeneous Debris Waste, Remote-Handled

This waste stream consists of mixed remote-handled heterogeneous debris waste generated by hot cell operations. This waste is comprised of combustible and noncombustible waste.

C.1.3 Treated Wastes

MTRUW is treated at a permitted unit at the Facility. MTRUW is treated by cementation to stabilize the waste for storage and to meet the WIPP waste acceptance criteria.

C.1.3.1 Treated Mixed TRU Wastes

MTRUW that require treatment is generated primarily from R&D and processing and recovery operations. Treatment of MTRUW at the Facility may consist of stabilization by cementation to

form a noncorrosive solid matrix. Additional specific information on the stabilization treatment process is provided in Section C.3.2.4 of this WAP.

C.1.4 Description of Permitted Units

The permitted units used for storage and treatment of wastes addressed in this WAP are located within various TAs at the Facility. These units are listed in Attachment J (*Hazardous Waste Management Units*). Detailed information on the permitted units is provided in Attachment A (*Technical Area Unit Descriptions*).

C.2 WASTE ANALYSIS PARAMETERS

The Permittees shall conduct detailed chemical and physical characterization on non-mixed hazardous wastes, the hazardous component of MLLW, and the hazardous component of MTRUW as required by 40 CFR § 264.13 and Permit Section 2.4. The Permittees shall select waste analysis parameters to ensure that the waste characterization documentation will contain the information necessary to manage the waste in accordance with Resource Conservation and Recovery Act (RCRA) general facility standards in 40 CFR Part 264 and the LDR requirements in 40 CFR Part 268.

C.2.1 Analytical Parameters and Methods

The Permittees shall use the characterization methods for non-mixed hazardous wastes, MLLW, and MTRUW summarized in Tables C-9 through C-11 to quantify the waste characterization parameters in those tables. The Permittees shall comply with the sampling and analysis requirements of Permit Sections 2.4.1 through 2.4.9. The Permittees shall use the methods listed below, as necessary, for the wastes listed in Attachment Section C.1.

1. Acceptable Knowledge (AK);
2. Sampling and laboratory analysis to determine the presence and concentrations of:
    - RCRA-regulated metals
    - RCRA-regulated volatile organic compounds (VOC)
    - RCRA-regulated semivolatile organic compounds (SVOC)
3. Additional MTRUW characterization sampling methods;
    - Headspace gas sampling to determine the presence of VOCs in container headspace
    - Physical waste from characterization through real-time radiography (RTR) and/or visual examination
4. Flash point characterization;
5. pH characterization;
6. Reactivity characterization; and

7. Free liquid determination via the paint filter test.

C.2.2 Criteria and Rationale for Characterization Methodology Selection

The Permittees shall select methods for waste characterization based on the physical form of the waste (*e.g.*, debris) and on knowledge of the process generating the waste. To determine whether a solid waste is hazardous, the Permittees shall use AK as described in Section C.3.1.1. When deemed necessary, the Permittees shall use sampling and laboratory analysis as described in Section C.3.1.2 and other characterization methodologies to evaluate the analytical parameters to confirm knowledge-based waste characterization for non-mixed hazardous waste, MLLW, and MTRUW based upon the rationales identified in Tables C-9, C-10, and C-11, respectively.

40 CFR § 260.11 lists approved analytical methods to determine the concentrations of hazardous constituents in the liquid and solid fractions and extracts of waste samples. All the methods are described in the most recent version of the U.S. EPA's *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)*. The Permittees shall use these and other approved methods approved by the Department, as necessary, to determine whether a waste stream is hazardous and to identify underlying hazardous constituents. The Permittees shall analyze samples for all hazardous constituents likely to be present based on the source of the waste stream and AK. The Permittees shall require the analytical laboratory to report all constituents the laboratory analytical method is capable of measuring as specified in the most recent version of the U.S. EPA's *Test Methods for Evaluating Solid Wastes* (*SW-846*). Any hazardous constituents identified during analysis shall be included on the waste profile form. Detailed instructions for conducting Toxicity Characteristic Leaching Procedure (TCLP) waste analysis are found in the most recent version of *SW-846* and are incorporated by reference in 40 CFR § 260.11. Also listed in *SW-846* is the appropriate analytical method for each hazardous constituent required to determine whether or not the waste contains a contaminant in excess of the maximum contaminant concentration regulated under 40 CFR Part 261.

TCLP is a method for leaching hazardous constituents from the solid portion of the waste and is used only if the solids constitute more than 0.5% of the waste by weight. The laboratory can also forego analysis by extraction if: 1) total analysis of the waste shows the concentrations of the analytes are so low that an extract of the waste could not contain analytes at concentrations above the regulatory limits (*see* Section C.3.1.2.1); or 2) analysis of any liquid portion of the waste contains such high concentrations of hazardous constituents that, even accounting for dilution, the entire sample would be hazardous.

Many hazardous wastes are restricted from land disposal under the Hazardous and Solid Waste Amendments unless they are treated to diminish their toxicity and reduce the likelihood that hazardous constituents will migrate from the disposal site. As required by 40 CFR Part 268, each waste shipment must be accompanied by a notification stating whether the restricted waste meets specific LDR treatment standards promulgated for hazardous constituents or is otherwise exempt. In most cases, the notification can be completed after laboratory analysis of the waste. If an LDR notification is based solely on knowledge of the waste, the Permittees shall keep the supporting documentation on record, in accordance with 40 CFR § 268.7.

C.3 CHARACTERIZATION METHODS

The Permittees' operating procedures consider characterization of wastes before a waste-generating process will begin. The preliminary characterization of waste begins prior to actual generation (at the point of concept and design of a process or system) so that the generator can determine whether AK, sampling and analysis, or a combination of the two will be required for waste characterization.

The Permittees shall characterize non-mixed hazardous wastes, MLLW, and MTRUW based on the chemical, physical, and radiological nature of the waste stream. The Permittees shall perform characterization by using AK or sampling and analysis or both, as described below.

The Permittees shall record information for each waste stream on a waste profile form accompanied by sampling and analysis data or AK documentation. These documents are collectively referred to as the waste characterization documentation. Such documentation may include items referred to by a traceable identifier and separately located within the Facility. The Permittees shall ensure that waste characterization documentation is reviewed and approved prior to acceptance at a permitted unit. If the documentation is incomplete or does not contain sufficient information to characterize the waste, the Permittees shall return the documentation to the generator and shall not accept the waste for storage or treatment.

Before accepting waste for storage or treatment, the Permittees shall determine that waste characterization documentation satisfies the information requirements of Permit Section 2.4, including but not limited to the assignment of all applicable EPA Hazardous Waste Numbers and the LDR status of the waste. Once the waste characterization documentation is reviewed and approved, the Permittees may notify the generator and authorize the transfer of the waste to a permitted unit. Before the waste is transferred, the Permittees' waste management personnel shall review any transfer documentation to ensure that it accurately pertains to the waste being transferred and that it corresponds with the waste characterization documentation. If the transfer documentation does not correspond with the characterization documentation, the Permittees shall not transfer the waste. The Permittees shall maintain the waste characterization documentation and the transfer documentation shall be part of the Facility Operating Record. After approval of waste characterization of a waste stream by waste management personnel, the Permittees shall approve subsequent transfer of waste from that waste stream based upon the generator's statement that the waste stream is accurately represented by the previously approved waste characterization information.

Training for use of waste characterization documentation is included in a facility waste documentation course. This training provides step-by-step instructions on how to complete and review forms for characterizing wastes.

The Permittees shall perform reevaluation of initial characterization information and annual verification in accordance with Permit Section 2.4.7.

The Permittees shall deem a waste container to contain free liquids if any of the following characterization methods so demonstrate:

1. generator waste-characterization knowledge;
2. visual examination;
3. radiography; or
4. the Paint Filter Test (*SW-846*, Method 9095).

C.3.1 Hazardous and Mixed Low-Level Waste Characterization

The Permittees shall select characterization methods for non-mixed hazardous waste and MLLW based on the physical nature of the waste stream (*i.e.*, homogeneous or heterogeneous). The Permittees shall characterize homogeneous solid waste for the presence of hazardous constituents (*e.g.*, VOCs, SVOCs, metals) on the basis of AK and, if necessary, sampling and analysis.

The Permittees shall characterize heterogeneous solid waste solely on the basis of AK for the following reasons:

1. the physical, chemical, and/or radiological nature of the waste makes it difficult to obtain representative samples;
2. the lack of appropriate sampling methodology; and
3. for MLLW, safety concerns associated with unnecessary exposure to the radioactive component of the waste.

In using AK to characterize waste, the Permittees shall review characterization documents with the help of subject matter experts, when necessary.

The Permittees shall characterize chemicals of an unknown nature by assembling all knowledge of the operations and activities that were performed at the site of generation relevant to waste generation and management. The Permittees shall test unknown wastes in volumes greater than one gallon for ignitability, corrosivity, reactivity, toxicity characteristics, and any other parameters indicated by the initial data gathered on the material. Based on that determination, the Permittees shall assign the waste the proper EPA Hazardous Waste Number(s) and LDR status. The Permittees shall use the characterization methods provided in Tables C-9 and C-10.

For purposes of managing unknown wastes, a small volume is defined as one liquid gallon or less. The rationale for this basis is that one gallon is the minimum quantity of sample needed to determine whether or not the waste is hazardous. The Permittees shall analyze small volumes of unknown wastes for pH, flash point, and reactivity.

C.3.1.1. Acceptable Knowledge

Acceptable knowledge (AK) includes process knowledge, additional characterization data, and facility records of analysis (EPA, 1994A).

Process knowledge (PK) includes information about the process used to generate the waste, material inputs to the process, and the time period during which the waste was generated. PK is described in 40 CFR § 264.13(a)(2) as data developed under 40 CFR Part 261 and existing

published or documented data on a specific hazardous waste or hazardous waste generated from similar processes. PK may include off-site facility waste characterization data pertaining to a specific waste and laboratory analysis data performed prior to the effective date of applicable RCRA regulations.

Additional characterization data includes data obtained after the advent of RCRA and from chemical or physical analysis that is not subject to the most recent version of *SW-846* and other approved methods, or through testing of similar or surrogate waste streams. This includes previous analytical data relevant to the waste stream including results from fingerprint analyses, spot checks, or routine waste verification sampling.

Facility records of analysis consist of waste analysis and physical characterization performed prior to the effective date of RCRA regulations.

The Permittees may use AK alone or in conjunction with sampling and analysis in the following instances (EPA, 1994A):

1. hazardous wastes from specific processes that are well documented;
2. F and K-listed wastes;
3. wastes are discarded, unused, commercial chemical products, reagents, or chemicals of known physical and chemical properties (P and U-listed wastes);
4. health and safety risks to personnel would not justify sampling and analysis ; and
5. physical nature of the waste does not lend itself to taking a laboratory sample (*e.g.*, heterogeneous waste streams).

The Permittees shall document the basis for using AK on a waste profile form. The Permittees shall maintain AK information in accordance with Permit Section 2.12.2 in a format that allows waste management personnel and subject matter experts to either obtain copies or, in the case of classified or sensitive AK documentation that cannot be sent to TA-54 due to security requirements, review the documentation at the point of waste generation. The Permittees shall assign a traceable identifier (*i.e.*, process or AK document number or alphanumeric designation) in accordance with Permit Section 2.4.1 to the waste characterization documentation so that the Permittees can obtain the information for as long as required by RCRA regulation and this Permit.

C.3.1.1.1 Process Knowledge

The Permittees shall obtain, assemble, and prepare the process knowledge documentation for each waste stream. The Permittees may substantiate process knowledge for a specific waste stream using documentation such as:

1. laboratory notebooks that detail the research processes and raw materials used in an experiment;
2. process or experiment design documents;

3. safety analysis reports;
4. standard operating procedures and detailed operating procedures, which can include a list of the raw materials or reagents, a description of the process or experiment that uses the materials, and a description of the wastes generated and how the wastes are handled;
5. waste packaging logs;
6. test plans or research project reports that describe the reagents and other raw materials used in an experiment;
7. chemical inventory database for particular processes or experiments;
8. information from site personnel (*e.g.*, documented interviews);
9. industry reports on a similar process when there is a clear connection between the Facility process/experiment and the industry's similar process or experiment;
10. Material Safety Data Sheets, product labels, and other product package information; and
11. ER site and waste characterization data.

C.3.1.2 Sampling and Analysis

For waste streams that can be representatively sampled (*i.e.*, homogeneous), the Permittees shall conduct sampling and analysis when there is insufficient AK. The Permittees shall collect a representative sample of the waste and handle it by a means that preserves its original physical form and composition and prevents contamination or changes in concentration of the constituents to be analyzed. The Permittees shall, when it is necessary to conduct sampling and analysis to fully characterize a waste, utilize the analytical methods specified in Tables C-9 through C-18 for the identification of any hazardous constituents likely to be present based on the source of the waste stream and AK. Personnel involved in sampling and analysis shall comply with the most recent version of *SW-846* and other Department approved methods. The Permittees shall obtain samples representative of the waste stream in accordance with Permit Section 2.4.2.

C.3.1.2.1 Solid Waste Analysis

The Permittees shall, if necessary for waste characterization purposes, sample and analyze homogeneous waste streams for the toxicity characteristic (TC) contaminants listed in 40 CFR § 261.24, which is incorporated herein by reference. The Permittees may conduct analysis for total concentration of TC contaminants on samples in a screening step, as described in Section 1.2 of Method 1311, the toxicity characteristic leaching procedure (TCLP). If total concentrations are used in the waste characterization process, the Permittees shall compare analytical data to the TC regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL) values for the determination of whether a particular waste exhibits a TC. The Permittees shall obtain RTL values by calculating the weight/weight concentration (in the solid) of a TC contaminant that would give the regulatory weight/volume concentration in the TCLP extract. If the total concentrations are less than the

RTL value, then it may be assumed that the waste does not exhibit the toxicity characteristic and the TCLP does not need to be completed for the screened TC contaminants.

C.3.1.2.2 Liquid Waste Analysis

Liquid wastes generated at the Facility consist of aqueous solutions, slurries, and organic liquids. The Permittees shall sample and analyze these wastes, if necessary for waste characterization purposes, for total metal content, VOCs, and SVOCs. In accordance with Method 1311 (TCLP), liquid wastes (*i.e.*, those wastes that contain less than 0.5 percent dry solids) do not require extraction. The liquid waste, after filtration, is defined as the TCLP extract. Liquid waste, therefore, is characterized by filtering the waste, measuring total contaminant concentrations in the resulting filtrate, and comparing these concentrations to the TC regulatory levels in 40 CFR § 261.24.

The Permittees shall characterize wastes that contain both a liquid and a solid phase using total analytical data for the solid phase to determine toxicity characteristics. The Permittees shall compare with the TC regulatory levels for each phase in a manner consistent with the discussion in Section C.3.1.2.1. The following formula (EPA, 1994b) will be used to calculate the maximum theoretical leachate concentrations for the combined phases:

$$\frac{[A \times B] + [C \times D]}{B + [20 \text{ liters/kilogram} \times D]} = M$$

Where:

A = concentration of the analyte in the liquid portion of the sample (milligrams/liter);

B = volume of the liquid portion of the sample (liter);

C = concentration of the analyte in the solid portion of the sample (milligrams/kilogram);

D = weight of the solid portion of the sample (kilogram); and

M = maximum theoretical leachate concentration (milligrams/liter).

C.3.1.2.3 Sample Handling, Preservation, and Storage

Table C-15 presents requirements specified in the most recent version of *SW-846* regarding sample containers, preservation techniques, and holding times associated with sample collection. The Permittees shall adhere to these requirements. In the event the specified criteria are not met, the Permittees shall collect another sample and submit it for analysis.

C.3.1.2.4 Analytical Laboratory Selection and Analytical Methods

The Permittees shall ensure that analytical laboratories at the Facility and approved contractor laboratories conduct the detailed qualitative and quantitative chemical analyses specified in Tables C-16 and C-17. These laboratories must have:

1. a documented and comprehensive QA/QC program;
2. technical analytical expertise;
3. a document control and records management plan; and
4. the capability to perform data reduction, validation, and reporting.

C.3.1.3 Verification Frequencies

The Permittees shall comply with the waste characterization verification procedures identified in Permit Section 2.4.7(3). The Permittees shall place a non-conformance report in the Facility Operating Record if the characterization for the waste stream is found to be inconsistent with the documentation. The Permittees shall decline to accept any waste from the waste stream in issue until the characterization deficiency is remedied.

C.3.2 Mixed Transuranic Waste Characterization

The Permittees characterize MTRUW for the information specified in Permit Section 2.4.1 in accordance with the parameters and methods shown in Tables C-11 and C-18 for management, storage, and treatment at the Facility. Characterization of the hazardous component of MTRUW to be stored and treated at the Facility shall be conduct in accordance with the procedures discussed in the following sections.

Initial characterization of MTRUW for the purpose of storage at the Facility is based primarily on AK (*see* Attachment Section C.3.1.1) with additional procedures applied to confirm the AK. The Permittees shall begin the AK process by reviewing the available generator documentation for the waste stream. This includes process knowledge, any extant analytical data, and the information included with the waste documentation forms associated with the individual waste containers.

The Permittees shall categorize MTRUW streams by Summary Category Groups based on the physical and chemical form of the waste as established by AK. The Permittees shall assign individual waste containers to waste streams based upon AK.

The Permittees shall utilize AK to determine the hazardous waste codes applicable to the waste stream or container under consideration. The Permittees shall utilize AK to determine whether the container requires additional waste management procedures such as secondary containment for liquid waste or segregation of incompatible, ignitable, or reactive wastes. If AK is insufficient to determine needed information (*e.g.*, ignitability), the Permittees shall use headspace gas sampling to provide the needed information.

Until it is determined that a container does not contain free liquids, the Permittees shall manage MTRUW container storage in accordance with regulations and Permit requirements applicable to containers holding free liquids (*i.e.*, with secondary containment and appropriate labeling).

If AK is inadequate to characterize a homogeneous MTRUW stream or container (*e.g.*, homogeneous solids, soil and gravel, aqueous liquids and slurries) the Permittees shall collect a representative sample of the waste and submit the waste for laboratory analysis.

C.3.2.1 Real-Time Radiography

MTRUW containers generated after the effective date of the Permit and that are not wastes taken from retrievable storage after that date are not required to undergo RTR if associated AK documentation contains the information necessary to fully characterize the waste in accordance with Permit Section 2.4.1. Otherwise, all MTRUW containers require RTR prior to storage at the Facility.

RTR is a nondestructive, qualitative, and semi-quantitative assay technique that involves x-ray scanning of waste containers to identify and verify the physical form(s) of waste container contents using appropriate equipment and qualified operators. The Permittees shall use RTR to verify the absence of free liquids, to confirm the physical form of containerized waste, and to document the materials present.

The Permittees shall ensure that during RTR the waste container is scanned while the operator views and permanently records the image from the television screen on audio and videotape. The Permittees shall utilize a radiography data form to document the materials present and all other relevant characterization information about the containerized waste.

The Permittees shall allow only properly trained personnel to operate radiography equipment. Standardized training requirements for radiography operators are based upon existing industry standard training requirements. Operators must requalify at least every two years.

The Permittees shall examine the radiography image produced for evidence of liquids by repetitively moving the container-handling system and searching for evidence of wave motion.

The Permittees may visually examine the contents of a MTRUW container as a substitute to RTR. The Permittees shall ensure that waste characterization determined through visual examination is recorded in the associated waste's AK documentation.

C.3.2.2 Characterization to Meet LDR Requirements

The Permittees shall characterize MTRUW to determine its land disposal restriction status in accordance with Attachment Section C.5.2.

C.3.2.3 WIPP Characterization

Most MTRUW waste at the Facility is destined for disposal at the Waste Isolation Pilot Project (WIPP) in Carlsbad, New Mexico. Therefore, prior to shipment to WIPP, additional characterization to meet WIPP certification procedures will be implemented to meet requirements of the WIPP permit for these wastes. Waste information that is derived from the WIPP waste characterization will be used for Facility MTRUW characterization as additional information for AK.

C.3.2.4 Characterization Procedures Prior to Treatment of Mixed TRU Wastes

The Permittees shall adhere to the waste characterization procedures specific to waste treatment in the stabilization unit at TA-55, Building 4, Room 401, outlined below. The stabilization unit is a miscellaneous unit pursuant to 40 CFR Part 264, Subpart X and is used to treat liquid and solid mixed wastes by stabilization in cement to form a noncorrosive solid matrix.

The stabilization unit treats homogeneous liquid and solid mixed waste generated primarily from R&D and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. The liquid wastes (Summary Category Group L1000) generally consist of evaporator bottoms solutions and laboratory solutions that may exhibit the hazardous characteristics of corrosivity and toxicity for metals (including arsenic, barium, cadmium, chromium, lead, mercury, and silver) as defined in 40 CFR §§ 261.22 and 261.24, which are incorporated herein by reference. The homogeneous solid process wastes (Summary Category Group S3000) consist of process residue from the evaporator, process leached solids, filter cake, and other miscellaneous solids. This waste stream typically exhibits the hazardous characteristic of toxicity (for metals) and corrosivity. These waste streams are mixed with cement in 55-gallon drums and allowed to cure into a noncorrosive solid matrix. Table C-19 provides a description of the waste streams associated with the stabilization unit and identifies their potentially applicable EPA Hazardous Waste Numbers. The resulting cemented waste is identified by Summary Category Group S3000 and typically carries the Waste Matrix Code S3100.

C.3.2.4.1 Characterization Procedures for Waste to Be Treated by Stabilization

The Permittees shall conduct chemical and physical characterization prior to treatment of MTRUW. The Permittees shall use documented AK, as described in Attachment Section C.3.1.1, to determine whether or not the waste stream is regulated as a hazardous waste. The Permittees shall use process knowledge, chemical analytical data, or both to adequately characterize the MTRUW prior to stabilization. If process information is not sufficient, the Permittees shall periodically sample and analyze the wastes to be treated by stabilization for pH and for TC metals listed in 40 CFR § 261.24 to establish a baseline, as appropriate. Based on documented AK, these wastes do not contain VOCs or SVOCs. Parameters and analytical methods for specific hazardous constituents are presented in Table C-18.

To ensure that proper procedures and considerations for sample collection and preservation, QA/QC, and occupational safety and health are followed, the Permittees shall comply with the Facility-specific protocol consistent with the most recent version of *SW-846*. For purposes of collecting a representative sample of MTRUW, the Permittees shall collect and handle the sample in a manner that preserves its original physical form and composition and prevents contamination or changes in concentration of the parameters to be analyzed. Specific requirements as for sampling, parameters, and analytical methods are outlined in Tables C-11 and C-18. Reevaluation frequency is addressed in Attachment Section C.3.

C.3.2.4.2 Characterization Procedures for Waste Treated by Stabilization

The Permittees shall characterize waste treated by stabilization (*i.e.*, MTRUW) in accordance with Attachment Section C.3.2.

C.3.2.5 Sample Handling, Preservation, and Storage

Table C-15 presents the most recent *SW-846* requirements regarding sample containers, preservation techniques, and holding times associated with sample collection. The Permittees shall adhere to these requirements to ensure that sampling and analysis meet quality objectives for data.

C.4 OFF-SITE WASTE ACCEPTANCE PROCEDURES

For off-site waste, the Permittees shall require the generator to provide waste characterization documentation equivalent to that prepared by the Permittees for waste generated on site. The Permittees shall review such documentation for completeness and accuracy prior to approving the waste for shipment to the Facility.

The Permittees shall verify that off-site waste documentation, including Uniform Hazardous Waste Manifests and LDR Notification Forms, corresponds to the waste received and its associated characterization documentation.

The Permittees shall physically examine waste shipments upon receipt for correct documentation, correctness and completeness of waste container identification and labeling, and conformance with permitted container types and waste compatibility for storage and segregation, as appropriate. If the Permittees find discrepancies between the wastes received and the manifest or during further characterization find such discrepancies, the Permittees shall notify the Department in accordance with Permit Section 2.4.4. If the Permittees cannot resolve the discrepancies, the waste shall be returned to the generator in accordance with Permit Section 2.4.4.

C.5 SPECIAL PROCEDURAL REQUIREMENTS

Waste management requirements specific to ignitable, reactive, and incompatible waste as well as requirements for compliance with LDR and 40 CFR Subparts BB and CC are described below.

C.5.1 Procedures for Ignitable, Reactive, and Incompatible Wastes to be Stored or Treated

The Permittees shall characterize all waste to be stored or treated under this Permit to identify applicable and appropriate classes and divisions contained in 49 CFR § 177.848, which is incorporated herein by reference, and shall label the container or tank to reflect that classification.

C.5.2 Procedures to Ensure Compliance with LDR Requirements

The Permittees shall evaluate all waste streams to identify all applicable underlying hazardous constituents (UHCs) exceeding treatment standards in accordance with 40 CFR § 268.7(a)(1), which is incorporated herein by reference. Waste designated to be disposed of at the Waste Isolation Pilot Plant (WIPP) must undergo characterization to determine whether it is subject to the land disposal prohibitions, but it is not required to be characterized to determine all applicable underlying hazardous constituents listed in 40 CFR § 268.48.

If waste is to be treated on site to meet the LDR requirements, the Permittees shall comply with the testing and reporting requirements of 40 CFR § 268.7(b), which is incorporated herein by reference. The Permittees shall identify and document before treatment all waste whose treatment goal is to meet the LDR requirements. After treating such waste, the Permittees shall characterize the treated waste or residue to determine whether all treatment standards have been met. The Permittees shall analyze residues from wastes with concentration-based treatment standards by the appropriate methods described in Attachment Section C.3.1.2 to assure that the waste meets applicable treatment standards.

The Permittees shall prepare certifications required by the 40 CFR § 268.7(b), which is incorporated herein by reference, appropriate to formerly characteristic wastes for which all characteristics have been deactivated and all Universal Treatment Standards have been met, formerly characteristic wastes for which all characteristics have been deactivated but not all treatment standards are achieved, and other special certifications as required. The Permittees shall prepare new waste characterization documentation for the treated waste or residue, as appropriate, incorporating the treatment facility paperwork requirements of 40 CFR § 268.7(b) or the generator paperwork requirements of 40 CFR § 268.7(a), which is incorporated herein by reference, if the residue is considered a newly-generated waste

C.5.3 Procedures to Ensure Compliance with Subpart BB Requirements

The Permittees shall comply with 40 CFR Part 264, Subpart BB, as described below, as to equipment at the facility that is subject to specific requirements for test methods and procedures at 40 CFR Part 264, which is incorporated herein by reference.

C.5.3.1 Requirements for Leak Detection and Monitoring

The Permittees shall ensure that monitoring complies with Reference Method 21 at 40 CFR Part 260.

The detection instrument shall meet the performance criteria of Reference Method 21. The Permittees shall use Reference Method 21 procedures to calibrate the detection instrument prior to each day it is used. The calibration gases shall be:

1. less than 10 parts per million (ppm) of hydrocarbon in air; and
2. methane or n-hexane mixed with air at approximately, but less than, 10,000 ppm methane or n-hexane.

The Permittees shall measure all potential leak interfaces as close to the interface as possible. For determining compliance with "no detectable emissions" requirements (40 CFR § 264.1054, which is incorporated herein by reference), the Permittees shall meet all of the above requirements as well as the following:

1. background shall be determined pursuant to Reference Method 21; and
2. the arithmetic difference between background and the maximum concentration detected shall be compared with 500 ppm.

C.5.3.2 Determination of Hazardous Waste Concentration

The Permittees shall determine whether hazardous waste contained in, or in contact with, the equipment is greater than or equal to 10% by weight organics using one of the following (*see* 40 CFR § 264.1063(d)):

1. ASTM Methods D 2267-88, E 169-87, E 168-88, E 260-85 (*see* 40 CFR § 260.11);
2. *SW-846* Method 9060 or 8260 (*see* 40 CFR § 260.11); or
3. acceptable knowledge with documentation (*e.g.*, production process information, measurements from an identical process at another facility).

If concentration of the hazardous waste changes such that it is believed to be greater than 10% by weight organics, the Permittees shall revise the determination only after chemical analyses is performed in accordance with the methods listed above (*see* 40 CFR § 264.1063(e)). If the Department does not agree with the determination, chemical analyses using the methods listed above can be used to resolve the dispute (*see* 40 CFR § 264.1063(f)). Samples used to make this determination shall be representative of the highest total organic concentration expected (*see* 40 CFR § 264.1063(g)).

C.5.4 Procedures to Ensure Compliance with Subpart CC Requirements

The Permittees' waste streams described in this document may be subject to 40 CFR Part 264, Subpart CC "Air Emission Standards for Tanks, Surface Impoundments, and Containers" based on applicability criteria specified in 40 CFR § 264.1080, incorporated herein by reference. For waste units that are not exempt from this Subpart under 40 CFR §264.1080(b), the Permittees shall address the applicable Subpart CC requirements. In addition, exemption from the standards specified in 40 CFR §§ 264.1084 through 264.1087, incorporated herein by reference, can be demonstrated if the average VOC concentration is less than 500 parts per million by weight (ppmw) at the point of waste origination, as described at 40 CFR § 264.1082(c)(1), incorporated herein by reference. The Permittees shall make this determination in accordance with 40 CFR § 264.1083(a) and shall review and update it as necessary at least every twelve months.

If the Permittees claim a 40 CFR § 264.1082(c) exemption for any hazardous waste management units, the Permittees shall document the determination for each waste stream. Permittees may use AK or process knowledge to make the determination. However, if sampling and analysis is needed, the Permittees shall conduct it in accordance with the approved methods identified at 40

CFR §§ 265.1084(a)(3)(iii)(A) through 265.1084(a)(3)(iii)(I), and listed in Tables C-16, C-17, and C-18. The Permittees shall review the characterization documentation before acceptance of the waste at TA-54 as required in Permit Section 2.4.7.

Characterization requirements for waste that has been treated to meet the exemptions allowed at 40 CFR §§ 264.1082(c)(2) and (4) are summarized below:

1. in accordance with 40 CFR § 264.1082(c)(2)(i), waste is treated to reduce the volatile organic (VO) concentration to less than 500 ppmw that is measured in either a waste from a single point of origination or individual wastes from multiple points of origination commingled before treatment. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b);
2. in accordance with 40 CFR § 264.1082(c)(2)(ii), waste is treated to reduce the VO concentrations by at least 95% and the treated waste VO concentration is ensured to be less than 100 ppmw. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b);
3. in accordance with 40 CFR § 264.1082(c)(2)(iii), waste is treated to remove VO mass greater than or equal to the VO mass that exceeded the 500 ppmw. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b);
4. in accordance with 40 CFR § 264.1082(c)(2)(v), waste is treated to reduce the VO concentration to less than the lowest VO concentration for all individual waste streams mixed together at the point of origin and less than 500 ppmw. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b);
5. in accordance with 40 CFR § 264.1082(c)(2)(vi), waste is treated to reduce the VO concentration by 95% and each individual waste stream entering the treatment process is certified to be less than 10,000 ppmw. The Permittees shall analyze the waste prior to and after treatment pursuant to provisions at 40 CFR § 264.1083(a) and (b); and
6. in accordance with 40 CFR § 264.1082(c)(4), waste is treated to meet LDR standards, either concentration-based or technology-based. LDR compliance is determined for concentration-based using either analysis or AK.

Details for specific treatment criteria and analytical requirements associated with each exemption can be found at the regulations cited.

C.6 REFERENCES

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

DOE, 1999, "Radioactive Waste Management," *DOE Order 435.1*, U.S. Department of Energy, Washington, D.C.

DOE, 1995, "DOE Waste Treatability Groups Guidance," Revision 0.0, U.S. Department of Energy, Idaho Operations Office.

EPA, 1994a, "Waste Analysis at Facilities that Generate Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

EPA, 1994b, "Use of Total Waste Analysis in Toxicity Characteristic Determinations," FAXBACK 13647, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

NMED, 1995, "Federal Facility Compliance Order (Los Alamos National Laboratory)," New Mexico Environment Department, Santa Fe, New Mexico.

Table C-1

(This table is reserved)

Table C-2
Descriptions of Hazardous Waste Stored at the Facility
(This table is for informational purposes only)

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Spent Solvents	Research and development (R&D) activities; laser research; organic and inorganic chemistry research (*e.g.*, solvent extractions, liquid chromatography solvents, polymer synthesis, and distillations); cleaning; and degreasing operations	Acceptable Knowledge Sampling and Analysis	D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D027 D028 D029 D030 D032 D034 D035 D036 D037 D038 D040 D041 D042 D043 F001 F002 F003 F004 F005 U213	Ignitability Corrosivity Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform 1,4-Dichlorobenzene 1,2-Dichloroethane 1,1-Dichloroethylene 2,4-Dinitrotoluene Hexachlorobenzene Hexachloroethane Methyl ethyl ketone Nitrobenzene Pentachlorophenol Pyridine Trichloroethylene 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Tetrahydrofuran	NA[c] NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 7.5 0.5 0.7 0.13 0.13 3.0 200.0 2.0 100.0 5.0 0.5 400.0 2.0 0.2 NA[c] NA[c] NA[c] NA[c] NA[c] NA[c]	Antimony, Arsenic, Barium, Cadmium, Cyanides (Total), Chromium (Total), Lead, Mercury-all others, Selenium, Silver, Acetone, Acetonitrile, Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 1,1-Dichloroethylene, 2,4-Dinitrotoluene, 1,4-Dioxane, Ethyl ether, Hexachlorobenzene, Hexachloroethane, Methanol, Methylene chloride, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Toluene, Triethylamine, Trichloroethylene, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, Vinyl chloride and all applicable constituents identified above the UHC regulatory limit.

Table C-2 (continued)

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Contaminated Solid Wastes	Machining operations, chemistry research, decontamination and decommissioning projects, metal finishing operations, HE wastewater filtration, and general maintenance operations	Acceptable Knowledge Sampling and Analysis	D001	Ignitability	NA[c]	Arsenic, Barium, Beryllium, Cadmium, Chromium, Lead, Mercury-all others, Selenium, Silver, Thallium, Benzene, Carbon Disulfide, Carbon Tetrachloride, Chlorobenzene, Chloroform, o-Cresol, m-Cresol, p-Cresol
			D003	Reactivity	NA[c]	
			D004	Arsenic	5.0	
			D005	Barium	100.0	
			D006	Cadmium	1.0	
			D007	Chromium	5.0	
			D008	Lead	5.0	
			D009	Mercury	0.2	
			D010	Selenium	1.0	
			D011	Silver	5.0	
			D018	Benzene	0.5	
			D019	Carbon tetrachloride	0.5	
			D021	Chlorobenzene	100.0	
			D022	Chloroform	6.0	
			D023	o-Cresol	200.0[d]	Cresol,1,4-Dichlorobenzene
			D024	m-Cresol	200.0[d]	
			D025	p-Cresol	200.0[d]	
			D027	1,4-Dichlorobenzene	7.5	
			D028	1,2-Dichloroethane	0.5	1,1-Dichloroethylene,2,4-Dinitrotoluene, Ethyl Ether, Heptachlor (and its epoxide), Hexachlorobenzene
			D029	1,1-Dichloroethylene	0.7	
			D030	2,4-Dinitrotoluene	0.13	
			D031	Heptachlor (and its epoxide)	0.008	
			D032	Hexachlorobenzene	0.13	
			D033	Hexachlorobutadiene	0.5	Hexachlorobutadiene,
			D034	Hexachloroethane	3.0	
			D035	Methyl ethyl ketone	200.0	Hexachloroethane, Methanol, Methyl ethyl ketone, Methylene Chloride, Nitrobenzene,
			D036	Nitrobenzene	2.0	
			D037	Pentachlorophenol	100.0	Pentachlorophenol, Phenol, p,p'-DDT, Pyridine, Tetrachloroethylene, Trichloroethylene,
			D038	Pyridine	5.0[e]	
			D039	Tetrachloroethylene	0.7	
			D040	Trichloroethylene	0.5	
			D041	2,4,5-Trichlorophenol	400.0	2,4,5-Trichlorophenol,
			D042	2,4,6-Trichlorophenol	2.0	2,4,6-Trichlorophenol,
			D043	Vinyl chloride	0.2	Vinyl chloride, and all applicable constituents identified above the UHC regulatory limit
			F001	Spent halogented solvents	NA[c]	
			F002	Spent halogenated solvents	NA[c]	
			F003	Spent non-halogenated solvents	NA[c]	
			F004	Spent non-halogenated solvents	NA[c]	
			F005	Spent non-halogenated solvents	NA[c]	
			K045	Spent non-halogenated solvents	NA[c]	
				Spent carbon	NA[c]	

Table C-2 (continued)

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Paint and Related Wastes	Painting and finishing operations, and general facility maintenance	Acceptable Knowledge Sampling and Analysis	D001 D005 D006 D007 D008 D009 D011 D036 F003 F005	Ignitability Barium Cadmium Chromium Lead Mercury Silver Nitrobenzene Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] 100.0 1.0 5.0 5.0 0.2 5.0 2.0 NA[c] NA[c]	Barium, Cadmium, Chromium (Total), Lead, Mercury –all others, Silver, Methyl ethyl ketone, Nitrobenzene and all applicable constituents above the UHC regulatory limit
Photographic and Photocopier Wastes	Photographic film processing and photocopier operations	Acceptable Knowledge Sampling and Analysis	D001 D002 D006 D007 D008 D011	Ignitability Corrosivity Cadmium Chromium Lead Silver	NA[c] NA[c] 1.0 5.0 5.0 5.0	Cadmium, Chromium, Lead, Silver and all applicable constituents above the UHC regulatory limit
Corrosive Liquid Wastes	Analytical chemistry research, electro-etching, and electro-polishing	Acceptable Knowledge Sampling and Analysis	D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D022 D038 F002 F003 F005 P023	Ignitability Corrosivity Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Chloroform Pyridine Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Chloroacetaldehyde	NA[c] NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 6.0 5.0 NA[c] NA[c] NA[c] NA[c]	Acetone, Arsenic, Barium, Benzene, Cadmium, Chromium (Total), Chloroform, Cyanides (Total), 2,4-Dinitrophenol, Fluoride, Isobutyl alcohol, Lead, Mercury-all others, Methanol, Nickel, o-Nitrophenol, Pyridine Selenium, Silver, Sulfide, Thallium, Triethylamine, Zinc, and all applicable constituents above the UHC regulatory limit

Table C-2 (continued)

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Solid Metals and Metallic Compounds	Machining and cutting operations; synthesis reactions; solder from electronic manufacturing, repair, and brazing operations; and grinding operations	Acceptable Knowledge Sampling and Analysis	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury-all others, Nickel, Silver, and all applicable constituents above the UHC regulatory limit
Mercury Wastes	Lamp replacement, chemical research, mercury spill cleanup, and equipment cleaning and maintenance	Acceptable Knowledge Sampling and Analysis	D003 D008 D009 D011 U151	Reactivity Lead Mercury Silver Mercury	NA[c] 5.0 0.2 5.0 NA[c]	Barium, Chromium (Total), Lead, Mercury-all others, Silver Thallium, Zinc and all applicable constituents above the UHC regulatory limit
Unused/Off-specification Commercial Chemical Products	R&D, spill residues, and general facility operations	Acceptable Knowledge Sampling and Analysis	D001 D002 D003 D004 through D043 All P- and U-listed EPA Hazardous Waste Numbers[g]	Ignitability Corrosivity Reactivity Toxicity characteristic wastes Discarded commercial chemical products and off-specification species	NA[c] NA[c] NA[c] -[b] NA[c]	Arsenic, Barium, Cadmium, Chromium (Total), Lead, Mercury-all others, Nickel, Selenium, Silver, Acetonitrile, Benzene, Carbon tetrachloride Chlorobenzene, Chloroform, o-Cresol, m-Cresol, p- Cresol, 2, 4-D, 1,4 Dichlorobenzene, 1,1-Dichloroethylene, 1,2-Dichloroethane 2,4 Dinitrotoluene, Endrin, Heptachlor (and its epoxide), Hexachlorobenzene Hexachlorobutadiene, Hexachloroethane, Lindane, Methoxychlor, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol; Pyridine, Tetrachloroethylene, Toluene, Toxaphene, Trichloroethylene, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4,5-TP (Silvex), Vinyl chloride, and all applicable constituents identified above the UHC

						regulatory limit

Table C-2 (continued)

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Contaminated Non-corrosive Aqueous and Non-aqueous Solutions and Sludges	Vacuum pump maintenance, analytical spectrometry, equipment cleaning and maintenance, vehicle maintenance, synthesis reactions, metal-polishing operations, and chemical research	Acceptable Knowledge Sampling and Analysis	D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D023 D024 D025 D027 D028 D029 D030 D032 D033 D034 D035 D036 D037 D038 D039 D040 D041 D042 D043 F001 F002 F003 F004 F005	Ignitability Corrosivity Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform o-Cresol m-Cresol p-Cresol 1,4-Dichlorobenzene 1,2-Dichloroethane 1,1-Dichloroethylene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Methyl ethyl ketone Nitrobenzene Pentachlorophenol Pyridine Tetrachloroethylene Trichloroethylene 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 200.0[d] 200.0[d] 200.0[d] 7.5 0.5 0.7 0.13[e] 0.13[e] 0.5 3.0 200.0 2.0 100.0 5.0 0.7 0.5 400.0 2.0 0.2 NA[c] NA[c] NA[c] NA[c] NA[c]	Acetone, Acetonitrile, Antimony, Arsenic, Barium, Benzene, Cadmium, Carbon tetrachloride, Chlorobenzene, Chloroform Chromium (Total), Chrysene, o-Cresol, m-Cresol p-Cresol m-Dichlorobenzene, 1,4-Dichlorobenzene 1,2-Dichloroethane, 1,1-Dichloroethylene, 2,4-Dinitrotoluene, 4,6-Dinitro-o-cresol, 1,4-Dioxane, Fluorine, Indeno(1,2,3-c,d) pyrene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Lead, Mercury-all others, Methanol, Methyl ethyl ketone, Methylene chloride, Naphthalene, Nitrobenzene, p-Nitrophenol, Pentachlorophenol, Pyridine, Selenium, Silver, Tetrachloroethylene, Toluene, Trichloroethylene, 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol, Zinc Vinyl chloride and all applicable constituents above the UHC regulatory limit

Table C-2 (continued)

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Gas Cylinder Waste	R&D and general facility operations	Acceptable Knowledge	D001 D002 D003 Potential D-coded EPA Hazardous Waste Numbers Potential P-and U-listed EPA Hazardous Waste Numbers	Ignitability Corrosivity Reactivity Toxicity characteristic wastes Discarded commercial chemical products and off-specification species	NA[c] NA[c] NA[c] -[b] NA[c]	Arsenic, Barium, Cadmium, Chromium (Total), Lead, Mercury-all others, Selenium, Silver, Benzene, Carbon tetrachloride Chlorobenzene, Chloroform o-Cresol, m-Cresol, p-Cresol, 2,4-D, 1,4-Dichlorobenzene 1,1-Dichloroethylene,2,4-Dinitrotoluene, Endrin, Heptachlor (and its epoxide), Hexachlorobenzene Hexachlorobutadiene, Hexachloroethane, Lindane, Methoxychlor, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol Pyridine, Tetrachloroethylene, Toxaphene, Trichloroethylene, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4,5-TP (Silvex) Vinyl chloride, and all applicable constituents identified above the UHC regulatory limit
Used Batteries and Battery Fluids	Equipment maintenance	Acceptable Knowledge	D002 D003 D006 D007 D008 D009 D011 D038	Corrosivity Reactivity Cadmium Chromium Lead Mercury Silver Pyridine	NA[c] NA[c] 1.0 5.0 5.0 0.2 5.0 5.0[e]	Cadmium, Chromium, Lead, Mercury-all others, Pyridine, Silver and all applicable constituents above the UHC regulatory limit

Table C-2 (continued)

Waste Description[a]	Waste-Generating Process[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Environmental Restoration (ER) Soils and Sludges	Site decommissioning, site characterization, and site remediation; includes septic tank and detention basin closure, removal actions, and other remedial actions and site closures	Acceptable Knowledge Sampling and Analysis	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D022 D030 D032 D033 D034 D036 D039 D040 D042 F001 F002 F003 F005	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Chloroform 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Tetrachloroethylene Trichloroethylene 2,4,6-Trichlorophenol Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 6.0 0.13[c] 0.13[c] 0.5 3.0 2.0 0.7 0.5 2.0 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury-all others, Selenium, Silver, Benzene, Chloroform, 2,4-Dinitrotoluene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Nitrobenzene, Tetrachloroethylene, Trichloroethylene, 2,4,6-Trichlorophenol, and all applicable constituents identified above the UHC regulatory limit

[a] Denotes information from the Los Alamos National Laboratory waste characterization documentation database

[b] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of the waste contains any of the contaminants listed (D004-D043) at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart II, Part 261, Subpart C [6-14-00]

[c] Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes

[d] If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 milligrams per liter

[e] The quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level (20.4.1 NMAC, Subpart II, 261.24, Table 1 [6-14-00])

Table C-3
Descriptions of Mixed Low-Level Waste Stored at the Facility
(This table is for informational purposes only)

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Solid Wastes						
Soils with Heavy Metals	Decontamination and decommissioning (D&D) and Environmental Restoration (ER) activities	Acceptable Knowledge and Preliminary Analysis	D004 D005 D006 D007 D008 D009 D010 D011	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0	Arsenic, Barium, Cadmium, Chromium (Total), Mercury-all others, Lead, Selenium, Silver, Vanadium, Zinc and those constituents identified above the UHC regulatory limit
Environmental Restoration Soils	Remediation of release sites and D&D activities	Acceptable Knowledge Sampling and Analysis	D005 D006 D007 D008 D009 D028 D029 F001 F002 F004 F005	Barium Cadmium Chromium Lead Mercury 1,2-Dichloroethane 1,1-Dichloroethylene Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	100.0 1.0 5.0 5.0 0.2 0.5 0.7 NA[c] NA[c] NA[c] NA[c]	Barium, Cadmium, Chromium (Total), Lead, Mercury 1,2-Dichloroethane 1,1-Dichloroethylene and all applicable constituents identified above the UHC regulatory limit.
Inorganic Solid Oxidizers	D&D of research laboratories and research and development (R&D)	Acceptable Knowledge	D001 D003 D005	Ignitability Reactivity Barium	NA[c] NA[c] 100.0	Barium and all applicable constituents identified above the UHC limit
Lead Waste	Radioisotope experiments and other reactor, accelerator, laser, and x-ray activities	Acceptable Knowledge	D002 D003 D007 D008 D009	Corrosivity Reactivity Chromium Lead Mercury	NA[c] NA[c] 5.0 5.0 0.2	Chromium, Lead, Mercury-all others and all applicable constituents identified above the UHC regulatory limit
Noncombustible Debris	Maintenance, D&D, R&D, and ER activities	Acceptable Knowledge	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0	Arsenic, Barium, Cadmium, Chromium (Total), Lead, Mercury-all others, Selenium, Silver, and all applicable constituents identified above the UHC regulatory limit

			F002 F005	Spent halogenated solvents Spent non-halogenated solvents	NA[c] NA[c]	

Table C-3 (continued)

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Solid Wastes						
Combustible Debris	Maintenance, R&D, D&D, and ER activities	Acceptable Knowledge	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011 F001 F002 F003 F005	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium, Chromium, Lead, Mercury-all others, Selenium, Silver, Nickel, Zinc and all applicable constituents identified above the UHC regulatory limit
Organic-Contaminated Noncombustible Solids	Vacuum pump maintenance, R&D, D&D, and ER activities	Acceptable Knowledge	D001 D004 D005 D006 D007 D008 D009 D010 D011 D018 D027 D030 D032 D033 D034 D035 D037 D038 D041 D042 F001 F002 F004 F005	Ignitability Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Methyl ethyl ketone Pentachlorophenol Pyridine 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 7.5 0.13[d] 0.13[d] 0.5 3.0 200.0 100.0 5.0[d] 400.0 2.0 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium Cadmium, Chromium Lead, Mercury Selenium, Silver Benzene, 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane, Methoxychlor, Methyl ethyl ketone, Pentachlorophenol, Pyridine, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol and all applicable constituents identified above the UHC regulatory limit

Table C-3 (continued)

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Solid Wastes						
Organic-Contaminated Combustible Solids	Maintenance, D&D, and ER activities	Acceptable Knowledge	D001 D003 D007 D008 D009 D030 D035 F001 F002 F003 F005	Ignitability Reactivity Chromium Lead Mercury 2,4-Dinitrotoluene Methyl ethyl ketone Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 5.0 0.2 0.13[d] 200.0 NA[c] NA[c] NA[c] NA[c]	Chromium, Lead Mercury-all other, 2,4-Dinitrotoluene, Methyl ethyl ketone and all applicable constituents identified above the UHC regulatory limit
Water-Reactive Wastes	Cleanup of HE firing-site debris, machining and disassembly of test components	Acceptable Knowledge	D001 D003 D005 F002	Ignitability Reactivity Barium Spent halogenated solvents	NA[c] NA[c] 100.0 NA[c]	Barium, and all applicable constituents identified above the UHC regulatory limit
Mercury Wastes	Cleanup operations	Acceptable Knowledge	D005 D007 D008 D009 F001	Barium Chromium Lead Mercury Spent halogenated solvents	100.0 5.0 5.0 0.2 NA[c]	Barium, Chromium, Lead, Mercury-all others and all applicable constituents identified above the UHC regulatory limit
Unused Solid Reagent Chemical Wastes	R&D activities	Acceptable Knowledge	D001 D002 D003 All P- and U-listed EPA Hazardous Waste Numbers[e]	Ignitability Corrosivity Reactivity Discarded commercial chemical products and off-specification species	NA[c] NA[c] NA[c] NA[c]	All applicable constituents above the UHC regulatory limit

Table C-3 (continued)

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Liquid Wastes						
Spent Solvents and Contaminated Solvent Mixtures	Maintenance, cleaning, and degreasing activities: R&D; processing operations, such as extraction, bench-scale experimental inorganic chemistry, environmental analysis, radiochemistry	Acceptable Knowledge	D001 D002 D004 D005 D007 D008 D009 D010 D011 D018 D019 D021 D022 D027 D028 D030 D032 D033 D034 D036 D042 D043 F001 F002 F003 F005	Ignitability Corrosivity Arsenic Barium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform 1,4-Dichlorobenzene 1,2-Dichloroethane 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene 2,4,6-Trichlorophenol Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 100.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 7.5 0.5 0.13[d] 0.13[d] 0.5 3.0 2.0 2.0 0.2 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium, Chromium, Lead, Mercury-all others, Selenium, Silver, Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 2,4-Dinitrotoluene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Nitrobenzene, Tribromomethane (Bromoform) 2,4,6-Trichlorophenol, Vinyl chloride and all applicable constituents identified above the UHC regulatory limit
Corrosive Liquid Wastes	Radiochemistry research, plutonium-processing operations, and analytical chemistry	Acceptable Knowledge	D001 D002 D004 D006 D007 D008 D009 D010 D011 D036 D043 F001 F002 F005	Ignitability Corrosivity Arsenic Cadmium Chromium Lead Mercury Selenium Silver Nitrobenzene Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 1.0 5.0 5.0 0.2 1.0 5.0 2.0 0.2 NA[c] NA[c] NA[c]	Arsenic, Barium, Cadmium, Bromodichloromethane, Chromium (Total), Lead, Mercury-all others, Nitrobenzene, Nickel, Selenium, Silver, Vinyl Chloride and all applicable constituents identified above the UHC regulatory limit

Table C-3 (continued)

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Liquid Wastes						
Oil Wastes	Equipment maintenance operations	Acceptable Knowledge	D004 D005 D006 D007 D008 D009 D010 D018 D019 D027 D028 D030 D032 D033 D034 D036 D037 D038 D041 D042 D043 F001 F002 F003 F005	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Benzene Carbon tetrachloride 1,4-Dichlorobenzene 1,2-Dichloroethane 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Pentrachlorophenol Pyridine 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol Vinyl chloride Spent halogenated solvents Spent halogenated solvents Spent non-halogenated solvents Spent non-halogenated solvents	5.0 100.0 1.0 5.0 5.0 0.2 1.0 0.5 0.5 7.5 0.5 0.13[d] 0.13[d] 0.5 3.0 2.0 100.0 5.0[d] 400.0 2.0 0.2 NA[c] NA[c] NA[c] NA[c]	Arsenic, Barium, Cadmium, Chromium Lead, Mercury-all others, Selenium, Silver, Thallium, Benzene, Carbon tetrachloride, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 2,4-Dinitrotoluene, Diethylphthalate, Di-n-butyl phthalate, Hexachlorobutadiene, Hexachlorobenzene, Hexachloroethane, Hexachlorocyclopentadiene, Nitrobenzene, Pentachlorophenol, Pyridine, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, Vinyl chloride and all applicable constituents identified above the UHC regulatory limit
Unused Liquid Reagent Chemical Wastes	R&D activities	Acceptable Knowledge	D001 D002 D035 All P- and U-listed EPA Hazardous Waste Numbers[e]	Ignitability Corrosivity Methyl ethyl ketone Discarded commercial chemical products and off-specification species	NA[c] NA[c] 200.0 NA[c]	Methyl ethyl ketone and all applicable constituents identified above the UHC regulatory limit

Table C-3 (continued)

Waste Description[a]	Waste Generating Activity[a]	Basis for Hazardous Waste Designation[a]	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents
Liquid Wastes						
Aqueous and Nonaqueous Liquids Contaminated with Heavy Metals and/or Organics	ER activities, metal-polishing operations, and radiochemistry research	Acceptable Knowledge Sampling and Analysis	D001 D003 D004 D005 D006 D007 D008 D009 D010 D011 D018 D019 D021 D022 D023 D024 F002 F005	Ignitability Reactivity Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Benzene Carbon tetrachloride Chlorobenzene Chloroform o-Cresol m-Cresol Spent halogenated solvents Spent non-halogenated solvents	NA[c] NA[c] 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0 0.5 0.5 100.0 6.0 200.0[f] 200.0[f] NA[c] NA[c]	Arsenic, Barium, Cadmium, Chromium (Total), Lead, Mercury-all others, Selenium, Silver, Benzene, Carbon Tetrachloride, Chlorobenzene, Chloroform, o-cresol, m-cresol, 1,2-Dichloroethane, and all applicable constituents identified above the UHC regulatory limit
Gas Cylinder Waste						
Gas Cylinder Waste	R&D and general facility operations	Acceptable Knowledge	D001 D002 D003 Potential D-coded EPA Hazardous Waste Numbers Potential P- and U-listed EPA Hazardous Waste Numbers[e]	Ignitability Corrosivity Reactivity Toxicity characteristic wastes Discarded commercial chemical products and off-specification species	NA[c] NA[c] NA[c] -[b] NA[c]	All applicable constituents above the UHC regulatory limit

a Denotes information from the Los Alamos National Laboratory waste characterization documentation database.

b A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of the waste contains any of the contaminants listed (D004-D043) at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart II, Part 261, Subpart C [6-14-00].

c Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes.

d The quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level (20.4.1 NMAC, Subpart II, 261.24, Table 1 [6-14-00]).

e Refers to the P- and U-listed wastes found in the "Los Alamos National Laboratory General Part A Permit Application," Revision 3.0, 2002, Los Alamos National Laboratory, Los Alamos, New Mexico.

f If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 milligrams per liter.

Note: Fluoride, sulfide, vanadium, and zinc are not "underlying hazardous constituents" in characteristic wastes, according to the definition in § 268.2(i). Selenium is not an underlying hazardous constituent as defined at § 268.2(i) because its Universal Treatment Standard level is greater than its Toxicity Characteristic level, thus a treated selenium waste would always be characteristically hazardous, unless it is treated to below its characteristic level.

Table C-4
Facility MTRUW Stream Waste Matrix Codes Correlated with Facility Waste Identification Systems

(This table is for informational purposes only)

Summary Category Group	Waste Matrix Code	Waste Stream Description	RSWD Code[a]		IDC[b]		TRUCON Code[c]	
S3000 - Homogeneous	S3100	Homogeneous Inorganic, Cemented	A-25	Leached Process Residues	002	Cemented Aqueous Waste	LA111	Solidified Aqueous or Homogeneous Inorganic Solids
			A-26	Evaporator Bottoms/Salts	006	Solidified Inorganic and Organic Process Solids	LA114	Solidified Inorganic Process Solids
			A-76	Cement Paste				
	S3100	Homogeneous Inorganic, Cemented Organics					LA126	Solidified Organic Process Solids
	S3100	Homogeneous Inorganic, Non-cemented	A-75	Chemical Treatment Sludge	003	Stabilized Aqueous Waste (dewatered sludge)	LA122	Solid Inorganic Waste
							LA130	Ash
	S3100	Homogeneous Inorganic, Salts	A-27	Nitrate Salts		Salt Waste	LA124	Pyrochemical Salt Waste
			A-28	Chloride Salts				
			A-29	Hydroxide Cake				
	S3100	Homogeneous Inorganic, Vermiculite	A-20	Hydrocarbon Oil – Liquid (Absorbed)			LA112	Solidified Organic Waste
			A-21	Silicon-Based - Liquid (Absorbed)				
S4000 – Soil/Gravel	S4100	Soil	A-90	Radioactively-Contaminated Soil				

Table C-4 (continued)

Summary Category Group	Waste Matrix Code	Waste Stream Description	RSWD Code[a]		IDC[b]		TRUCON Code[c]	
S5000 - Debris	S5300	Combustible Debris	A-14	Combustible Decon Waste	004	Combustible Waste	LA116	Combustible Debris
			A-15	Cellulosics				
			A-16	Plastics				
			A-17	Rubber Materials				
			A-18	Combustible Lab Trash				
			A-35	Combustible Building Debris				
			A-40	Combustible Hot-Cell Waste				
			A-60	Other Combustibles				
	S5400	Heterogeneous Debris	A-10	Graphite Solids	001	Metal Scrap and Incidental Combustibles	LA115	Graphite Waste
			A-19	Combined Combustible/Non-Combustible Lab Trash	005	Combined Noncombustible / Combustible Waste	LA117	Metal Waste
			A-30	PN Equipment	005LG	Glass Waste	LA118	Glass Waste
			A-31	Non-PN Equipment	005LM	Metal Waste	LA119	HEPA Filter Waste
			A-36	Noncombustible Building Debris	005P1	Leaded Rubber and Metal Waste	LA123	Leaded Rubber and Metal Waste

Table C-4 (continued)

Summary Category Group	Waste Matrix Code	Waste Stream Description	RSWD Code[a]		IDC[b]		TRUCON Code[c]	
			A-41	Noncombustible Hot-Cell Waste	005P2G	Graphite Waste	LA125	Mixed Combustible / Noncombustible Waste
			A-46	Skull and Oxide				
			A-47	Slag and Porcelain				
			A-50	Metal Crucibles, Scrap, Dies				
			A-51	Precious Metals				
			A-52	Scrap Metal				
			A-55	Filter Media				
			A-56	Filter Media Residue				
			A-61	Other Noncombustibles				
			A-72	Beryllium Contaminated Debris				
			A-74	Ion Exchange Resin				
			A-80	Irradiation Sources				
			A-85	Firing Point Residues				
			A-95	Glass				

[a] RSWD = Radioactive Solid Waste Disposal [codes]
[b] IDC = Item Description Code
[c] TRUCON = TRUPACT-II Content [codes]

Table C-5
Descriptions of Mixed Transuranic Waste Stored at the Facility
(This table is for informational purposes only)

Summary Category Group	Waste Matrix Code	Waste Description[a]	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and /or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
S3000 - Homogeneous	S3100	Homogeneous Inorganic, Cemented	Plutonium processing operations	Acceptable Knowledge	D002	Corrosive	NA[d]	
					D003	Reactive	NA[d]	
					D004	Arsenic	5.0	
					D005	Barium hydroxide	100.0	
		Homogeneous Inorganic, Cemented Organics	Plutonium processing operations	Acceptable Knowledge	D006	Cadmium	1.0	
					D007	Chromium	5.0	
					D008	Lead	5.0	
					D009	Mercury	0.2	
		Homogeneous Inorganic, Non-cemented	Plutonium processing operations	Acceptable Knowledge	D010	Selenium	1.0	
					D011	Silver	5.0	
					D018	Benzene	0.5	
					D019	Carbon tetrachloride	0.5	
					D021	Chlorobenzene	100.0	
		Homogeneous Inorganic, Salts	Plutonium processing operations	Acceptable Knowledge	D022	Chloroform	6.0	
					D035	Methyl ethyl ketone	200.0	
					D038	Pyridine	5.0[e]	
					D039	Tetrachloroethylene	0.7	
					D040	Trichloroethylene	0.5	
					F001	Spent halogenated solvents	NA[d]	
					F002	Spent halogenated solvents	NA[d]	
					F003	Spent non-halogenated solvents	NA[d]	
					F005	Spent non-halogenated solvents	NA[d]	

Table C-5 (continued)

Summary Category Group	Waste Matrix Code	Waste Description[a]	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
S3000 - Homogeneous	S3100	Homogeneous Inorganic, Vermiculite	Plutonium processing operations	Acceptable Knowledge	D002	Corrosive	NA[d]	
					D004	Arsenic	5.0	
					D005	Barium hydroxide	100.0	
					D006	Cadmium	1.0	
					D007	Chromium	5.0	
					D008	Lead	5.0	
					D009	Mercury	0.2	
					D010	Selenium	1.0	
					D011	Silver	5.0	
					D018	Benzene	0.5	
					D019	Carbon tetrachloride	0.5	
					D021	Chlorobenzene	100.0	
					D022	Chloroform	6.0	
					D027	1,4-Dichlorobenzene	7.5	
					D028	1,2-Dichloroethane	0.5	
					D030	2,4-Dinitrotoluene	0.13[e]	
					D032	Hexachlorobenzene	0.13[e]	
					D033	Hexachlorobutadiene	0.5	
					D034	Hexachloroethane	3.0	
					D035	Methyl ethyl ketone	200.0	
					D036	Nitrobenzene	2.0	
					D037	Pentachlorophenol	100.0	
					D038	Pyridine	5.0[e]	
					D039	Tetrachloroethylene	0.7	
					D040	Trichloroethylene	0.5	
					D042	2,4,6-Trichlorophenol	2.0	
					D043	Vinyl Chloride	0.2	
					F001	Spent halogenated solvents	NA[d]	
					F002	Spent halogenated solvents	NA[d]	
					F003	Spent non-halogenated solvents	NA[d]	
					F005	Spent non-halogenated solvents	NA[d]	

Table C-5 (continued)

Summary Category Group	Waste Matrix Code	Waste Description[a]	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
S4000 – Soil/ Gravel	S4100	Soil	D&D	Acceptable Knowledge	D004	Arsenic	5.0	D004
					D005	Barium hydroxide	100.0	D005
					D006	Cadmium	1.0	D006
					D007	Chromium	5.0	D007
					D008	Lead	5.0	D008
					D009	Mercury	0.2	D009
					D010	Selenium	1.0	D010
					D011	Silver	5.0	D011
					D018	Benzene	0.5	D018
					D019	Carbon tetrachloride	0.5	D019
					D021	Chlorobenzene	100.0	D021
					D022	Chloroform	6.0	D022
					D035	Methyl ethyl ketone	200.0	D035
					D038	Pyridine	5.0[e]	D038
					D039	Tetrachloroethylene	0.7	D039
					D040	Trichloroethylene	0.5	D040
					F001	Spent halogenated solvents	NA[d]	F001
					F002	Spent halogenated solvents	NA[d]	F002
					F003	Spent non-halogenated solvents	NA[d]	F003
					F005	Spent non-halogenated solvents	NA[d]	F005

Table C-5 (continued)

Summary Category Group	Waste Matrix Code	Waste Description[a]	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Waste Constituents and/or Characteristics	Regulatory Limits[b] (milligrams per liter)	Potential Underlying Hazardous Constituents[c]
S5000 - Debris	S5300	Combustible Debris	Plutonium processing operations	Acceptable Knowledge	D003	Reactive	NA[d]	
					D004	Arsenic	5.0	
					D005	Barium hydroxide	100.0	
					D006	Cadmium	1.0	
					D007	Chromium	5.0	
	S5400	Heterogeneous Debris	Plutonium processing operations; D&D	Acceptable Knowledge	D008	Lead	5.0	
					D009	Mercury	0.2	
					D010	Selenium	1.0	
					D011	Silver	5.0	
					D018	Benzene	0.5	
					D019	Carbon tetrachloride	0.5	
					D021	Chlorobenzene	100.0	
					D022	Chloroform	6.0	
					D035	Methyl ethyl ketone	200.0	
					D038	Pyridine	5.0[e]	
					D039	Tetrachloroethylene	0.7	
					D040	Trichloroethylene	0.5	
					D043	Vinyl Chloride	0.2	
					F001	Spent halogenated solvents	NA[d]	
					F002	Spent halogenated solvents	NA[d]	
					F003	Spent non-halogenated solvents	NA[d]	
					F004	Spent non-halogenated solvents	NA[d]	
					F005	Spent non-halogenated solvents	NA[d]	
					U080	Methylene Chloride	NA[d]	

a This table is based on information from the *Acceptable Knowledge Information Summary for Los Alamos National Laboratory Transuranic Waste Streams* (AKIS), (TWCP-AK-2.1-019, R.0) (LA-UR-03-4870); and from waste characterization documentation information maintained by the Facility and Waste Operations Division. Waste with EPA Hazardous Waste Numbers that are not included in the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit will not be transported to WIPP.

b A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, Part 261, Subpart C [6-14-00].

c Potential underlying hazardous constituents (UHC) have been included, where the information is available. UHC characterization for the purpose of Land Disposal Restrictions will apply for mixed transuranic waste to be disposed of at WIPP.

d Not Applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes.

e Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

Note: Fluoride, sulfide, vanadium, and zinc are not "underlying hazardous constituents" in characteristic wastes, according to the definition in § 268.2(i). Selenium is not an underlying hazardous constituent as defined at § 268.2(i) because its Universal Treatment Standard level is greater than its Toxicity Characteristic level, thus a treated selenium waste would always be characteristically hazardous, unless it is treated to below its characteristic level.

Table C-6

(This table is reserved)

TABLE C-7

(This table is reserved)

Table C-8

(This table is reserved)

Table C-9
Parameters, Characterization Methods, and Rationale for Parameter Selection for Hazardous Waste

Waste Description[a]	Parameters[b]	Characterization Methods	Rationale
Spent Solvents	~ Flash point (for liquid waste) ~ pH (for liquid waste) ~ RCRA[c]-regulated metals ~ Volatile organic compounds (VOC) ~ Semivolatile organic compounds (SVOC) ~ Free liquids	~ Acceptable Knowledge ~ Sampling and Analysis	~ Determine characteristic for ignitability, corrosivity, reactivity, and toxicity ~ Determine concentration of F-listed solvents ~ Determine underlying hazardous constituents
Contaminated Solid Wastes	~ RCRA[c]-regulated metals ~ VOCs ~ SVOCs	~ Acceptable Knowledge ~ Sampling and Analysis	~ Determine characteristic for ignitability, reactivity, and toxicity ~ Determine concentration of F-listed solvents
Paint and Related Wastes	~ Flash point (for liquid waste) ~ RCRA[c]-regulated metals ~ VOCs	~ Acceptable Knowledge ~ Sampling and Analysis	~ Determine characteristic for ignitability and toxicity ~ Determine concentration of F-listed solvents
Photographic and Photocopier Wastes	~ Flash point (for liquid waste) ~ pH (for liquid waste) ~ RCRA[c]-regulated metals	~ Acceptable Knowledge ~ Sampling and Analysis	~ Determine characteristic for ignitability, corrosivity, and toxicity
Corrosive Liquid Wastes	~ Flash point (for liquid waste) ~ pH (for liquid waste) ~ RCRA[c]-regulated metals ~ VOCs ~ SVOCs	~ Acceptable Knowledge ~ Sampling and Analysis	~ Determine characteristic for ignitability, corrosivity, and toxicity ~ Determine concentration of F-listed solvents
Solid Metals and Metallic Compounds	~ RCRA[c]-regulated metals	~ Acceptable Knowledge ~ Sampling and Analysis	~ Determine characteristic for ignitability, reactivity, and toxicity
Contaminated Noncorrosive Aqueous and Nonaqueous Solutions and Sludges	~ Flash point ~ RCRA[c]-regulated metals ~ VOCs ~ SVOCs	~ Acceptable Knowledge ~ Sampling and Analysis	~ Determine characteristic for ignitability, reactivity, and toxicity ~ Determine concentration of F-listed solvents
Mercury Wastes	~ RCRA[c]-regulated metal	~ Acceptable Knowledge ~ Sampling and Analysis	~ Determine characterisitc for toxicity ~ Determine the presence of a U-listed unused commercial chemical product
Used Batteries and Battery Fluids	~ pH (for liquid waste) ~ RCRA[c]-regulated metals	~ Acceptable Knowledge	~ Determine characteristic for corrosivity and toxicity
Unused/Off-specification Commercial Chemical Products	~ Flash point (for liquid waste) ~ pH (for liquid waste) ~ RCRA[c]-regulated metals ~ VOCs ~ SVOCs	~ Acceptable Knowledge ~ Sampling and Analysis	~ Determine characteristic for ignitability, corrosivity, reactivity, and toxicity ~ Determine presence of P-listed or U-listed unused commercial chemical products
Gas Cylinder Waste	~ RCRA[c]-regulated metals ~ VOCs ~ SVOCs	~ Acceptable Knowledge	~ Determine characterisitic for ignitability, corrosivity, and reactivity ~ Determine presence of D-coded and U- and P-listed wastes
Environmental Restoration (ER) Soils and Sludges	~ RCRA[c]-regulated metals ~ VOCs ~ SVOCs	~ Acceptable Knowledge	~ Determine characteristic for ignitability, reactivity, and toxicity ~ Determine concentration of F-listed solvents
ER Aqueous Liquids	~ pH ~ RCRA[c]-regulated metals ~ VOCs ~ SVOCs	~ Acceptable Knowledge	~ Determine characteristic for ignitability, corrosivity, reactivity, and toxicity ~ Determine concentration of F-listed solvents
ER Debris	~ RCRA[c]-regulated metals ~ VOCs ~ SVOCs	~ Acceptable Knowledge	~ Determine characteristic for ignitability, reactivity, and toxicity ~ Determine concentration of F-listed solvents

[a] Information contained in this column is from the Los Alamos National Laboratory waste characterization documentation database

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

[c] Resource Conservation and Recovery Act. Use of the term "RCRA-regulated metals" refers to hazardous waste as defined in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, 261.24 [6-14-00]

Table C-10
Parameters, Characterization Methods, and Rationale for Parameter Selection for Mixed Low-Level Waste

Waste Description[a]	Parameter[b]	Characterization Method	Rationale
Soils with Heavy Metals	RCRA-regulated metals[c]	Acceptable Knowledge Sample and analyze randomly selected drums in waste stream	Determine toxicity characteristic
Environmental Restoration Soils	RCRA-regulated metals[c] VOCs	Acceptable Knowledge Sample and analyze randomly selected drums in waste stream	Determine presence of F-listed solvents Determine toxicity characteristic
Inorganic Solid Oxidizers	RCRA-regulated metals[c]	Acceptable Knowledge Sample and analyze randomly selected drums in waste stream	Determine toxicity characteristic Determine characteristic for ignitability and reactivity
Lead Waste	RCRA-regulated metals[c]	Acceptable Knowledge	Determine characteristic for reactivity Determine toxicity characteristic
Noncombustible Debris	RCRA-regulated metals[c]	Acceptable Knowledge	Determine toxicity characteristic Determine characteristic for ignitability and reactivity
Combustible Debris	RCRA-regulated metals[c] VOCs	Acceptable Knowledge	Determine toxicity characteristic Determine presence of F-listed solvents Determine characteristic for ignitability and reactivity
Organic-Contaminated Noncombustible Solids	RCRA-regulated metals[c] VOCs	Acceptable Knowledge	Determine toxicity characteristic Determine presence of F-listed solvents
Organic-Contaminated Combustible Solids	RCRA-regulated metals[c] VOCs	Acceptable Knowledge	Determine characteristic for ignitability and reactivity Determine toxicity characteristic Determine presence
Solid Wastes			
Mercury Wastes	RCRA-regulated metals[c] VOCs	Acceptable Knowledge Sample and analyze randomly selected drums in waste stream	Determine toxicity characteristic Determine presence of F-listed solvents
Unused Solid Reagent Chemical Wastes	RCRA-regulated metals[c]	Acceptable Knowledge	Determine characteristic for ignitability and corrosivity Determine the presence of P- and U-listed unused

			commercial chemical product

Table C-10 (continued)

Waste Description[a]	Parameter[b]	Characterization Method	Rationale
Solid Wastes			
Unused Solid Reagent Chemical Wastes	RCRA-regulated metals[c]	Acceptable Knowledge	Determine characteristic for ignitability and corrosivity Determine the presence of P- and U-listed unused commercial chemical product
Liquid Wastes			
Spent Solvents and Contaminated Solvent Mixtures	Flash point pH RCRA-regulated metals[c] VOCs Semivolatile organic compounds	Acceptable Knowledge Sampling and Analysis	Determine characteristic for ignitability, corrosivity, and toxicity Determine concentration of F-listed solvents
Corrosive Liquid Wastes	Flash point pH RCRA-regulated metals[c] SVOCs	Acceptable Knowledge Sampling and Analysis	Determine characteristic for ignitability, corrosivity, and toxicity Determine concentration of F-listed solvents
Aqueous and Nonaqueous Liquids Contaminated with Heavy Metals and/or Organics	Flash point RCRA-regulated metals[c] VOCs SVOCs	Acceptable Knowledge Sampling and Analysis	Determine characteristic for ignitability and toxicity Determine concentration of F-listed solvents
Oil Wastes	RCRA-regulated metals[c] VOCs SVOCs	Acceptable Knowledge Sampling and analysis	Determine characteristic for toxicity Determine concentration of F-listed solvents
Unused Liquid Reagent Chemical Wastes	Flash point pH	Acceptable Knowledge	Determine characteristic for ignitability and corrosivity Determine the presence of P- and U-listed unused commercial chemical product
Gaseous Wastes			
Gas Cylinder Waste	RCRA[c]-regulated metals VOCs SVOCs	Acceptable Knowledge	Determine characteristic for ignitability, corrosivity, and reactivity Determine presence of D-coded and P- and U-listed waste

[a] Information contained in this column is extracted primarily from Los Alamos National Laboratory, 1995, "LANL's Federal Facility Compliance Order Site Treatment Plan Background Volume," Los Alamos National Laboratory, Los Alamos, New Mexico.

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

[c] Resource Conservation and Recovery Act. Use of the term "RCRA-regulated metals" refers to hazardous waste as defined in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, 261.24 [6-14-00]

Table C-11
Parameters, Characterization Methods, and Rationale for Parameter Selection for Mixed Transuranic Waste

Summary Category Group/ Description[a]	Waste Description	Parameters	Characterization Methods	Rationale
Storage				
S3000-Homogeneous Solids	Solidified aqueous waste (*e.g.*, concreted/cemented aqueous waste)	Free liquids in waste matrix Physical form of the waste	Visual examination Real-time radiography (RTR) Acceptable Knowledge	Verify physical waste form No free liquids allowed
	Solidified aqueous waste (*e.g.*, dewatered sludge and chemical treatment sludge) Solidified inorganic/organic process solids and liquids	Resource Conservation and Recovery Act (RCRA)-regulated metals	Sample and analyze statistically selected number of drums in waste stream Acceptable Knowledge	Determine toxicity characteristic Determine concentration of metals
	Homogeneous inorganic solids Glass/noncombustible waste Non-cemented inorganics Absorbed organics on vermiculite	Volatile organic compounds in container headspace gas	Gas chromatography / mass spectrometry (GC/MS) Fourier transform infrared spectrometry Gas chromatography / Flame ionization detector Acceptable Knowledge	Qualitative screening to confirm the presence of VOCs
S4000-Soils/Gravels	Contaminated soil	Free liquids in waste matrix Physical form of the waste	Visual examination RTR Acceptable Knowledge	Verify physical waste form No free liquids allowed
		RCRA-regulated metals	Sample and analyze statistically selected number of drums in waste stream Acceptable Knowledge	Determine toxicity characteristic Determine concentration of metals
		VOCs in container headspace gas	GC/MS Fourier transform infrared spectrometry Gas chromatography / Flame ionization detector	Qualitative screening to confirm the presence of VOCs
S5000-Debris Waste	Mixed metal scrap and incidental combustibles Combustible waste Graphite waste Metal waste Glass waste	Free liquids Physical form of the waste VOCs in container headspace gas VOCs and semivolatile organic compounds	Visual examination RTR Acceptable Knowledge	Verify physical waste form No free liquids allowed Determine compliance with land disposal restrictions (LDR) treatment standards, if applicable
	Leaded-rubber and metal waste High-efficiency particulate air filters Noncombustible waste Mixed combustible / noncombustible waste	RCRA-regulated metals	Gas chromatography / mass spectrometry Fourier transform infrared spectrometry Gas chromatography / Flame ionization detector	Qualitative screening to confirm the presence of VOC Determine compliance with LDR treatment standards, if applicable

Summary Category Group/ Description[a]	Waste Description	Parameters	Characterization Methods	Rationale
			Acceptable Knowledge	

Table C-11 (continued)

Treatment				
L1000 Aqueous Liquids/Slurries	Evaporator bottoms solutions, aqueous waste, and laboratory solutions	RCRA-regulated metals and corrosivity	Acceptable Knowledge Sampling and Analysis	Determine toxicity characteristics Determine concentration of metals
S3000 Homogeneous Solids	Inorganic process solids and cemented inorganic process solids	RCRA-regulated metals	Acceptable Knowledge Sampling and Analysis	Determine concentration of metals

[a] Information in this column is based on information from the *Acceptable Knowledge Information Summary for Los Alamos National Laboratory Transuranic Waste Streams* (AKIS), TWCP-AK-2.1-019, R.0, LA-UR-03-4870, Los Alamos National Laboratory, Los Alamos, New Mexico.

Table C-12

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Table C-13

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Table C-14

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Table C-15
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples:	Method 5035: 40-milliliter (mL) vials with stirring bar. Method 5021: See method. Methods 5031 & 5032: 125-mL WM[c]-G[d]. Use Teflon-lined lids for all procedures.	Cool to 4º degrees Celsius (ºC)[e]	14 days
Aqueous Samples:			
No Residual Chlorine Present	Methods 5030, 5031, & 5032: 2 x 40-mL vials with Teflon-lined septum caps.	Cool to 4ºC and adjust pH[f] to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Residual Chlorine Present	Methods 5030, 5031, & 5032: 2 x 40-mL vials with Teflon-lined septum caps.	Collect sample in a 125-mL container which has been pre-preserved with 4 drops of 10% sodium thiosulfate solution. Gently swirl to mix sample and transfer to a 40-mL volatile organic analysis (VOA) vial. Cool to 4ºC and adjust pH to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$	14 days
Acrolein and Acrylonitrile	Methods 5030, 5031, & 5032: 2 x 40-mL vials with Teflon-lined septum caps.	Adjust to pH of 4-5. Cool to 4ºC	14 days
Soil/Sediments and Sludges:	Method 5035: 40-mL vials with stirring bar. Method 5021: See method. Methods 5031 & 5032: 125-mL WM[c]-G[d]. Use Teflon-lined lids for all procedures.	See the individual method	14 days

Table C-15 (continued)

Analyte Class and Sample Type	Container	Preservative	Holding Time
Semivolatile Organics/Organochlorine Pesticides and Herbicides			
Concentrated Waste Samples:	125 mL WM[c]-G[d] with Teflon-lined lid	None	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Soil/Sediments and Sludges:	250 mL WM[c]-G[d] with Teflon-lined lid	Cool to 4ºC	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Liquid Samples:			
No Residual Chlorine Present	1-gallon (gal.), 2 x 0.5 gal., or 4 x 1 liter (L) AG[g] container with Teflon-lined lid	Cool to 4ºC	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction
Residual Chlorine Present	1-gal., 2 x 0.5 gal., or 4 x 1-L AG[g] with Teflon-lined lid	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Addition of sodium thiosulfate solution to sample container may be performed in the laboratory prior to field use. Cool to 4ºC.	Samples must be extracted within 7 days and extracts analyzed within 40 days following extraction
Metals			
Aqueous Samples:			
Metals (except hexavalent chromium and mercury)	1-L P[h] or G[d]	Add nitric acid to adjust pH to less than 2.	180 days
Hexavalent chromium	500-mL P[h] or G[d]	Cool to 4ºC	24 hours
Mercury	500-mL P[h] or G[d]	Add nitric acid to adjust pH to less than 2.	28 days
Soil/Sediments and Sludges:			
Metals (except hexavalent chromium and mercury)	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC	180 days
Hexavalent chromium	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC	Not established - analyze as soon as possible.
Mercury	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC	28 days

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations
[b] Information primarily from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846,* U.S. Environmental Protection Agency, 1986 and all approved updates
[c] Wide-mouth
[d] Glass
[e] Adjust to pH of less than 2 with sulfuric acid, hydrochloric acid, or solid sodium bisulfate
[f] A term used to describe the hydrogen-ion activity of a system

[g] Amber glass[h]; P = Polyethylene

Table C-16
Summary of Characterization Methods for Hazardous Waste

Parameter	Method Numbers	Test Methods	Rationale
Volatile organic compounds in waste matrix: Spent halogenated solvents Spent nonhalogenated solvents	ASTM Method D4547-91[a] U.S. EPA/540/4-91/001[b] *SW-846* (1311, 8260B, 8275A)[c] or equivalent methods[d] Methods included in 20.4.1 NMAC §§ 265.1084(a)(2), (a)(3), and (a)(4)	Total and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromotography/mass spectrometry (GC/MS) Semivolatile organic compound (SVOC) analysis by thermal extraction/gas chromatography/mass spectrometry (TE/GC/MS) Acceptable Knowledge	Determine total and/or TCLP and SVOC/VOC concentration in samples of solids or liquids
SVOCs in waste:	*SW-846* (1311 and 8270C)[c] or equivalent methods[d]	Total or TCLP SVOC analysis by GC/MS Acceptable Knowledge	Determine total and/or TCLP and SVOC concentration in samples of solids or liquids
Resource Conservation and Recovery Act-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	*SW-846* (1311, 6010B, 7060A, 7061A)[c] (1311, 6010B, 7080A, 7081)[c] (1311, 6010B, 7130, 7131A)[c] (1311, 6010B, 7190, 7191)[c] (1311, 6010B, 7420, 7421)[c] (1311, 6010B, 7470A, 7471A, 7472)[c] (1311, 6010B, 7740, 7741A, 7742)[c] (1311, 6010B, 7760A, 7761)[c] or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Anodic stripping voltammetry Acceptable Knowledge	Determine total and/or TCLP concentration in samples of solids or liquids
Reactive Sulfide	*SW-846*, Test Method to Determine Hydrogen Sulfide Released from Wastes[e] *SW-846* (9030B, 9031, 9034)[c] or equivalent methods[d]	Colorimetric, titrametric, or spectrophotometric measurement of hydrogen sulfide released from waste following reflux distillation under acidic conditions	Determine concentration of reactive sulfides
Ignitability (Flash Point)	*SW-846* (1010, 1020A, 1030)[c] or equivalent methods[d]	Pensky-Martens closed cup Setaflash closed cup Ignitability of solids	Determine ignitablity
pH (Corrosivity)	*SW-846* (9040B, 9041A, 9045C)[c] or equivalent methods[d]	pH electrometric measurement pH paper Soil and waste pH	Determine corrosivity

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

[b] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 154014-91001, Office of Research and Development

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

[d] Equivalent methods subject to EPA approval may be substituted

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

Table C-17
Summary of Characterization Methods for Mixed Low-Level Waste

Parameter	Method Numbers	Test Method	Rationale
Solid Wastes			
Volatile organic compounds in waste matrix: Spent halogenated solvents Spent nonhalogenated solvents	ASTM Method D4547-91[a] U.S. EPA/540/4-91/001[b] *SW-846* (1311, 8260B, 8275A)[c] or equivalent methods[d] Methods included in 20.4.1 NMAC §§ 265.1084(a)(2), (a)(3), and (a)(4)	Total and/or toxicity characteristic leaching procedure (TCLP) VOC analysis by gas chromotography/mass spectrometry (GC/MS) Semivolatile organic compounds (SVOC) analysis by thermal extraction/gas chromatography/mass spectrometry (TE/GC/MS) Acceptable Knowledge	Determine total and/or TCLP and VOC concentration in samples of solid process residues and soils
SVOCs in waste:	*SW-846* (1311 and 8270C)[c] or equivalent methods[d]	Total and/or TCLP SVOC analysis by GC/MS Acceptable Knowledge	Determine total and/or TCLP and SVOC concentration in samples of solid process residues and soils
Resource Conservation and Recovery Act (RCRA)-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	*SW-846* (1311, 6010B, 7060A, 7061A)[c] (1311, 6010B, 7080A, 7081)[c] (1311, 6010B, 7130, 7131A)[c] (1311, 6010B, 7190, 7191)[c] (1311, 6010B, 7420, 7421)[c] (1311, 6010B, 7470A, 7471A, 7472)[c] (1311, 6010B, 7740, 7741A, 7742)[c] (1311, 6010B, 7760A, 7761)[c] or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Acceptable Knowledge	Determine total and/or TCLP concentration in samples of solid process residues and soils
Liquid Wastes			
VOCs in waste matrix: Spent halogenated solvents Spent nonhalogenated solvents	ASTM Method D4547-91[a] EPA/540/4-91/001[b] *SW-846* (1311 and 8260B)[c] or equivalent methods[d]	Total and/or TCLP VOC analysis by GC/MS Acceptable Knowledge	Determine total and/or TCLP and VOC concentration in samples of liquid
SVOCs in waste:	*SW-846* (1311 and 8270B)[c] or equivalent methods[d]	Total and/or TCLP SVOC analysis by GC/MS Acceptable Knowledge	Determine total and/or TCLP and SVOC concentration in samples of liquid

Table C-17 (continued)

Parameter	Method Numbers	Test Method	Rationale
Liquid Wastes (cont.)			
RCRA-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	*SW-846* (1311, 6010B, 7060A, 7061A)[c] (1311, 6010B, 7080A, 7081)[c] (1311, 6010B, 7130, 7131A)[c] (1311, 6010B, 7190, 7191)[c] (1311, 6010B, 7420, 7421)[c] (1311, 6010B, 7470A, 7471A, 7472)[c] (1311, 6010B, 7740, 7741A, 7742)[c] (1311, 6010B, 7760A, 7761)[c] or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Anodic stripping voltammetry Acceptable Knowledge	Determine total and/or TCLP concentration in samples of liquid
Ignitability (Flash Point)	*SW-846* (1010, 1020A, 1030)[c] or equivalent methods[d]	Pensky-Martens closed cup Setaflash closed cup Acceptable Knowledge	Determine ignitability
pH (Corrosivity)	*SW-846* (9040B, 9041A, 9045C)[c] or equivalent methods[d]	pH electrometric Measurement pH paper Soil and waste pH Acceptable Knowledge	Determine corrosivity

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

[b] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 154014-91991, Office of Research and Development

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

[d] Equivalent methods, subject to EPA approval, may be substituted

Table C-18
Summary of Characterization Methods for Mixed Transuranic Waste

Parameter	Method Numbers	Test Methods	Rationale
Storage			
Physical Waste Form (Free liquids in waste matrix)		Waste inspection procedures Real-time radiography Visual examination Acceptable Knowledge	Verify waste container contents
Volatile organic compounds in waste matrix: Spent halogenated solvents Spent nonhalogenated solvents	ASTM Method D4547-91[a] U.S. EPA/540/4-91/001[b] *SW-846* (1311, 8260B, 8275A)[c] or equivalent methods[d] Methods included in 20.4.1 NMAC §§ 265.1084(a)(2), (a)(3), and (a)(4)	Total and/or toxicity characteristic leaching procedure (TCLP) VOCs in container headspace gas VOC analysis by gas chromatography/mass spectrometry (GC/MS) Semivolatile organic compound (SVOC) analysis by thermal extraction/gas chromatography/mass spectrometry (TE/GC/MS) Acceptable Knowledge	Determine the presence or absence of VOCs in samples
SVOCs in waste	*SW-846* (1311 and 8270C)[c] or equivalent methods[d]	Total and/or TCLP SVOC analysis by GC/MS Acceptable Knowledge	Determine the presence or absence of SVOCs in samples
Resource Conservation and Recovery Act (RCRA)-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	*SW-846* (1311, 6010B, 7060A, 7061A)[c] (1311, 6010B, 7080A, 7081)[c] (1311, 6010B, 7130, 7131A)[c] (1311, 6010B, 7190, 7191)[c] (1311, 6010B, 7420, 7421)[c] (1311, 6010B, 7470A, 7471A, 7472)[c] (1311, 6010B, 7740, 7741A, 7742)[c] (1311, 6010B, 7760A, 7761) or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Anodic stripping voltammetry Acceptable Knowledge	Determine total and/or TCLP concentration in samples
Ignitability	*SW-846* (1010, 1020A, 1030)[c] or equivalent methods[d]	Pensky-Martens closed cup Setaflash closed cup Ignitabililty of Solids Acceptable Knowledge	Determine ignitability

Parameter	Method Numbers	Test Methods	Rationale
pH (Corrosivity)	*SW-846* (9040B, 9041A, 9045C) or equivalent methods[d]	pH electrometric measurement Acceptable Knowledge	Determine corrosivity

Parameter	Method Numbers	Test Methods	Rationale
Treatment			
RCRA-regulated metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Silver	*SW-846* (1311, 6010B, 7060A, 7061A)[c] (1311, 6010B, 7080A, 7081)[c] (1311, 6010B, 7130, 7131A)[c] (1311, 6010B, 7190, 7191)[c] (1311, 6010B, 7420, 7421)[c] (1311, 6010B, 7470A, 7471A, 7472)[c] (1311, 6010B, 7760A, 7761)[c] or equivalent methods[d]	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Acceptable Knowledge	Determine total and/or TCLP metals concentration in samples
pH (Corrosivity)	*SW-846* (9040B, 9041A, 9045C) or equivalent methods[d]	pH electrometric measurement Acceptable Knowledge	Determine corrosivity

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

[b] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 154014-91001, Office of Research and Development

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

[d] Equivalent methods, subject to EPA approval, may be substituted

Table C-19
Description of Cementation Waste Streams at Technical Area 55
(This table is for informational purposes only)

Summary Category Group	Waste Description	Waste-Generating Activity	Basis for Hazardous Waste Designation	Potential EPA Hazardous Waste Numbers	Potential Hazardous Constituents in the Waste	Regulatory Limits[a] (milligrams per liter)
L1000 – Aqueous Liquids/Slurries	Evaporator bottoms solutions, aqueous waste, and laboratory solutions	Process residue from evaporator bottoms and other discardable solutions.	Acceptable Knowledge	D002 D004 D005 D006 D007 D008 D009 D010 D011	Nitric acid Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver	NA 5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0
S3000 – Homogenous Solids	Inorganic process solids and cemented inorganic process solids	Process residue from evaporator bottoms and other discardable solutions; process-leached solids, ash, filter cakes, salts, metal oxides, and fines generated as a result of plutonium-processing	Acceptable Knowledge	D004 D005 D006 D007 D008 D009 D010 D011	Arsenic Barium hydroxide Cadmium Chromium Lead Mercury Selenium Silver	5.0 100.0 1.0 5.0 5.0 0.2 1.0 5.0

[a] A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *EPA-SW-846*, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C., the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart II, 261.24, revised June 14, 2000

ATTACHMENT D

CONTINGENCY PLAN

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ATTACHMENT D
GENERAL CONTINGENCY PLAN

This Attachment presents contingency measures applicable to all permitted hazardous or mixed waste management units. The Permittees shall implement the provisions of this Plan and the applicable provisions of Permit Part 2 (*General Facility Conditions*) immediately to minimize hazards whenever there is a fire, explosion, or release of hazardous or mixed waste or hazardous or mixed waste constituents that could threaten human health or the environment.

D.1 HAZARDOUS AND MIXED WASTE EMERGENCY RESPONSE RESOURCES

1. The management of hazardous and mixed waste emergency incidents at the Facility resides within Permittees' Emergency Management Group (EM). During an emergency situation, line management (*i.e.*, the Group Leader of the affected area) works with the Duty Emergency Manager from the EM Group. The Emergency Manager has primary responsibility for managing emergency response operations, directing the Emergency Operations Support Center (EOSC) to make appropriate notifications, and activating the emergency response organizations. The Emergency Manager has authority to assume the role of Incident Commander (IC) during an emergency and typically assumes full responsibility for management of the emergency response operations at the scene. (Personnel from other organizations, such as the Federal Bureau of Investigation or the Los Alamos Fire Department [LAFD], may also assume the role of IC, depending upon the type of emergency and responding organizations.) Additional Facility resources that may provide assistance in an emergency include personnel from health physics, industrial hygiene, environment compliance, emergency response, and radiation protection personnel at the Facility. These personnel as well as other resources are discussed in Attachment Sections D.1.2, D.1.3, and D.1.6 of this Attachment.

2. Laboratory-contracted support services and other agencies shall also be available for assistance during emergencies. These are discussed in Attachment Section D.1.5 and include the contracted services for security and the LAFD. These contracted services, if changed, shall be replaced and/or supplemented with functionally equivalent contracted services required to assume the same duties and responsibilities described in this section. Other outside response agencies are discussed in Section D.1.7 and include the Los Alamos County Police Department (LACPD) and the Los Alamos Medical Center (LAMC). The LACPD and the LAMC each provide assistance under a memorandum of understanding with the U.S. Department of Energy (DOE).

3. The Permittees shall use the Incident Command System (ICS) in response to all emergencies. The ICS is based on the on-scene management structure protocols of the National Incident Management System (NIMS). The NIMS is a national standard that provides consistency in terminology/methodology and allows for an integrated emergency response both locally and nationally, if necessary.

4. The IC (*e.g.*, Duty Emergency Manager) coordinates all groups and agencies responding to the emergency and personnel operating at the scene using the ICS. The ICS response structure, illustrated on Figure D-1, is designed to expand and contract, as appropriate, to include the response groups/agencies needed to address any particular emergency. The EOSC provides notification to on-site and off-site groups and agencies for both response requests and information.

5. The IC may appoint and utilize a network of support personnel to assess, plan for, and mitigate emergencies. These personnel can include, but are not limited to, a Safety Officer, a Public Information Officer, and a Liaison Officer that report directly to the IC and are responsible for issues related to safety, information, and the interaction of various groups associated with the overall emergency. Also reporting directly to the IC are an Operations Section Chief, Logistics Section Chief, Planning Section Chief, and an Administrative Section Chief. The Operations Section Chief oversees the Fire Branch and the Emergency Medical Services Branch, and is responsible for the actual emergency response. The Logistics Section Chief is responsible for providing support personnel and equipment necessary for the emergency response. The Planning Section Chief is responsible for planning the active mitigation and recovery for the emergency. The Administrative Section Chief is responsible for keeping records of expenditures. These ICS positions are listed in Figure D-1. In some instances, some or all of these positions may be activated, as the emergency warrants. During an emergency at the Facility, assistance may be provided to the IC and the IC's appointees by a large variety of response groups/agencies. The responsibilities and/or assistance available from the various response groups/agencies are listed in Attachment Table D-1 and discussed briefly in Attachment Sections D.1.2 through D.1.7.

6. The Permittees shall provide a copy of this Contingency Plan and any revisions to each of the emergency response groups/agencies (including the LACPD, LAFD, LAMC, and the State of New Mexico's Department of Homeland Security and Emergency Management (DHSEM) Area 3 Emergency Management Coordinator).

D.1.1 Emergency Management Group

1. The Permittees shall delegate the authority and responsibility for administering and implementing the Facility's emergency management program to the Emergency Operations Division, which includes EM personnel. Emergency Operations Division personnel shall coordinate and issue the Facility's Los Alamos National Laboratory and Los Alamos Site Office Hazardous Materials Program Plan, while EM provides response coordination for emergencies. EM provides a 24-hour Emergency Operations Center for the Facility and a 24-hour Duty Emergency Manager to respond to emergencies, including hazardous and mixed waste releases. The Facility Emergency Manager is the functional equivalent of the Emergency Coordinator (40 CFR § 264.55). The EM maintains an Emergency Operations Center (EOC) in a ready condition, should a center be required. The primary EOC is located at TA-69, Building 33 (TA-69-33). An alternate EOC is located at TA-49-113. Should an EOC be activated during an emergency, additional emergency personnel can be requested by the IC through the EOC.

2. Assignment as the Duty (*i.e.*, primary) Emergency Manager is rotated. The Duty Emergency Manager can be reached 24 hours a day by contacting the EOSC at 667-6211.

3. The Duty Emergency Manager will respond to emergency incidents involving the release of hazardous or mixed waste to the environment, including spills, fires, and explosions. With input from the appropriate Facility groups, the Duty Emergency Manager shall initially assess the possible hazards to human health or the environment and, if assuming incident command, shall use whatever response personnel and/or emergency equipment necessary to control and contain the waste. In the event of an emergency, the Emergency Manager typically becomes the IC with full responsibility for field activities. As described previously, the exception to this is when on-site personnel can adequately address the emergency and maintain incident command internally.

4. The Duty Emergency Manager responding to an emergency shall have access to a copy of the appropriate building emergency plan(s) (BEP) for the area in which the incident is occurring. These plans shall be maintained by the facility manager where a waste management unit is located and shall be available at the EOC at TA-69; they are also located on site for use by emergency response personnel. The various response groups shall obtain specific information relating to the facilities involved (including the layout of all affected buildings; the location of evacuation routes, equipment, and personnel; properties of the materials/wastes managed at the facility; and the hazards associated with these materials/wastes) from the BEP(s) and other site-specific information.

5. The Permittees shall ensure that the names, addresses, and telephone numbers listed below are the current Primary and Alternate Emergency Manager.

Primary:

Brenda Anderson
3926 A Alabama
Los Alamos, NM
(H) 505-662-4173
(W) 505-667-6211
(C) 505-699-1144

Alternates:

Manny L'Esperance
13 Paseo Paltron
Los Alamos, NM
(H) 505-660-9799
(W) 505-667-6211
(C) 505-699-1383

Joyce Boyet
125 Private Rd. 1153
Espanola, NM
(H) 505-753-6108
(W) 505-667-6211
(C) 505-412-9997

Ron Huerta
P.O. Box 923
Espanola, NM
(H) 505-852-0286
(W) 505-667-6211
(C) 505-412-8434

Wil Martinez
120 A RA CR 92
Chimayo, NM
(H) 505-351-2340
(W) 505-667-6211
(C) 505-412-8135

Dave McClard
2220 A 36 Street
Los Alamos, NM
(H) 505-412-8945
(W) 505-667-6211
(C) 505-699-0803

6. To assure timely notifications and immediate response during an emergency, the Permittees shall ensure that the telephone numbers 911 or 667-6211 obtain the on-call Duty Emergency Manager.

D.1.2 Hazardous Materials Response

1. The Hazardous Materials (HAZMAT) Team is responsible for the aggressive mitigation of chemical, radiological, hazardous waste, and mixed waste emergencies, including field decontamination of responders and response equipment. At the request of the IC, the HAZMAT

Team may provide limited field decontamination support for victims. The HAZMAT Team is capable of providing a decontamination station at the scene of a hazardous material incident to process people working in a contaminated area and is prepared to perform decontamination of personnel. The HAZMAT Team shall meet the training criteria for emergency response personnel specified in the Code of Federal Regulations, Title 29, §1910.120(q)(6)(iii), (iv), and (v). The HAZMAT Team acts as part of the ICS reporting through the EOSC via the Operations Section Chief. The field monitoring team leader supervises field monitoring activities.

2. During an emergency response, the HAZMAT Team may also provide site field monitoring to determine the nature and extent of contamination, provide information on correct handling of chemicals, make recommendations on protective clothing and equipment, and provide exposure and treatment information to responders. The HAZMAT Team may obtain resources from environmental monitoring groups, such as health physics and industrial hygiene personnel.

D.1.3 Environmental Protection Division Response

At the scene, representatives and technical advisors from Environmental Protection Division (ENV) and other response personnel are coordinated by the IC. In addition to their post-emergency duties, they may also be responsible for on-scene emergency operations such as planning. Depending on the type of emergency and the associated hazards, an individual from the most relevant group in the ENV shall provide technical support and shall ensure the Permittees' compliance with applicable federal, state, and local regulations.

D.1.3.1 Ecology Personnel

Ecology personnel provide field surveys of soil, foodstuffs, and biota to determine environmental effects of exposure after an emergency.

D.1.3.2 Meteorology and Air Quality Personnel

Meteorology and air quality personnel provide field surveys of air to determine environmental impacts and dose equivalent to members of the public after a radiological emergency. In addition, they provide expertise in meteorology to project short- and long-term environmental effects of emergency conditions.

D.1.3.3 Hazardous Waste Compliance Personnel

Hazardous waste compliance personnel provide guidance on regulatory requirements for proper treatment, storage, and transportation of hazardous and mixed wastes to other Facility groups. After an emergency, hazardous waste compliance personnel may provide field sampling (*e.g.*, of soil, spills, or potentially hazardous waste) to determine environmental effects of exposure.

D.1.3.4 Water Quality and Hydrology Personnel

After an emergency, water quality and hydrology personnel provide sampling of surface water runoff and sediments to determine the environmental effects of an emergency and perform

assessments for regulatory reporting requirements. They also provide expertise in hydrogeology to establish short- and long-term environmental effects of emergency conditions.

D.1.4 Other Facility Response Resources

Emergency response personnel from the Plutonium Manufacturing and Technology Division at TA-55 are trained to respond to emergencies at that facility. Personnel from the Waste Disposition Project may provide guidance on proper treatment, storage, and transportation of hazardous and mixed waste at TA-50 and TA-54.

D.1.5 Contracted Response

Contracted response groups' representatives may report directly to the IC Post, if requested. If the IC deems it necessary, the IC may designate an Operations Section Chief to aid in the coordination and direction of these groups. In addition, contracted response groups may report to a staging area, with a representative going either to the IC Post or, if activated, to the EOC.

D.1.5.1 Security Services

Security personnel provide security service to the Facility. During an emergency, these activities include maintaining security, directing traffic within the Facility, and controlling access to the emergency scene. Security personnel maintain the necessary equipment (such as crowd-control equipment and patrol vehicles) to perform these functions.

D.1.5.2 Maintenance Site Services

Maintenance Site Services (MSS) provides a maintenance support force to the Facility. This support force is under the Permittees' direction in an emergency. MSS also provides a representative to the Facility in the event of an emergency and participates, as necessary, in post-emergency cleanup under the direction of a Recovery Manager designated by the IC. The duties of the Recovery Manager are discussed in Attachment Section D.10

D.1.5.3 Los Alamos Fire Department

The LAFD provides fire protection and ambulance coverage for the residential communities of Los Alamos and White Rock and for the Facility. In the case of an emergency within the Facility, the LAFD coordinates fire suppression and Emergency Medical Services. The IC retains overall responsibility for the emergency response effort.

D.1.6 Facility Support

D.1.6.1 Health Physics Operations

Radiation protection personnel perform routine site evaluation and monitoring to determine radiological conditions in facilities. They also provide guidance on radiological decontamination. In addition, this group augments the assessment and monitoring functions of the HAZMAT Team.

D.1.6.2 Occupational Medicine Personnel

1. The Facility maintains its own medical facility operated by occupational medicine personnel. Occupational medicine personnel provide appropriate medical treatment for occupation-related illnesses and injuries and monitors employees to assess the effectiveness of health protection programs.

2. Although occupational medicine personnel are not routinely involved with on-scene emergency response, the group maintains a central medical facility with a fully equipped emergency room and decontamination facilities at TA-3, Building 1411. The location of this and other emergency facilities are shown on Figure 49 in Attachment N (*Figures)*. Medical staff at these facilities includes physicians, physician's assistants, nurses, technicians, and counselors. All full-time physicians and nurses receive radiation accident training. Occupational medicine personnel also maintain access to a database that provides the clinical staff with timely toxic exposure and treatment information.

D.1.6.3 Industrial Hygiene and Safety Personnel

Industrial hygiene and safety personnel assist occupational medicine personnel with their ability to obtain additional exposure and treatment information. In addition, they maintain computer access to the National Institute of Occupational Safety and Health Technical Information Center and the Registry of Toxic Effects of Chemical Substances. During routine operations, these personnel perform site evaluations and field testing to determine the nature and extent of chemical contamination and specify protective clothing and equipment.

D.1.6.4 Contract Assurance Office

The Contract Assurance Office assists the facility manager in investigating all adverse environmental, safety, health, and operational occurrences (on-site and off-site), determining the causal factors, identifying the appropriate corrective actions, and assisting in the preparation of reports documenting the occurrence to DOE. This group tracks corrective actions associated with such occurrences and maintains the information in an on-site database.

D.1.7 Outside Response Agencies

During an emergency, outside response agencies report directly to the IC. A Liaison Officer or an Operations Section Chief, designated by the IC, may aid in coordinating and directing the groups responding to an emergency.

D.1.7.1 Los Alamos County Police Department

The Los Alamos County Police Department (LACPD) may assume IC under unique circumstances, but usually has only minimal interaction with the Facility in an on-site emergency. This interaction normally involves traffic control on DOE roads with public access, handling criminal activity, and criminal investigations.

D.1.7.2 Los Alamos County Emergency Management Coordinator

Los Alamos County has an agreement with the Facility's EM to provide assistance in certain emergency situations. If an emergency occurs on Facility property that may affect the communities of Los Alamos and White Rock, EM personnel will notify the CDC who will in turn notify the Los Alamos County Emergency Management Coordinator, who will coordinate necessary emergency actions throughout the county.

D.1.7.3 Los Alamos Medical Center

The Facility maintains a fully equipped decontamination room adjacent to the emergency room at LAMC. In the event that a case is sent to LAMC, support for the emergency room staff is provided by Facility occupational medical personnel. Radiation protection, industrial hygiene, and HAZMAT personnel also provide assistance to the emergency room staff; assistance from additional Facility resources is provided, as necessary. Assistance is coordinated through EM personnel.

D.2 EMERGENCY EQUIPMENT AND COMMUNICATIONS

D.2.1 Emergency Equipment

The Permittees shall make available the lists of emergency equipment listed in Table D-2 for use at any of Permittees' hazardous or mixed waste management units. The list includes emergency equipment available in the HAZMAT vehicles and trailers as well as supplemental emergency equipment maintained by the LACFD, KSL, and occupational medicine personnel. A list of emergency equipment available for use at specific hazardous and/or mixed waste management units is identified in Attachment Tables TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3, TA-55 Vault, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3, and TA-55 Building 185, D-4. Emergency equipment listed in these tables may be replaced and/or upgraded with functionally equivalent components and equipment, as necessary, for routine maintenance and repair.

D.2.2 Emergency Communications

The initial phase of an emergency may involve a small number of individuals at the affected area, require notification of the Duty Emergency Manager, and utilize local communication equipment and/or systems. When responding to hazardous and/or mixed waste emergencies, the Permittees shall ensure that EM personnel can provide communications between response units and emergency organizations.

D.2.2.1 Fire Alarms

Fire alarms are monitored 24 hours per day by trained personnel. Both the primary and backup buildings where the monitoring takes place have emergency power systems. The Duty Emergency Manager is notified when there is confirmed fire or smoke via the Los Alamos County Consolidated Dispatch Center.

D.2.2.2 Power Dispatch

The Permittees shall maintain the Power Dispatch facility 24 hours a day. Alarms at this facility are connected to Facility experiments, equipment, and/or buildings to record outages and hazardous conditions. Any conditions that activate these alarms shall be reported immediately to the building management or to the CAS operator for notification and response.

D.2.2.3 Additional Communication Systems

Internal communication systems at the Facility include:

1. Preprogrammed telephone system
2. Private telephone lines
3. A variety of frequency modulated very high frequency simplex repeater systems, including:
   - Multiple base stations
   - Mobile and hand-held units
   - Links to New Mexico public safety agencies
4. An ultrahigh frequency radio system, including:
   - Multiple antenna sites
   - Mobile and base units
   - Links with the LACPD, the LAFD, and the State Medical System
5. A 400-megahertz trunked radio system that includes a link with the LAFD
6. Transmission and reception (through the EOC) for:
   - Secure telephone
   - Secure fax
   - Secure still video
   - Secure videoconference system (to all DOE EOCs and DOE Headquarters)
7. Access to all radio systems outlined above (through the EOC).

2. Off-site communications with federal, state, tribal, county, and other agencies are available through the following:

1. A preprogrammed telephone system
2. Private telephone lines
3. Two NAWAS stations

3. The Permittees' EOC, maintained by EM personnel, operates radio systems on key Facility and off-site channels. Emergency personnel responding to on-site incidents have the benefit of wide-area radio coverage using EOC facilities. The Duty Emergency Manager is responsible for activating whatever support personnel, equipment, or services are needed 24 hours a day.

D.3 CONTINGENCY PLAN IMPLEMENTATION

The following sections discuss requirements used to implement this Plan, emergency notification, emergency manager actions, and actions to be taken in response to fires, explosions,

or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents into the environment at the Facility.

D.3.1 Requirements for Implementation

1. The decision to implement this Plan depends upon whether an emergency exists, which for the purposes of this section is defined as an imminent or actual incident arising from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents that could threaten human health or the environment. The Duty Emergency Manager or IC will use the guidelines listed below to decide whether to implement this Plan. The Permittees shall investigate all adverse environmental, safety, health, and operational occurrences (on-site and off-site) resulting in implementation of the contingency plan to determine to causal factors and identify the appropriate corrective actions.

2. This Plan shall be implemented immediately in the following situations involving releases or potential releases of hazardous or mixed waste:

1. Spills:
   - If a hazardous or mixed waste spill cannot be contained with secondary containment or application of sorbents
   - If a hazardous or mixed waste spill causes the release of flammable material, creating a fire or explosion hazard
   - If a hazardous or mixed waste spill results in toxic fumes that threaten human health
2. Explosions:
   - If an unplanned explosion involving hazardous or mixed waste occurs
   - If an imminent danger of an explosion involving hazardous or mixed waste exists.
3. Fires:
   - If a fire involving hazardous or mixed waste occurs
   - If any building, grass, forest, or nonhazardous waste fire exists that threatens to volatilize or ignite hazardous or mixed waste.
4. Other Acts of Force Majeure
   - If an earthquake or other natural disaster threatens containment integrity, including precipitation that threatens to move spilled material off site.

D.3.2 Emergency Notification

1. Emergency notification requires immediate notification of 667-6211 or EM personnel upon discovery of an imminent or actual incident involving hazardous and/or mixed waste. During nonworking hours, personnel will report all imminent or actual incidents involving hazardous and/or mixed waste to the Emergency Manager at 667-6211. In the case of fire, notification of these individuals is superseded by the Facility fire alarm system. A fire is reported by dialing 911, activating automatic alarms, or activating a fire alarm pull box. All fire alarms alert the Los Alamos County Consolidated Dispatch Center, who contact the LAFD and the Duty Emergency Manager.

2. Upon recognition of a hazardous or mixed waste emergency, the first arriving emergency-trained person will become the Facility Command Leader. Once EM personnel are notified of the emergency, the Duty Emergency Manager will proceed to the scene and be briefed by the Facility Command Leader, building/area personnel, and/or other emergency units/teams. The Emergency Manager will then assume the position of IC. If necessary, the IC may recommend that the EOC be activated and that the necessary members of the emergency management team be determined. The IC will form an ICS and contact the Emergency Operations Support Center. The EOSC will notify the appropriate emergency response groups. The IC may determine from the list of response groups described in Table D-1 which groups to contact in an emergency. Each response group maintains an on-call person and/or a call-down procedure to respond to emergencies.

3. EM personnel shall be notified of any potential hazardous or mixed waste emergency. The IC will use whatever means are available (including the assistance of other response groups, computer data searches, and sampling) to determine if a hazardous or mixed waste emergency exists.

4. The Facility Emergency Manager or his or her designee shall make best efforts to timely communicate the nature or the emergency and the hazards that may be present to any outside response agency whose assistance may be provided.

D.3.3 Emergency Manager Actions

1. Upon notification of an emergency incident, the Duty Emergency Manager may:

    1. Make an initial assessment of the incident and, in conjunction with the IC, obtain resources to determine the source, quantities, and types of hazardous and/or mixed waste involved and the areal extent of any released materials.
    2. Request resources needed and have EOC staff begin notifications.
    3. Proceed directly to the scene.
    4. Assess the nature of the incident (*e.g.*, through communication with the IC).
    5. Assume incident command after a direct briefing with the Facility Command Leader.
    6. Based on the guidelines in Attachment Section D.3.1 of this Plan, determine if implementation of this Plan is warranted.
    7. Activate the EOC, if necessary.

2. Upon deciding to implement this Plan, the IC will, when appropriate:

    1. Assess the hazards to human health and the environment, including both direct and indirect effects, such as generation of toxic, irritating, or asphyxiating gases and/or hazards of runoff of water or chemicals used for fire suppression. An individual designated by the IC will use the guidelines in Section D.3.1 to assess the hazards to human health and the environment. If any of the criteria under Section D.3.1 are met and if the responsible Group Leader (or his/her designee) has not already accomplished evacuation of the area, the IC will initiate shelter in place or evacuation of the immediate area.

2. Direct the EOC staff to initiate protective actions and immediately notify appropriate response groups and personnel as per the EM Guidelines. The Los Alamos County Emergency Coordinator may activate one or more of the following community alert mechanisms: reverse 911, the AM 1490 KRSN radio, or the cable television capture system, site wide area network radios, and public radio and television channels.
3. In the case of fire or release of any type, make reasonable efforts to confirm that all response personnel at the scene are aware of actual or imminent special hazards associated with hazardous or mixed waste.
4. In emergency situations, contact the appropriate ENV representative to notify the Department's Hazardous Waste Bureau and the National Response Center at (800) 424-8802, reporting:
   - The name and telephone number of the ENV representative
   - The name and address of the facility
   - The time and type of incident
   - The name and quantity of material involved, to the extent known
   - The extent of injuries, if any
   - The possible hazards to human health or the environment outside the facility.
5. When an emergency occurs at hazardous or mixed waste treatment units, ensure that appropriate Facility personnel monitor for leaks, pressure buildup, gas generation, or equipment ruptures.

3. Once control of the emergency is established, the IC will take all reasonable measures to minimize the occurrence, recurrence, or spread of fires, explosions, or releases. In addition, the IC will delegate cleanup and decontamination responsibilities to the Recovery Manager. These responsibilities may include:

1. Arranging for site cleanup.
2. Assisting with arrangements for proper handling of recovered waste, contaminated soil, or contaminated surface/groundwater.
3. Assisting with arrangements for decontamination of equipment, as needed.
4. Arranging for replacement and/or repair of equipment, as needed.
5. Requesting that testing is conducted to verify successful cleanup.

4. The Permittees shall report implementation of this Plan in accordance with Permit Sections 1.9.12, 1.9.13, and 2.11.6.3.

D.4 SPILLS

1. Sudden releases may include spills of hazardous or mixed waste that pose a significant threat to human health or the environment. Spill incidents resulting in a sudden release of hazardous or mixed waste that present a potential threat to human health or the environment, as listed in Attachment Section D.3.1, require implementation of this Plan.

2. Hazardous and mixed wastes are stored on site at the Facility in a variety of containers. The general steps in handling hazardous and/or mixed waste spills are as follows:

1. Isolate the immediate area and deny entry to all unauthorized personnel;
2. Contain the spill by spreading sorbents or forming temporary dikes to prevent further migration (performed by properly trained personnel, if safe);
3. Monitor the spill area and sample the spilled waste and contaminated media.
4. Package the waste and contaminated media in sound containers;
5. Decontaminate the area and all involved equipment and personnel (followed by testing to assure adequate cleanup); and
6. Remove the waste and contaminated media (performed by appropriate waste management personnel).

3. The IC will determine the steps to be taken for spill mitigation. If initial mitigation of the spill is necessary and can be accomplished safely (by appropriately trained personnel) before the Emergency Manager arrives, a qualified member of the affected area's operating group will serve as the Facility Command Leader.

4. The Permittees shall ensure that hazardous and/or mixed waste spills are stabilized and cleaned up. During spill control and cleanup, all personnel shall wear appropriate personal protective equipment (PPE). Monitoring will be conducted to ensure that chemical and, as appropriate, radiological exposure is minimized. The collected material may be treated as hazardous or mixed waste, depending on the components present. Runoff from spills of listed hazardous or mixed waste that have migrated outside hazardous waste management areas must be contained and managed as hazardous or mixed waste, as appropriate. If the spill was from a characteristic hazardous or mixed waste and if it is determined by analysis that the runoff does not exhibit the characteristic (*i.e.*, ignitability, corrosivity, reactivity, and/or toxicity), the runoff need not be managed as characteristic waste. Temporary dikes may be constructed to contain runoff.

D.4.1 Spill Control Procedures

When a flammable organic solvent spill, a highly acidic spill, or a highly caustic spill has been stabilized with the contents of an organic solvent spill kit, an acid spill kit, or a caustic spill kit, respectively, the resulting material may be sorbed using a nonbiodegradable sorbent. Nonbiodegradable sorbent can be used to control any spill if it is known to be compatible with the spilled material. Appropriate containers or packaging shall be used to collect all spilled material and contaminated sorbent. Attachment Tables TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3, TA-55 Vault, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3, and TA-55 Building 185, D-4 list emergency equipment available for spill control at specific units. The ultimate disposition of any contaminated sorbent or waste material shall be determined by appropriate waste management personnel, and in accordance with hazardous waste management regulatory requirements.

D.4.1.1 Tank System Spill Control and Reporting

1. The Permittees shall remove a tank system from service immediately using approved shutdown procedures if a leak or spill occurs from the tank system or its secondary containment system or if the system is determined to be unfit for use. Further addition of waste to the tank system or containment system will cease and the system shall be visually inspected to determine the cause of the leak or spill. If a leak occurs from a tank system, as much of the waste as is necessary to prevent further release of waste will be removed within 24 hours after detection or as early as practicable, and the system will be inspected and repaired. All released waste will be removed within 24 hours or as soon as possible if a leak occurs to a tank's containment system.

2. If a spill from a tank is not immediately contained and cleaned up and exceeds a quantity of one pound, the release will be reported to the Department within 24 hours of its detection in accordance with the requirements of 40 CFR § 264.196(d)(1). In addition, the Permittees shall report in accordance with Permit Section 1.9.12 and 2.11.6.3. That report shall describe the likely migration route of the release; soil characteristics at the site; monitoring and sampling data relevant to the release; proximity to down gradient drinking water, surface water, and populated areas; and response actions taken or planned.

D.4.1.2 Tank System/Secondary Containment Repair and Closure

If the integrity of a tank system, including its secondary containment, has not been damaged by a spill, the system may be returned to service. Service may not resume until after all released waste is removed and repairs, if necessary, are made. Any tank system that cannot satisfy the criteria described above shall undergo closure in accordance with the requirements of 40 CFR § 264.197.

D.4.1.3 Certification of Major Repairs

If a tank system undergoes extensive repairs (*e.g.*, installation of an internal liner, tank system piping retrofit), the tank system will not be returned to service until a certification by an independent, qualified registered professional engineer is obtained, verifying that the repaired system is capable of handling wastes without release for the intended life of the system. This certification will be submitted to the Department within seven days after returning the tank system to use.

D.4.2 Decontamination Verification

1. Decontamination will be accomplished at the spill site by removal of all contaminated material. After the spilled material has been sorbed, the material will be containerized. If the spill occurs on a concrete or asphaltic-concrete area, water or an appropriate solvent will be used to clean the area. Liquids (*i.e.*, spilled material and cleaning water or solvents used to clean a spill) may be sorbed with a compatible, nonbiodegradable sorbent and containerized. If a spill is from an identifiable source, the spilled material may be characterized as a newly-generated waste using acceptable knowledge or may be analyzed, as applicable, for the hazardous waste constituents known to be components of the waste managed at that unit. Analytical method(s)

given in Table D-3 will be utilized, as appropriate. If the spill is from other than an identifiable source, the spilled material will be analyzed for the appropriate parameters listed in Table D-3. All personnel conducting decontamination verification will wear appropriate PPE. Radiation protection personnel will conduct health physics monitoring whenever mixed waste is involved to ensure that radiation exposure is maintained as low as reasonably achievable. Any hazardous or mixed waste collected from decontamination activities will be handled appropriately.

2. In order to establish baseline data, a sample of decontamination water or solvent (and nonbiodegradable sorbent material, as applicable) will be taken prior to the start of the decontamination effort. A sample of the final washwater (or the used sorbent) will then be taken. The baseline samples and final washwater/used sorbent samples will be analyzed for the applicable parameters given in Attachment Table D-3. If the decontamination samples contain hazardous constituents that are not present in the baseline samples the decontamination procedure shall be repeated. An alternative demonstration of decontamination may be proposed and justified to the Department, who will evaluate the proposed alternative in accordance with the standards and guidance currently in effect. If the proposed alternative is accepted, decontamination levels will meet the levels approved by the Department. Each sample will be collected with an appropriate sampling device (*e.g.*, a thief or trier) as specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986), and approved updates, as applicable.

3. If a hazardous/mixed waste spill occurs on soil, any free liquid present will be collected and containerized. Liquids may be sorbed with a compatible nonbiodegradable sorbent prior to containerization. For such a spill, contaminated soil will either be excavated and containerized or remediated in situ. Industrial health and safety personnel will conduct industrial hygiene monitoring and, if mixed waste is involved, radiation protection personnel will conduct health physics monitoring, if deemed necessary, to minimize exposure during soil removal or remediation operations. Excavation or remediation will continue until soil contaminant concentrations are at a level approved by the Department.

4. If a hazardous/mixed waste spill occurs in an area with flooring, the floor will either be removed in lieu of decontamination, or the floor will be decontaminated. If the decision is made to decontaminate the floor, swipe samples or other types of sampling appropriate for the contaminant will be collected at random and characterized for decontamination verification. If, after several decontamination efforts, it is subsequently determined that the affected floor area cannot be decontaminated, the floor material will be removed. In all cases, wastes generated during the decontamination and/or removal process will be managed appropriately.

D.5 EXPLOSION

1. Explosions and resultant releases may result in a significant threat to human health or the environment. The potential exists for hazardous or mixed waste to be released during an explosion. Implementation of this Plan is required whenever there is an explosion at a permitted unit.

2. In the event of an explosion at the Facility, all personnel will immediately evacuate the area. Any injured personnel will be decontaminated at the site, if required and if time allows. An LAFD ambulance will transport these personnel to LAMC for treatment. If an injury is severe and requires immediate medical evacuation, the injured person will be wrapped to contain contamination, if necessary. In the case of an actual or potential explosion, on-site personnel will contact EM personnel immediately so that the Emergency Manager can ensure that all necessary emergency response personnel are alerted. The LAFD is notified automatically upon fire alarm activation. The Emergency Manager assumes incident command and will remain near but at a safe distance from the site in order to inform personnel responding to the explosion of the known hazards.

3. If a fire results from an explosion, the LAFD Senior Officer will, upon arrival at the scene, evaluate all available information and determine the appropriate firefighting methods and tactics. The LAFD Senior Officer will direct firefighting operations as the acting IC until EM formally assumes command.

D.6 FIRE

1. Fires and resultant releases of hazardous or mixed waste may result in a significant threat to human health or the environment. Implementation of this Plan is required whenever there is a fire at a permitted unit.

2. Fire alarms will be sounded automatically or manually to alert personnel that a fire hazard exists and to evacuate the area immediately if in the vicinity. Information related to the various fire alarms at the specific units is included in Attachment Tables TA-3, D-1; TA-50, D-1; TA-54, Area L, D-1; TA-54, Area G, D-2; TA-54 West, D-3, TA-55 Vault, D-1; TA-55 Building 4 Basement, D-2; TA-55 Container Storage Pad, D-3, and TA-55 Building 185, D-4.

3. Depending on the size of the fire and the fuel source, portable fire extinguishers may be used. However, Facility policy does not encourage the use of portable fire extinguishers by employees unless they are properly trained. Instead, Facility policy encourages immediate evacuation of the area and notification of the Los Alamos County Emergency Coordinator by dialing 911. For any fire, including a fire that involves hazardous or mixed waste, the responsible Group Leader and EM personnel must be contacted immediately. The Emergency Manager will alert the LAFD and all other necessary emergency response personnel. If the fire spreads or increases in intensity, all personnel must follow protective actions as designated by the Emergency Manager. The Emergency Manager assumes incident command and will remain near the scene to advise personnel responding to the fire of the known hazards.

4. Upon arrival at the scene, the LAFD Senior Officer will evaluate all available information and determine the appropriate firefighting methods and tactics. The LAFD Senior Officer will direct firefighting operations as the acting IC until EM formally assumes command.

D.7 UNPLANNED NONSUDDEN RELEASES

Nonsudden releases include those incidents that, if uncontrolled, impact the environment over a long period of time. Such incidents include minor leaks from containers and loss of secondary containment integrity.

D.7.1 Responsibility

Appropriate Facility personnel are responsible for correction of a nonsudden release from a hazardous or mixed waste unit if the correction can be performed safely with normal maintenance and management procedures. Personnel from EM may provide assistance in mitigating releases. Any correction methods for nonsudden releases that have resulted in an impact to the environment will be coordinated with the Department.

D.7.2 Nonsudden Releases

1. In general, the response to a nonsudden release will be to contain the release, to correct the cause of the release, and to clean up any release to a level that protects human health and the environment.

2. Appropriate Facility personnel shall conduct regularly scheduled inspections to detect failure of containment at the unit(s) addressed in this Permit. Secondary containment systems shall be inspected regularly to ensure that the integrity of the containment systems has not deteriorated. If an inspection reveals that containers are leaking or that secondary containment has deteriorated, Facility personnel shall ensure that maintenance or replacement of containment is performed, as appropriate. Inspections will be conducted in accordance with the facility's inspection plan.

D.7.3 Nonsudden Release Surveillance

1. In addition to routine inspection and site-specific sampling and testing, the Permittees shall maintain an area-wide environmental monitoring network. Monitoring and sampling locations for various types of measurements are organized into three main groups. Regional monitoring stations located within the counties surrounding Los Alamos County are placed up to 80 kilometers (50 miles) from the Facility. These stations serve to determine background conditions. Perimeter stations are generally located within four kilometers (2.5 miles) of the Facility boundary and document conditions in residential areas surrounding the Facility. On-site stations, most of which are accessible only to employees during normal working hours, are within the Facility boundary.

2. Different types of surveillance sampling conducted at these stations include measuring radiation and collecting samples of air particulates, surface waters, groundwater, soil, sediment, and foodstuffs for subsequent analysis. Additional samples provide information about particular events, such as major runoff events and nonroutine releases. Data from these efforts are used for comparison with standards, for determining background levels, and for radiation dose calculations.

D.8 EXPOSURE TO HAZARDOUS OR MIXED WASTE

1. If a person is exposed to hazardous or mixed waste, the affected person, a co-worker, or line management will notify EM personnel. Appropriate first aid should be administered immediately. An EM representative will make appropriate notifications as soon as possible so that exposure levels and decontamination requirements can be established. The affected person will then be transported to the occupational medical facility or to LAMC for evaluation. If possible, the material involved in the exposure will be ascertained, and the information will be given to the medical staff.

2. Other potential exposures will necessitate evacuation of the area, if appropriate, or under any of the following conditions:

1. Irritation of the eyes, breathing passages, or skin
2. Difficulty in breathing
3. Nausea, lightheadedness, vertigo, or blurred vision.

3. The affected person will be transferred to the occupational medical facility or to LAMC if there is a serious injury. An industrial health and safety, radiation protection, or HAZMAT representative will attempt to ascertain what, if any, exposure occurred and what corrective measure is appropriate.

D.9 EVACUATION

A permitted unit shall be evacuated upon the voice command to evacuate the area or upon the sounding of the evacuation or fire alarm. The IC may call for sheltering in place when evacuation is impractical due to significant airborne hazards. Shelter in place may be possible in a designated area or in a building where all exterior windows and doors may be closed and outdoor air ventilation equipment turned off. Once the airborne hazard has decreased, personnel would then be evacuated.

D.9.1 Emergency Process Shutdown Prior To Evacuation

Personnel are instructed to shut down equipment prior to evacuating a building/area unless an immediate building/area evacuation is announced or signaled. To ensure efficient shutdown, training and exercises addressing the shutdown process are performed. In the case of an immediate evacuation, a selected team may shut down designated equipment in an evacuated area upon approval of command. The team will be equipped with proper equipment and PPE. If they are on location, radiation protection, industrial health and safety, and/or HAZMAT personnel will provide advice and assistance.

D.9.2 Evacuation Plan

1. Emergency situations may warrant the shutdown and evacuation of areas or buildings in order to protect personnel and property, to anticipate the emergency condition, or to enhance the appropriate response. Attachment Table D-4 lists the criteria for evacuation, persons responsible for initiating evacuations, and reentry conditions.

2. To initiate the evacuation of a building/area, the evacuation or fire alarm is sounded and/or the public address (PA) system may be used. Evacuation alarms cannot be silenced and reset by site personnel. Only the Fire Alarm Maintenance Section and the LAFD Battalion Chief can silence and reset alarms. To evacuate a portion of a building or area, use of the PA system may be more appropriate. The PA system will notify the occupants of the area to be evacuated and will advise personnel throughout the building of the existence of a problem in a specific area. Once evacuation has been initiated and if conditions allow, personnel will turn off all equipment that could contribute to the hazard if left unattended. All personnel will then proceed from the affected area to the assembly/muster area.

3. In the event of evacuation of a building, an outbuilding, or an outlying work area, the responsible Group Leader (or his/her designee) will determine a control point at the closest safe location (*e.g.*, considering wind direction). The designated area will be outside the affected area and will serve as an assembly/muster area where the Group Leader (or designee) can oversee evacuation operations and work to prevent further spread of the hazard.

4. As personnel exit an affected building/area, a primary sweep of the building/area may be performed to ensure that all personnel have evacuated. If the building/area is evacuated, a Group Leader designee will take attendance at the assembly/muster area and report personnel accountability to the IC. The evacuation procedure is as follows:

1. The person discovering the accident or emergency will call 911 if the event is life-threatening or LAFD is required, or 667-6211 for all other evacuations. The person will then notify line management.
2. Site-specific BEPs and/or emergency action procedures will be followed concerning evacuation, sweep, personnel accountability, and equipment shutdown procedures.

5. A responsible on-site person may direct the initial evacuation and the fire alarm system may be activated. EM personnel will be notified and dispatched immediately. A responsible on-site person may implement and direct the evacuation process until the Duty Emergency Manager or LAFD arrives at the scene to assume that responsibility.

D.10 SALVAGE AND CLEANUP

1. Appropriate representatives from the ENV groups will survey the affected area before salvage and cleanup begin. They will conduct visual inspections and sampling, as appropriate, of the affected area to determine whether cleanup is complete. If gases or fumes, electrical or radiological problems, or other conditions present a hazardous situation, personnel or selected teams equipped with proper PPE will reenter the area to perform designated decontamination tasks, repairs, and salvage to allow the return to normal operations. After an emergency, the IC will turn the operation over to a designated Recovery Manager, who will:

1. Provide for proper handling of recovered waste, contaminated soil or surface water, or any other material that results from a spill, fire, or explosion. Contaminated material will be managed appropriately and temporarily stored at one of the hazardous or mixed waste storage areas at the Facility. Waste management personnel will be responsible for

determining the final disposition of the waste. This determination will be made in compliance with hazardous waste management regulations.

2. Arrange to monitor for damage or improper operation of the unit and associated equipment as a result of the emergency or of plant shutdown in response to the emergency.
3. Arrange for site cleanup procedures to be completed and ensure that no waste that may be incompatible with the released material is treated or stored in the same area.
4. Ensure that emergency equipment is cleaned, decontaminated, and fit for its intended use before operations are resumed. Equipment will be inspected visually and then sampled, if necessary, to determine the type and degree of contamination and to determine appropriate cleanup measures.

2. Prior to resuming operations, the Permittees shall verify that the previously mentioned tasks have been performed. The Permittees shall notify appropriate state and local authorities that cleanup procedures are completed and that emergency equipment is clean and fit for its intended use.

3. The IC assumes the coordination of post-emergency actions (particularly during the time period immediately following the emergency) until a Recovery Manager is appointed. The Recovery Manager then assumes this coordination role. The Recovery Manager is the functional equivalent of the Emergency Coordinator for post-emergency actions. The post-emergency actions include cleanup operations, vital equipment repair, or interim hazard-removal operations (such as arranging for demolition of unstable walls). The services of affected operational organizations, ENV groups, maintenance personnel, and other on-site resources will also be used to estimate cleanup costs and operational impact.

D.11 EMERGENCY RESPONSE RECORDS AND REPORTS

The Permittees shall ensure that any emergency that requires implementation of this Plan will be documented and reported in accordance with Permit Section 1.9.12, 1.9.13, and 2.11.6.3. This information will be maintained in the facility operating record.

D.12 CONTINGENCY PLAN AMENDMENT

The Permittees shall review this Plan at a minimum annually. The Plan will be amended immediately if determined to be inadequate to handle releases (spills, explosions, and/or fires) and whenever:

1. The facility permit is revised;
2. There is change in the design or operation of the facility (*e.g.*, quantities of waste handled and handling techniques) that increases the likelihood of an emergency and requires changes in emergency response;
3. The Primary Emergency Manager changes; and
4. The list of emergency equipment changes significantly.

D.13 REFERENCES

EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *EPA-SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

LANL, 2002, "Los Alamos National Laboratory Emergency Management Plan," LIR 403-00-01.0, Los Alamos National Laboratory, Emergency Management and Response Office, Los Alamos, New Mexico.

LANL, 2002a, “Los Alamos National Laboratory General Part B Permit Renewal Application”, Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico.

Table D-1

Response Groups and Agencies Available to the Emergency Management Group for Guidance and/or Emergency Assistance

Facility[a]-Controlled Response Group	Telephone	Responsibilities
Health Physics Personnel	667-7797	Provides routine guidance on radiological decontamination. Provides routine site evaluation and monitoring to determine the nature and extent of contamination (radiological).
Occupational Medicine	667-0660	Provides emergency medical treatment.
Industrial Hygiene and Safety Personnel	606-0295 667-5231	Provides guidance on industrial hygiene equipment and operational safety. Provides routine site evaluation/support field testing to determine the nature and extent of contamination (chemical).
Contractor Assurance Office	6658206	Reports occurrences and tracks follow-up actions.
Hazardous Materials Response (HAZMAT)	665-5237	Provides emergency site evaluation/field monitoring (chemical and radiological). Specifies protective clothing and equipment. Dispatches Hazardous Materials Response Team. Provides support for chemical, radiological, hazardous, and mixed waste incidents and decontamination of responders and response equipment.
Meteorology & Air Quality Personnel	667-6952	Provides information on meteorological conditions.
Water Quality and Hydrology Personnel	667-0666 or 665-0453	Provides information on hydrologic conditions.
Hazardous Waste Compliance Personnel	667-0666 or 665-0453	Provides guidance on regulatory requirements. Provide guidance on proper treatment, storage, and off-site shipment of hazardous and mixed waste. Conducts field surveys to determine spread of contamination

Facility[a]-Controlled Response Group	Telephone	Responsibilities
		and adequacy of cleanup.
Ecology Personnel	667-6952	Provide information on biotic conditions.
Security Personnel	667-4531	Provide traffic control and security.
Maintenance and Site Services	667-5702	Dispatches maintenance personnel and equipment. Assists in waste cleanup under direction of the Recovery Manager
TA-55 Operations Division	667-3030	Provides initial emergency site evaluation at Technical Area (TA) 55 and conducts activities related to the prevention, notification, and control of emergencies at TA-55. In the event of an emergency at TA-55, monitors for leaks, pressure buildup, gas generation, or equipment ruptures, if necessary. Maintains and operates TA-55 Emergency Response Team. Writes TA-55 emergency plans and procedures.
Dynamic and Energetic Materials Division	667-5653	Provides information and/or assistance during emergencies at TA-14, TA-15, TA-36, and TA-39.
Los Alamos County Fire Department	911 662-8301	Dispatches firefighting personnel and equipment and provides Emergency Medical Services.
Los Alamos County Police Department	662-8222	Provides traffic control on public access roads.
Los Alamos Medical Center[c]	662-4201	Provides medical services. Provides and maintains Emergency Room.
Facility-controlled Response Group; Maintenance services	667-5702	Dispatches maintenance personnel and assists in waste cleanup under the direction of the Recovery Manager

[a] Los Alamos National Laboratory.
[c] Medical services related to hazardous and mixed waste injuries are provided under the direction of HSR-2.

Table D-2

Los Alamos National Laboratory-Wide Emergency Equipment

Hazardous Materials (HAZMAT) Vehicles and Associated Emergency Equipment

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HAZMAT vehicles and trailers are located at Technical Area (TA) 64, Building 39 (TA-64-39). They are available to the Emergency Response Group (ER) for emergency response to all of the TAs at the Facility. ER is responsible for maintaining the supplies of appropriate emergency equipment in each vehicle and trailer.

The HAZMAT vehicles and trailers are equipped with safety and emergency equipment, personal protective clothing, and other supplies, which may include, but are not limited to, some or all of the following:

Assorted personal protective equipment, T-shirts, and gloves
Safety goggles, safety glasses, and face shields
Boots and booties
Totally encapsulating suits and boots
Level A and B suits
Flash suits
Self-contained breathing apparatus (SCBA) and SCBA bottles
Respirators and cartridges
Hazardous chemical reference books and other reference materials
Shovels
Siphon pumps
Assorted spill kits and sorbents
Neutralizing solutions: acids, bases, and caustics
Two-way radios, cellular phones, facsimile, and other communication equipment
Bottles of leak detector and leak repair kits
Emergency repair packs
HAZMAT bags
Gas detectors and chemical monitoring equipment
Radiological monitoring equipment
Sponges and cleaners
Warning signs and barricade tape
Traffic control barriers
Flashlights
Cameras and film
Knives
Portable power supplies
Warning and signal horns
Harnesses and belts

Decontamination equipment
Sampling equipment
Lifting equipment and vetter bags
Assorted tools, tape, and other supplies
Non-sparking tools
Biological detection equipment
Chemical vacuums
Sandia foam
Plugging and diking equipment
Sample van equipped with a glovebox and analysis equipment
Environmental continuous air monitoring equipment
Robot
National Atmospheric Release Advisory Center-Internet Client (NARAC Client)
Hotspot plume modeling program
Mass decontamination trailer with tent and supplies
Portable decontamination trailer
Portable structures
Tents
Trucks
Trailers
International Shipping Units
Portable hot water heater
Forklift
Automated external defibrillators

Supplemental Emergency Equipment and Personnel Available From the Los Alamos Fire Department (LAFD)

Supplemental emergency equipment available from the LAFD may include, but is not limited to, some or all of the following:

Fire engines
Mini-tankers with compressed air foam capability
Modular ambulances
Rescue vehicles
Crash-Fire-Rescue (CFR) unit
Water tankers with compressed air foam capability
Incident Command vehicles
SCBA units
SCBA air tanks
Remote air system for confined space rescue
Ladder truck with pump
Personnel with Hazardous Material First Response Operational Level training
Personnel with Basic Emergency Medical Technician training

Personnel with Advanced Life Support training

Supplemental Emergency Equipment and Personnel from Maintenance and Site Services (MSS)

Supplemental emergency equipment may include, but is not limited to, some or all of the following:

TRANSPORTATION EQUIPMENT

Pickups, 1/2 through 3/4 ton
Trucks, 1 through 3 ton
Vans, panels, and carryalls
Buses

SPECIAL EQUIPMENT

Graders
Loaders
Snowplows and snow blowers
Bulldozers
Scrapers
Semitrailers
Chain saws
Street flushers
Mobile transceivers
Generators
Handsets (2-way)
Pageboys (1-way)
Welders
Mobile site logistics support equipment/associated heavy equipment
Fully equipped spill response unit
Utilities equipment and emergency utility support
Fuel trucks
Light banks
Dump trucks
Backhoes
Potable water trucks
Cranes
Forklifts

TRAINED PERSONNEL

Heavy equipment operators
Dispatchers
Mechanics

Power saw operators
Radio and telephone operators
Truck drivers
Rodent/Pest Control personnel
HAZMAT response/cleanup personnel
Welders
Electricians

Emergency Equipment and Personnel at the Occupational Medicine Clinic Occupational Medicine Group (OM)

At TA-3 (SM-1411) Central Clinic

Emergency equipment and supplies available from OM may include, but are not limited to, some or all of the following:

PERSONNEL

Physicians
Physician's Assistants
Nurses
X-ray Technician
Clinical Laboratory Technicians
Clinical Testing Technicians
Clinical Psychologist
Counselors

SPECIAL EQUIPMENT-PORTABLE

Multichannel emergency receiver-base station
Two-way radio on the State Med Net, the Facility Emergency Management channel, and the Facility Health-Safety Net
Cardiac monitors and defibrillators
Crash cart emergency equipment with E-tank oxygen (O_2)
Portable physicians' bag with medications
Portable suction unit
Portable stretchers (ambulance, gurney, folding)
Wheelchairs
O_2 tanks
Manual resuscitators
Intravenous (IV) stands
IV solutions
Otoscopes/ophthalmoscopes
Portable sphygmomanometers
Stethoscopes
Anticontamination apparel

Eye irrigation solution
First-aid kits
Extrication and cervical collars, crutches, canes
Suture sets
Protective apparel
Morgan lens irrigation sets
Decontamination equipment (portable)

SUPPLIES-GENERAL

Bedding/pillows
Rescue blankets
Burn blankets
Thermal/icing pouches
Multitrauma dressings, surgical and first aid supplies
Disposable ice bags

SPECIAL FACILITIES - NONPORTABLE

Fully equipped decontamination room at the Occupational Medicine Clinic
Completely equipped emergency room with ambulance entrance
Emergency lighting system
Complete X-ray suite
Protective clothing and wound counters
12-lead electrocardiograph
Fully equipped crash cart with Life Pak defibrillator/external pacer, intubation equipment, emergency medications
Fully equipped decontamination room at Los Alamos Medical Center (LAMC) adjacent to the LAMC emergency room

TRANSPORTATION

Full ambulance service is available within minutes to the central facility.

COMMUNICATION

Base station on State Medical Net and Los Alamos Fire Department trunked radio system.

Table D-3

Waste Analysis Parameters and Test Methods[a]

Parameter	Test Method	Reference[b]
Ignitability	Pensky-Martens closed-cup method	(L, S) SW1010, SW1020A
	Setaflash closed-cup method	(S) SW1030
	Ignitability of solids	(L, S) ASTM D93-02a
Reactivity	Test method to determine hydrogen cyanide released from waste	(L, S) SW, Section 7.3
	Test method to determine hydrogen sulfide released from waste	
Corrosivity	Electrometric (pH of aqueous solution)	(L) SW9040B
Toxicity characteristic (TC)	Toxicity characteristic leaching procedure (TCLP) extraction	(S) SW1311
TC Metals:	Graphite furnace atomic absorption (AA) spectroscopy, gaseous hydride AA, or direct aspiration AA, manual cold-vapor technique	
Arsenic		(L, S) SW7060A, SW7061A
Barium		(L, S) SW7080A, SW7081
Cadmium		(L, S) SW7130, SW7131A
Chromium		(L, S) SW7190, SW7191
Lead		(L, S) SW7420, SW7421
Selenium		(L, S) SW7740, SW7741A
Silver		(L, S) SW7760A, SW7761
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Volatile organics	Gas chromatography (GC)/mass spectrometry (MS)	(L, S) SW8260B
	GC/MS capillary column technique	
Semivolatile organics	GC/MS	(L, S) SW8270C[c]
	GC/MS capillary column technique	(S) SW8275A
Organochlorine Pesticides	Thermal extraction/GC/MS	(L, S) SW8081A
Chlorinated Herbicides	GC	(L, S) SW8151A
Cyanide, free and total	Distillation and colorimetric ultraviolet	(L, S) SW9010B, SW9012A
Total chromium	Colorimetric method for hexavalent chromium	(L, S) SW7196A
Sulfide	Colorimetric titration	(L, S) SW9030B

Table D-3 (Continued)

Parameter	Test Method	Reference[b]
Total RCRA metals[c,d]	Acid digestion	(L) SW3010A, (S) SW3050B
	Inductively coupled plasma atomic emission spectroscopy	(L, S) SW6010B
Arsenic		(L, S) SW6010B
Barium		(L, S) SW6010B
Cadmium		(L, S) SW6010B
Chromium		(L, S) SW6010B
Lead		(L, S) SW6010B
Selenium		(L, S) SW6010B
Silver		(L, S) SW6010B
Mercury	Manual cold-vapor technique	(L) SW7470A, (S) SW7471A
Free liquids	Paint Filter Liquids Test	(L, S) SW9095A

[a] At Los Alamos National Laboratory, current analytical capabilities include limited analyses of mixed waste samples. These analyses include gross alpha, beta, and gamma screening.
[b] "A" (*e.g.*, A006) refers to U.S. Environmental Protection Agency, 1984, "Sampling and Analysis Methods for Hazardous Waste Combustion," *EPA-600/8-84-002*.
"ASTM" refers to American Society for Testing and Materials standards.
"SW" refers to U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
(L) refers to liquid waste.
(S) refers to solid waste.
[c] See also atomic absorption methods. Total metals may be substituted for TCLP metals, if appropriate.
[d] RCRA = Resource Conservation and Recovery Act.

Table D-4

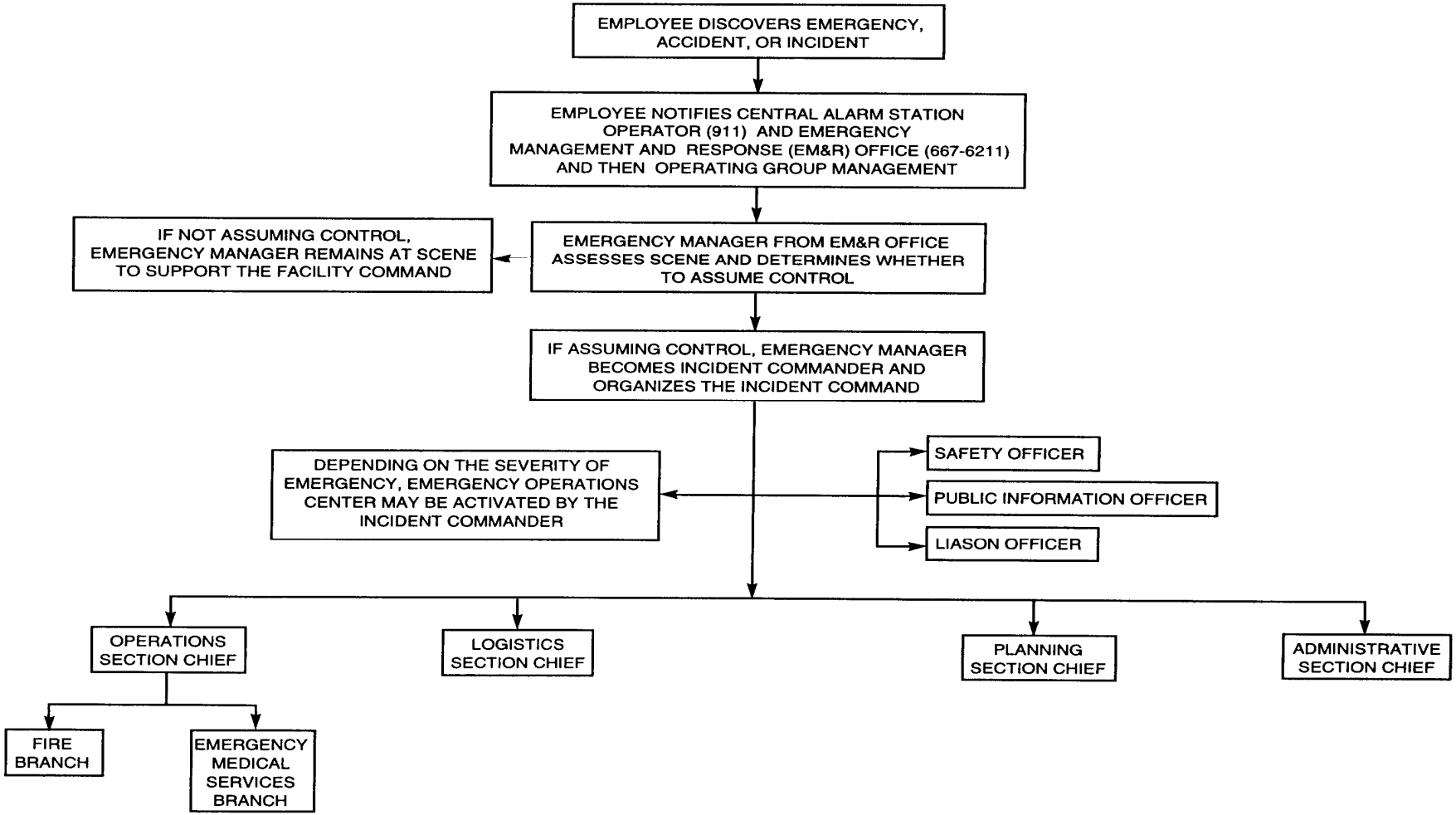
Evacuation Determination and Re-Entry Conditions

Reason for Evacuation	Evacuation Determination Made by	Reentry Conditions[a]
Fire	[1]Fire or evacuation alarm, Group Leader or alternate, Lead Engineer, Senior Staff Member present, Senior Technician, or Emergency Manager	Following survey by the person designated by the IC[b]
Explosion	Same as 1 above	Same as above
Loss of ventilation	[2]Group Leader or alternate, Senior Staff Member, Lead Engineer, or Senior Technician, or Emergency Manager	Same as above
Loss of electric power	Same as 2 above	Same as above
Extensive contamination	Same as 2 above or health physics representative	Same as above
Airborne contamination	Same as 2 above or Radiation Monitor	Same as above
Escape or release of toxic or hazardous gas or fumes	Group Leader or alternate, Senior Staff Member, Lead Engineer, Senior Technician, or Emergency Manager	Same as above
Bomb or bomb threat	EM[c] or security personnel , R&D[d] Section Leader or alternate, Senior Staff Member, or Lead Engineer	Same as above

[a] All reentries are authorized by the EM Incident Commander.
[b] "IC" refers to the Incident Commander as defined in 29 CFR § 1910.120.
[c] "EM" refers to the Emergency Management Group.
[d] "R&D" refers to the Research and Development Section

Figure D-1

General Hazardous Waste Emergency Notification Structure



TA-3

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Specific information on emergency response resources and release prevention/mitigation at TA-3 is provided below.

The CMR Building at the Facility has a facility-specific Emergency Management Plan (EMP) to ensure that emergency planning and preparedness for the CMR Building are commensurate with the facility and the nature of work performed there and to provide sufficient subject matter experts at the facility, should an emergency occur.

The EMP establishes the CMR Facility Emergency Response Organization, which is comprised of a facility Emergency Response Team (ERT), Facility Incident Command (FIC), and the CMR Operations Center. The CMR ERT is a 15 - 20 member group of volunteer facility personnel trained to provide initial response to emergencies. The FIC is comprised of division and line managers and key personnel who respond to pre-designated locations for the purpose of initial command and control of events that occur at CMR Building emergencies. The CMR Operations Center is the emergency communications focal point and has the responsibility of development and maintenance of alarm response instructions, notification lists, and call-out lists. When mitigation of the emergency is beyond the capabilities of CMR or when injuries occur or could potentially occur due to the emergency, EM is required to respond.

"The CMR Facility Emergency Management Plan Training for CMR Workers" (LANL, 1999), includes information on emergency equipment (*see* Table D-1 of this Attachment Section); evacuation routes and primary and secondary evacuation assembly areas; and evacuation procedures for the FIC, persons wearing anti-C clothing, and persons in non-anti-C clothing. The CMR EMP also includes emergency categorization, lists of potential facility emergencies, their associated alarms, and the appropriate response to the emergency and/or the alarms. Evacuation routes, evacuation area locations, and emergency equipment are subject to change.

REFERENCES

LANL, 1999, "The CMR Facility Emergency Management Plan Training for CMR Workers," Los Alamos National Laboratory, Los Alamos, New Mexico

LANL, 1998, "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

Table D-1

TA-3

Emergency Equipment

FIRE CONTROL EQUIPMENT

Dry chemical fire extinguishers are available in Rooms 9010, 9020, and 9030.

> Description of General Capabilities:
> Each fire extinguisher has a 10-pound minimum capacity and may be used by any qualified employee in the event of a small fire.

Nine fire hydrants are located around the outside perimeter of Technical Area (TA) 3, Building 29 (TA-3-29). The nearest fire hydrants to Rooms 9010, 9020, and 9030 are located on the south side of Wing 9 and west of Wing 5.

> Description of General Capabilities:
> The fire hydrants supply water at an adequate volume and pressure to satisfy the requirements of 40 CFR § 264.32(d).

Fire alarm pull boxes are located in Rooms 9010 and 9020.

> Description of General Capabilities:
> Manually-operated fire alarms may be activated by any employee in the event of fire to notify the Los Alamos Fire Department (LAFD) and security personnel.

Sprinkler systems are located in Rooms 9010, 9020, and 9030.

Automatic thermal alarm systems are located in Rooms 9010, 9020, and 9030.

> Description of General Capabilities:
> The sprinkler systems and thermal alarm systems are heat activated. Security personnel and the LACFD are alerted when a system has been activated.

SPILL CONTROL EQUIPMENT

Spill control kits are located in Rooms 9010, 9020, and 9030. Spill kits include (but are not limited to) sorbent pillows, and/or absorbent.

> Description of General Capabilities:
> Sorbent is used in the event of a small spill.

COMMUNICATION EQUIPMENT

Telephones are located in the north enclosure of Room 9010, in Room 9020, and in Room 9030.

Paging phones and evacuation alarms are located in Rooms 9010, 9020, and 9030.

Description of General Capabilities:
Telephones are used for internal and external communication and have paging capabilities. The evacuation alarm is a pulsating sound that can be heard over the public address system. The fire alarm is a double slow-whoop sound.

DECONTAMINATION EQUIPMENT

Emergency shower and eyewash stations are located in the two enclosures in Rooms 9010, 9020, and in Room 9030.

Material safety data sheets (MSDS) are available hard copy or via online database.

Description of General Capabilities:
Emergency shower and eyewash stations are used by personnel who receive a chemical splash to the skin or eyes. Specific MSDSs for the chemicals should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at TA-3-29 are required to use appropriate personal protective equipment (PPE) to protect themselves from hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation or during sampling activities.

Self-contained breathing apparatus are available in hallway outside of Room A130 (Administrative Wing).

Room 9102 is a change room with protective clothing available.

Full-mask negative pressure respirators are available as needed; radioactive particulate filters are available.

OTHER

See Table D-2 of this Contingency Plan for equipment available in the Hazardous Materials Response Group vehicles and trailers.

TA-50

ATTACHMENT D

CONTINGENCY PLAN

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Specific information on emergency response resources and release prevention/mitigation at TA-50 is provided below.

Emergency equipment currently available for use at TA-50 CSUs are included in Table D-1 below. A list of emergency equipment (including spill equipment) available from the Emergency Management Group is presented in Table D-1 in this Attachment.

Hazardous and mixed waste spills are managed by type and severity of the incident. If a hazardous/mixed waste spill occurs, the Incident Command evaluates the type and severity of the spill and determines if assistance from the Facility's Emergency Management Group personnel is required. If not, the spill is managed internally by TA-50 personnel.

REFERENCES

LANL, 1998, "Los Alamos National Laboratory General Part B Permit Application," Revision 1.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2002, "Los Alamos National Laboratory Technical Area 50 Part B Permit Renewal Application", Revision 3.0, August 2002, LA-UR-02-4739, Los Alamos National Laboratory, Los Alamos, New Mexico

Table D-1

TA-50

EMERGENCY EQUIPMENT

FIRE CONTROL EQUIPMENT

- **FIRE EXTINGUISHERS**

  Description of General Capabilities
  The fire extinguishers are portable, manually operated units and may be used by any employee in case of fire. They consist of Class ABC or BC rated.

  Locations
  2 fire extinguishers are located in TA-50-69, Indoor Container Storage Unit (CSU) (Room—102)

  1 fire extinguisher is located at the TA-50-69, Outdoor CSU

- **FIRE ALARM PULL BOXES CONNECTED TO THE CENTRAL ALARM STATION**

  Description of General Capabilities
  Fire alarms may be activated by any employee in the event of fire to notify the Central Alarm Station. Upon activation, fire alarm horns and strobes provide audible and visual signals for personnel notification. The fire alarm is a pulsing sound. The evacuation alarm is a wailing sound that can be heard throughout TA-50-69, Indoor CSU and at the TA-50-69, Outdoor CSU.

  Locations
  Three fire alarm pull stations are located in the TA-50-69, Indoor CSU. Personnel working at the TA-50-69, Outdoor CSU may use the pull stations at TA-50-69 in the event of a fire.

- **AUTOMATIC FIRE SUPPRESSION SYSTEM**

  Description of General Capabilities
  A wet-pipe automatic sprinkler system that is hydraulically designed for ordinary hazard Group II coverage is in place throughout TA-50-69. This system is activated at 100°C (212°F).

  Locations
  Throughout TA-50-69, as described above.

- **FIRE HYDRANT**

  Description of General Capabilities
  Fire hydrants provide water for fire fighting. All fire hydrants are supplied by an 8-inch (in.) water line connected to the 12-in. water main on Pecos Drive.

  Location
  A fire hydrant is located approximately 55 ft west of TA-50-69.

SPILL CONTROL EQUIPMENT

- **SPILL CONTROL EQUIPMENT**

  Description of General Capabilities
  The spill control kits may contain items such as absorbents (*i.e.*, pillows and pigs) or weighted tarps. The Emergency Management and Response Group provides additional spill control and clean up equipment as needed.

  Spill Control Kit Location
  The spill kits are located in TA-50-69 and at the TA-50-69 Outdoor CSU

COMMUNICATION EQUIPMENT

Description of General Capabilities
Telephones with public address (PA) capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required. The fire alarm is a double slow whoop sound. The evacuation alarm is a high-pitched wailing sound. The PA system can be heard at the TA-50-69, Outdoor CSU. When working at the CSUs, personnel will have immediate access to emergency communication equipment either directly or through visual or voice contact with another employee.

Location of Communication Equipment
Telephones with PA capabilities are located in TA-50-69. Personnel working at the TA-50-69, Outdoor CSU have access to the phone outside Room 104, will carry cellular phones, or will have immediate access to communication equipment through visual or voice contact with another employee.

DECONTAMINATION EQUIPMENT

- **SAFETY SHOWERS**

  Description of General Capabilities
  Safety showers are available to personnel who receive a chemical splash to the skin.

  Location of Safety Showers
  A safety shower is located in TA-50-69, Room 102. One standard shower is located adjacent to the change room in TA-50-69.

- **EYEWASHES**

  Description of General Capabilities
  Eyewashes are available to personnel who receive a chemical splash to the eye(s). Specific MSDSs for the chemicals being managed are available hard copy or via online database to personnel working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

  Location of Eyewashes and Material Safety Data Sheets
  An eyewash is located in the TA-50-69, Indoor CSU (Room 102). A portable eyewash station will be available during active waste management operations at the Outdoor CSU if waste with free liquids is being managed.

- **PERSONAL PROTECTIVE EQUIPMENT**

Appropriate personal protective equipment (PPE) will be worn to protect from hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation and may be found in the spill kits at various locations throughout the site.

- **OTHER**

Continuous air monitors, giraffe monitors, or other appropriated air monitoring equipment (as determine by health physics personnel) may be located in the container storage units for detection of airborne radioactive constituents.

TA-54

ATTACHMENT D

CONTINGENCY PLAN

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Specific information on emergency response resources and release prevention/mitigation at TA-54 is provided below.

Listings of emergency equipment currently available for use at Area L, Area G, and TA-54 West are presented in Tables D-1 through D-3 below.

REFERENCES

LANL, 2002, "Los Alamos National Laboratory General Part B Permit Renewal Application", Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico

LANL, 2003, "Los Alamos National Laboratory Technical Area 54 Part B Permit Renewal Application", Revision 3.0, June 2003, LA-UR-03-3579, Los Alamos National Laboratory, Los Alamos, New Mexico

TABLE D-1
TA-54 AREA L
Emergency Equipment

FIRE CONTROL EQUIPMENT

Class ABC and BC rated fire extinguishers are located at Area L. Class D rated fire extinguishers are available at Area L if combustible metals are being managed. A dry-pipe sprinkler system is located at TA-54-215.

Dry chemical fire-suppression systems are located in storage sheds TA-54-68, TA-54-69, and TA-54-70.

> Description of General Capabilities:
> Fire extinguishers may be used by any qualified employee in the event of a small fire. The automatic dry-pipe sprinkler system is heat activated. Security personnel and the Los Alamos Fire Department (LAFD) are alerted when this system has been activated.

Fire alarm pull boxes are located inside TA-54-37, TA-54-39, TA-54-51, TA-54-60, TA-54-117, TA-54-210, and TA-54-221.

> Description of General Capabilities:
> Fire alarms may be activated by any employee in the event of a fire to notify the LAFD and security personnel.

Fire hydrants are located near the main site entrance to Area L and at the southeast corner of TA-54-62 inside Area L. These fire hydrants supply water at an adequate volume and pressure to satisfy 40 CFR § 264.32(d).

Freeze-proof faucets are located east of TA-54-31.

SPILL CONTROL EQUIPMENT

Spill equipment at TA-54 Area L includes the following:

- Shovels
- Oversized drums
- Absorbent (various locations on site)
- Heavy equipment from Area G available for any emergencies at Area L

Spill kits are located throughout Area L. Each kit includes bags of absorbent, caustic neutralizer, acid neutralizer, and an inventory of tools and supplies.

COMMUNICATION EQUIPMENT

Alpha numeric emergency pagers are given to employees working in the area. Telephones are located in TA-54-32, TA-54-55, TA-54-62, and TA-54-1058.

Fire alarm pull boxes are locate at TA-54-215

Emergency paging system-loud speaker located throughout the site. Evacuation alarms are located adjacent to the fenceline crash gates at Area L, at the northeast end of TA-54-32, the exterior west end of TA-54-215 and at TA-54-62.

Additional equipment includes two-way radios and cellular telephones.

Description of General Capabilities:
External and internal Laboratory communications which may be used in emergency situations are listed.
Fire alarm may be activated by any employee in the event of a fire to notify the LAFD and security personnel.
Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on the emergency alpha-numeric pagers.
The evacuation alarm is a pulsating sound that can be heard throughout Area L. The fire alarm is a double slow-whoop sound.
The emergency paging system can be utilized to alert workers of an emergency situation as well as appropriate response actions.

DECONTAMINATION EQUIPMENT

Emergency shower and eyewash stations are located immediately east of TA-54-31, at TA-54-215, at TA-54-35, and at TA-54-39.

Material Safety Data Sheets (MSDS) are available hard copy or via online database at the facility.

Description of General Capabilities:
Emergency shower and eyewash stations are used by personnel who receive a chemical splash to the skin or eyes. Specific MSDSs for the chemical(s) should be obtained prior to working with the chemical to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at Area L are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation or during sampling activities.

Spill kits throughout Area L may contain PPE items such as: gloves, goggles, safety glasses, coveralls, and face shields.

Table D-2

TA-54 AREA G

Emergency Equipment

FIRE CONTROL EQUIPMENT

ABC and/or BC rated fire extinguishers are available at TA-54-8, TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, and TA-54-412, and on Pads 1, 9 and 10.

> Description of General Capabilities:
> These portable, manually operated fire extinguishers may be used by any qualified employee in the event of a small fire. For larger fires, security personnel and the Los Alamos Fire Department (LAFD) are alerted.

Flame or smoke detection equipment and fire alarm pull stations will be located within structures at TA-54-229, TA-54-230, TA-54-231, and TA-54-232.

Dry-chemical fire suppression systems are available at TA-54-1027, TA-54-1028, TA-54-1030, and TA-54-1041.

A dry-pipe fire suppression system is available at TA-54-412.

Fire alarm pull stations are available at TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, and TA-54-412.

> Description of General Capabilities:
> Fire alarms may be activated by any employee in the event of a fire to notify the LAFD and security personnel. Security personnel and LAFD are also notified upon activation of the flame or smoke detectors.

Several fire hydrants are located in Area G. These fire hydrants will supply water at an adequate volume and pressure to satisfy the requirements of 40 CFR 264.32(d)

SPILL CONTROL EQUIPMENT

Spill control stations and/or portable spill kits are located at TA-54-8, TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, and TA-54-412.

Each spill kit generally includes bags of absorbent and an inventory of tools and supplies.

COMMUNICATION EQUIPMENT

Alpha-numeric emergency pagers are given to employees working in the area.

Emergency paging system- loud speakers located throughout the site.

Evacuation alarm buttons are located at or near TA-54-33, TA-54-48, TA-54-49, TA-54-153, TA-54-224, TA-54-229, TA-54-230, TA-54-231, TA-54-232, TA-54-283, TA-54-375, TA-54-412, Pads 1, 9 and 10 and at various muster stations.

Additional equipment includes portable two-way radios and cellular telephones.

> Description of General Capabilities:
> Loud speakers, telephones and alarms are located throughout Area G. Paging telephones are equipped with public address capabilities. Evacuation alarms have horns mounted on telephone poles throughout Area G. The evacuation alarm is an audible alarm that can be heard throughout Area G. Employees can be notified of an emergency situation and appropriate response action through the use of a text message sent on the emergency alpha-numeric pagers. The emergency paging system can be utilized to alert workers of an emergency situation as well as appropriate response actions.

DECONTAMINATION EQUIPMENT

Portable eyewash stations are located at TA-54 CSUs during waste management operations involving free liquids.

One permanent, hard-plumbed eyewash station and a safety shower is located in TA-54-33.

Material Safety Data Sheets (MSDS) are available hard copy or via online database.

> Description of General Capabilities:
> Emergency shower and eyewash stations are used by personnel who receive a chemical splash to the skin or eyes. Specific MSDSs for the chemical(s) being managed should be obtained prior to working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at Area G are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. This PPE may include gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation and can be found in the spill kits or at various locations throughout the site.

OTHER

Continuous air monitors and giraffe monitors (or other appropriate air monitoring equipment) are located in many of the container storage units for detection of airborne radioactive constituents.

Heavy equipment available on site includes:

- Scraper
- Back hoe
- Bulldozer
- Front-end loader

Vehicles available to evacuate personnel from Area G include:

- All-terrain vehicles
- Pickup truck
- Flat-bed truck
- Micro trucks
- Vans

TABLE D-3
TA-54 WEST
Emergency Equipment

FIRE CONTROL EQUIPMENT

ABC and/or BC fire extinguishers are available at TA-54-38 in the high and low bays and at the outdoor container storage unit.

> Description of General Capabilities:
> Fire extinguishers may be used by any employee in the event of a small fire. Security personnel and the Los Alamos Fire Department (LAFD) are alerted when the automatic dry-pipe sprinkler system has been activated.

A dry-pipe sprinkler system is available throughout TA-54-38, including the loading dock area. The dry-pipe sprinkler system is heat activated in the high bay and at the loading dock. It is smoke activated in the low bay.

Fire alarm pull boxes are available inside TA-54-38 at the main entrance, in the high bay, and in the low bay.

> Description of General Capabilities:
> Fire alarms may be activated by any employee in the event of a fire to notify the LAFD and security personnel.

A fire hydrant is located west of TA-54-38 near the entrance to TA-54 West. This fire hydrant supplies water at adequate volume and pressure to satisfy 40 CFR § 264.32(d).

A wall hydrant is located on the west side of TA-54-38.

Freeze-proof faucets are located on the west, south, and east sides of TA-54-38.

SPILL CONTROL EQUIPMENT

A mobile response kit is located at TA-54-38. The kit includes absorbent socks, pillows, and sheets; goggles; and large plastic bags.

COMMUNICATION EQUIPMENT

Evacuation alarm buttons are located at the high bay, the low bay, and the main entrance to TA-54-38.

Telephones with public address (PA) capabilities are located in TA-54-38 in the high bay, in the low bay, and outside the main entrance. An emergency telephone is also located outside the main entrance.

Alpha-numeric emergency pagers are given to employees working in the area.

Additional equipment includes cellular phones.

Description of General Capabilities:
Telephones with PA capabilities for internal and external communication are available for use by any employee. Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on the emergency alpha-numeric pagers. The evacuation alarm can be heard throughout TA-54-38 and TA-54-34. The fire alarm is a double slow-whoop sound. Fire and evacuation alarms are activated in the event of a fire or evacuation. The emergency paging phone can be utilized to alert workers of an emergency situation as well as appropriate response actions.

DECONTAMINATION EQUIPMENT

Safety showers and portable eyewash stations are located in TA-54-38 in the high bay and on the loading dock. The portable eyewash stations will be present during active waste management operations involving free liquids at these locations.

Material Safety Data Sheets (MSDS) are available hard copy or via online database.

Description of General Capabilities:
Safety showers and eyewashes are used by personnel who receive a chemical splash to the skin or to the eyes. Specific MSDSs for the chemical(s) being managed should be obtained prior to working with mixed waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Personnel at TA-54 West are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. This PPE includes gloves, steel-toed shoes, and safety glasses. Additional PPE may be required during an unusual hazardous situation and can be found in the spill kits or at various locations throughout the site or at adjacent TA-54 facilities.

Gloves and goggles are found in the spill kits located at TA-54-38.

All workers located within the operating limits of a crane (fixed or mobile) wear hard hats.

TA-55

ATTACHMENT D

CONTINGENCY PLAN

TA-55
ATTACHMENT D
CONTINGENCY PLAN

Specific information on emergency response resources and release prevention/mitigation at TA-55 is provided below.

Emergency equipment currently available for use at TA-55 are included as Tables D-1 through D-4 in this Attachment. A list of emergency equipment (including spill control equipment) available from the Emergency Response Group is presented in Table D-2 of this Attachment's General Section. Emergency equipment discussed in this Plan may be replaced and/or upgraded with functionally equivalent components and equipment as necessary for routine maintenance and repairs.

Hazardous waste spills are managed by type and severity of the incident. If a hazardous waste spill occurs, the facility line management evaluates the type and severity of the spill and determines if assistance from the Facility's Emergency Management and Response Group is required. If not, the spill is managed internally by TA-55 personnel.

REFERENCES

LANL, 2002, "Los Alamos National Laboratory General Part B Permit Renewal Application", Revision 2.0, August 2002, LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico

LANL, 2003, "Los Alamos National Laboratory Technical Area 54 Part B Permit Renewal Application", Revision 3.0, June 2003, LA-UR-03-3579, Los Alamos National Laboratory, Los Alamos, New Mexico

Table D-1

TA-55 Building 4, First Floor

Emergency Equipment

FIRE CONTROL EQUIPMENT

Dry-chemical fire extinguishers are located in Room 401.

> Description of General Capabilities:
> The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire. The fire extinguishers in Room 401 are for use only in case of fire outside the gloveboxes.

Fire alarm pull boxes and push button stations are available in Room 401.

> Description of General Capabilities:
> Fire alarms can be activated by any employee in the event of fire to notify the Central Alarm Station.

An automatic fire suppression sprinkler system is located in Room 401.

Automatic thermal alarms are located in the gloveboxes in Room 401.

Fire hydrants are located outdoors on the north, south, and west sides of TA-55-4.

SPILL CONTROL EQUIPMENT

Room 401 provides secondary containment for the storage tank system and cementation unit.

COMMUNICATION EQUIPMENT

Telephones are located in Room 401. The telephones are capable of handling incoming/outgoing calls and paging.

A telephone is located at each of the two west exit doors of TA-55-4.

Two-way radios are available from the Nuclear Materials Technology Facility Incident Command located at TA-55-3, Room 179, for personnel working in Room 401.

> Alarms at TA-55-4:
> The fire alarm is a zone-wide whooping sound. If a drop-box pushbutton station is used, a zone-wide, high-pitched constant tone will be activated and then switch to the standard whooping sound.

The evacuation alarm is a facility-wide mid-range pulsating tone.

The continuous air monitor alarm is a local high-pitched pulsating tone.

The ventilation alarm is a local slow, repeating chime tone.

The public address system may also be used to announce an evacuation.

DECONTAMINATION EQUIPMENT

Safety showers and eyewash stations are located in Room 401.

> Description of General Capabilities:
> Safety showers and eyewashes are available for decontamination of personnel who receive a chemical splash to the skin or eyes.

Material Safety Data Sheets (MSDS) are available in Room 401 and at TA-55-4.

Specific MSDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Self-contained breathing apparatus (SCBA) are located in the southside hallway outside of Room 401, in the northside hallway of TA-55-4, and in TA-55-3, Room 179. The SCBAs are available for personnel working in or near Room 401.

Change/decontamination rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3. Protective clothing is also available in a locker located in the hallway near Room 401 for use by personnel working in or near Room 401.

Respirators located in TA-55-3 (Room 107) and in TA-55-4 (Room 515) are available for all personnel working in or near TA-55-4. Respirators are re-issued on a regular basis to TA-55-4 personnel for radiation work. These respirators are stored in the personnel's individual lockers. Combination gas canisters (particulate, organic, and acid) are available in TA-55-4 (Room 515).

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Management and Response Group.

TABLE D-2

TA-55 Building 4 Basement

Emergency Equipment

FIRE CONTROL EQUIPMENT

Halon, dry chemical, and/or carbon dioxide fire extinguishers are available near B40, B05, K13, B45, and the Vault.

> Description of General Capabilities:
> The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire.

Fire alarm pull boxes are located at B05, K13, B45, the Vault, and on each side of the fire door.

> Description of General Capabilities:
> Fire alarms can be activated by any employee in the event of fire to notify the Central Alarm System.

An automatic fire suppression sprinkler system is located throughout the basement at TA-55-4, including the Vault and the office and corridor associated with the Vault.

Fire hydrants are located outdoors on the north, south, and west sides of TA-55-4.

SPILL CONTROL EQUIPMENT

Self-containment pallets or cabinets are provided for containers of liquid and/or potentially liquid-bearing wastes stored at B40, K13, and the Vault.

COMMUNICATION EQUIPMENT

Telephones and intercom stations are located throughout the basement of TA-55-4. The telephones are capable of handling both incoming and outgoing calls. The intercom system is connected to the TA-55-3 Operations Center and allows the Operations Center to easily mobilize emergency response support.

Two-way radios are available from the Nuclear Materials Technology Facility Incident Command located at TA-55-3, Room 179, for personnel working in the basement at TA-55-4.

Personal pagers are issued to and carried by assigned personnel working in the basement of TA-55-4. These pagers are accessed by telephone.

Alarms at TA-55-4:

The fire alarm is an area-wide whooping sound.

The evacuation alarm is a facility-wide mid-range pulsating tone.

The continuous air monitor alarm is a local high-pitched pulsating tone.

The ventilation alarm is a local slow, repeating chime tone.

The public address system activated from the TA-55-3 Operations Center may be used to announce an evacuation.

A site-wide paging system activated from the TA-55-3 Operations Center can be heard throughout TA-55-4.

DECONTAMINATION EQUIPMENT

Eyewashes are located throughout the basement of TA-55-4.

> Description of General Capabilities:
> The eyewash stations are available for decontamination of personnel who receive a chemical splash to the eyes.

Safety showers are located near B40, K13 and in the office for the Vault.

> Description of General Capabilities:
> The safety showers are available for decontamination of personnel who receive a chemical splash to the skin.

Material Safety Data Sheets (MSDSs) are available at TA-55-41. Specific MSDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Change/decontamination rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3.

Respirators located in TA-55-4 and in TA-55-3 are available for all personnel working in or near TA-55-4. Particulate and toxic gas canisters are available in TA-55-4.

Self-contained breathing apparatus are located in the TA-55, Basement.

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Management and Response Group.

Forklifts stored in the basement are available for use in the basement and are stored near the north basement doorway.

TABLE D-3
TA-55 CONTAINER STORAGE PAD
Emergency Equipment

FIRE CONTROL EQUIPMENT

A dry chemical fire extinguisher is located on the Container Storage Pad.

> Description of General Capabilities:
> The fire extinguishers are portable, manually-operated units and can be used by any employee in case of fire.

Fire hydrants are located along the north, south, and west sides of TA-55-4.

One fire hydrant is located just south of the Container Storage Pad.

Fire alarm pull boxes are located in TA-55-42 at the northwest corner of TA-55-4.

One fire alarm pull box is located outside on the south side of TA-55-4.

COMMUNICATION EQUIPMENT

A telephone is located on the east side of TA-55-11, and additional phones are located in TA-55-185 and on the south side of TA-55-4.

Two-way radios are available from the Nuclear Materials Technology (NMT) Facility Incident Command located at TA-55-3, Room 179, for personnel working at the Container Storage Pad.

Personal pagers are issued to and carried by assigned personnel working at the Container Storage Pad. These pagers are accessed by telephone.

> Alarms at TA-55:
> The fire alarm is an area-wide whooping sound.
> The evacuation alarm is a facility-wide mid-range pulsating tone.

The public address (PA) system activated from the TA-55-3 Operations Center may be used to announce an evacuation. PA speakers are located on the west side of TA-55-4.

Two intercom systems to the TA-55-3 Operations Center are located on the south and north sides of TA-55-4.

DECONTAMINATION EQUIPMENT

A safety shower and eyewash station are located outdoors on the Container Storage Pad.

Description of General Capabilities:
The safety shower and eyewash are available for personnel who receive a chemical splash to the skin or eyes.

Material Safety Data Sheets (MSDSs) are available at TA-55-2. Specific MSDSs may be obtained prior to working with any hazardous waste to determine if the application of water is indicated for decontamination.

PERSONAL PROTECTIVE EQUIPMENT

Change rooms with protective clothing available are located on the first floor of TA-55-4 and in TA-55-3.

Respirators are located in TA-55-4 and in TA-55-3 for all personnel working in or near TA-55-4.

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Management and Response Group.

Two forklifts are available for NMT-7 use.

TABLE D-4
TA-55 BUILDING 185
Emergency Equipment

FIRE CONTROL EQUIPMENT:

Fire hydrants are located along the north, south, and west sides of TA-55, Building 4 (TA-55-4).

One fire alarm pull box is located inside TA-55-185.

Fire alarm pull boxes are located in TA-55, Building 42, at the northwest corner of TA-55-4.

One fire alarm pull box is located outside on the south side of TA-55-4.

COMMUNICATION EQUIPMENT:

One telephone is located inside TA-55-185.

A telephone is located on the east side of TA-55-11 and additional phones are located in TA-55-185 and on the south side of TA-55-4.

Two-way radios are available from the Nuclear Materials Technology (NMT) Facility Incident Command located at TA-55-3, Room 179, for personnel working at TA-55-185.

Personal pagers are issued to and carried by assigned personnel working at TA-55-185. These pagers are accessed by telephone.

> Alarms at TA-55-4:
> The fire alarm is an area-wide whooping sound.
> The evacuation alarm is a facility-wide mid-range pulsating tone.

The pubic address (PA) system activated from the TA-55-3 Operations Center may be used to announce an evacuation.

PA speakers are located on the west side of TA-55-4 near TA-55-185. Intercom systems to the TA-55-3 Operations Center are located on the south and north sides of TA-55-4.

DECONTAMINATION EQUIPMENT:

TA-55-185 will be equipped with a portable safety shower and eyewash station before wastes are managed there.

PERSONAL PROTECTIVE EQUIPMENT:

Change rooms with protective clothing available are located in TA-55-3.

Respirators located in TA-55-4 and in TA-55-3 are available for all personnel working in or near TA-55-185.

OTHER:

If transportation is needed for evacuation, vehicles may be obtained through the Emergency Management and Response Group.

A forklift is available inside of TA-55-185.

Two forklifts are available to NMT-7.

ATTACHMENT E

INSPECTION PLAN

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ATTACHMENT E
INSPECTION PLAN

This Attachment presents inspection requirements applicable to all hazardous or mixed waste management units (permitted units) at Los Alamos National Laboratory (LANL). Inspection schedules for the units have been developed to identify equipment malfunctions and deterioration, operator errors, and discharges that might cause or lead to a release of hazardous or mixed waste and pose a threat to human health and the environment.

The Permittees shall conduct Inspections at the schedule specified herein to identify problems in time to correct them before they harm human health or the environment. Inspection schedules or methods may differ at certain waste management units based upon worker safety issues or the nature of the safety and emergency equipment.

E.1 GENERAL INSPECTION SCHEDULES AND REQUIREMENTS

The Permittees shall follow this Inspection Plan for the inspection of monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, and responding to environmental or human health hazards. Inspections may be conducted at any time during the applicable day or week, as specified in the inspection schedule.

A copy of this Inspection Plan, which includes inspection schedules, shall be maintained by the Permittees' hazardous waste compliance personnel and by the site operator (*i.e.*, the division or operating group that is responsible for or manages the permitted unit), as required in Permit Section 2.12.2.

The Permittees shall follow the inspection schedules outlining the items to be addressed on the Permittees' Hazardous Waste Facility Inspection Record Form (IRF) and inspection frequencies for the unit types provided in this Attachment's Sections E.2 through E.8, and in TA-specific Attachment E sections. The IRF and instructions for its completion are provided at the end of this Attachment Section; the form may be supplemented, changed, or otherwise replaced through a permit modification pursuant to 40 CFR § 270.42(a). The IRF lists the items to be inspected.

E.1.1 Inspection Records

The Permittees shall insure that permitted unit personnel conduct inspections and record the information on IRFs or equivalent forms. The Permittees shall retain inspection records until closure of the associated permitted unit. The Permittees shall maintain an electronic version of the records through the closure or post-closure periods dependent upon the type of facility. The Permittees shall make inspection records available for review in the event that the Department or the U.S. Environmental Protection Agency inspects the facility for compliance with inspection requirements.

The IRF encompasses requirements for permitted hazardous and mixed waste management units, and additional requirements directed by the Permittees' policy. Instructions included with the IRF provide specific guidance for each inspection item listed.

The Permittees shall complete the IRF or equivalent form according to the daily and/or weekly schedules provided in Attachment Sections E.2 through E.8. The Permittees shall conduct and record inspections in Parts I and II of the IRF for each working day or week that waste is opened, moved, received, stored, treated, removed, or remains open, as appropriate. The Permittees shall use other records, such as a memo to file, to document a condition of "No Use" at a unit.

For every item requiring inspection, the Permittees shall enter a response indicating the condition of each item in the column under the appropriate day of the week. Responses may include "OK," "NA" (Not Applicable), or "AR" (Action Required). If the response is AR, the Permittees shall note the action required in Part II of the IRF. If more than one AR is listed, the Permittees shall number the ARs. The Permittees shall identify and number all ARs, even if corrected immediately by the inspector. If inspection results indicate that corrective measures are warranted, the Permittees shall record any and all actions taken (along with time, date, and other pertinent information) in Part II of the IRF and shall note the AR on all subsequent IRFs until corrective measures are completed. When corrective measures have been completed and recorded on an IRF, the Permittees shall enter an "OK" in the "Condition" column on the IRF.

The Permittees shall conduct and document monthly inspections of the items listed below to ensure that the equipment is fully functional for its intended purpose:

1. evacuation alarms;
2. ventilation alarms;
3. fire alarms; and
4. fire pumps.

E.1.2 Actions Resulting from Inspections

If the Permittees discover any defects, deterioration, operator errors, discharges, or potential hazards during an inspection, the Permittees shall complete appropriate corrective measures (*e.g.*, transfer of waste from a defective container to an appropriate container in good condition, repair or replacement of nonfunctioning equipment and/or systems, or removal of any accumulated liquids) promptly so that the problem does not lead to an environmental or human health hazard. The Permittees shall note any action taken in response to an inspection on the IRF or IRF documentation.

If a hazardous condition is imminent or has already occurred, the Permittees shall assess the condition immediately and follow up with appropriate remedial action. If this assessment indicates that human health or the environment may be or may have been adversely affected, the Permittees may implement Permit Attachment D, (*Contingency Plan*). In any case, the Permittees shall document the remedial action that is required and is taken.

E.1.3 Training

The Permittees shall provide inspection training to appropriate Facility personnel, and ensure that training is repeated, as necessary.

E.2 INSPECTION SCHEDULE AND REQUIREMENTS FOR CONTAINER STORAGE UNITS

The Permittees shall inspect container storage units (CSU) according to the schedule provided below.

E.2.1 On Day(s) of Waste Handling

The Permittees shall conduct inspections every day of, or the day after, waste handling, with special attention placed on areas subject to spills, such as loading and unloading areas. Waste handling includes when waste is received at, moved or opened within, treated at, or removed from a CSU. With respect to each container, the Permittees shall inspect and record the following items, as applicable:

1. General IRF information (Items 1-7)
2. Secondary containment structures
3. Run on and runoff control
4. Covers and lids of containers
5. Labels
6. Accumulation start date
7. Compatibility
8. Structural integrity of containers
9. (Un)loading area(s)
10. Presence and condition of shaft cover

E.2.2 Weekly

The Permittees shall conduct weekly inspections of CSUs every week that waste remains in storage. The Permittees shall inspect and record the following items, as applicable:

1. General IRF information (Items 1-7)
2. Communications equipment
3. Warning signs
4. Security
5. Work surfaces/floors
6. Spill/fire equipment
7. Eyewashes/safety showers
8. Wind sock
9. Secondary containment structures
10. Run on and runoff control
11. Covers and lids of containers
12. Labels
13. Accumulation start date

14. Compatibility
15. Structural integrity of containers
16. (Un)loading area(s)
17. Aisle space/stacking
18. Pallets/raised containers
19. Presence and condition of shaft cover

E.3 INSPECTION SCHEDULE AND REQUIREMENTS FOR TANK SYSTEMS

The Permittees shall inspect tank systems according to the schedule provided below.

E.3.1 Daily (During Operation)

The Permittees shall inspect tank systems (including ancillary equipment) at least once each operating day. An operating day includes when waste is present in the tank. The Permittees shall inspect tank systems for the items listed below, as appropriate:

1. General IRF information (Items 1-7)
2. Secondary containment structures
3. Labels
4. Structural integrity of tanks and ancillary equipment
5. (Un)loading area
6. Aboveground portions of tank systems to detect corrosion or releases of waste and to detect any possible malfunctions to overfill and spill control equipment, tank monitoring and leak detection systems, and data from these systems
7. Proper operating condition of treatment tank (if applicable)

E.3.2 Weekly

The Permittees shall conduct weekly inspections of tank systems every week that waste are managed in the systems. Weekly inspection requirements for tank systems include the following items, as appropriate:

1. General IRF information (Items 1-7)
2. Communications equipment
3. Warning signs
4. Security
5. Work surfaces/floors
6. Spill and fire equipment
7. Eyewashes and safety showers
8. Wind sock, if applicable
9. Secondary containment structures
10. Run on and runoff controls, if applicable
11. Labels
12. Accumulation start date, if appropriate
13. Structural integrity of tanks and ancillary equipment
14. (Un)loading areas

15. Aboveground portions of tank systems to detect corrosion or releases of waste, overfill and spill control equipment, tank monitoring and leak detection systems, and data from these systems
16. Proper operating condition of treatment tank (if applicable)

E.4 (Reserved)

E.5 INSPECTION SCHEDULE AND REQUIREMENTS FOR STABILIZATION UNITS

The Permittees shall inspect stabilization units according to the schedule provided below.

E.5.1 Daily (During Operation)

The Permittees shall inspect stabilization units each operating day (*i.e.*, when waste is treated in the unit). The Permittees shall inspect and record the following items, as applicable.

1. General IRF information (Items 1-7)
2. Warning signs
3. Work surfaces and floors
4. Secondary containment structures
5. Covers and lids of containers
6. Labels
7. (Un)loading area
8. Structural integrity of cementation unit

E.5.2 Weekly

The Permittees shall conduct weekly inspections of the stabilization unit including weeks when no treatment occurs. The Permittees shall inspect and record the following items, as applicable:

1. General IRF information (Items 1-7)
2. Communications equipment
3. Warning signs
4. Security
5. Work surfaces and floors
6. Spill/fire equipment
7. Eyewashes and safety showers
8. Secondary containment structures
9. Covers and lids of containers
10. Labels
11. (Un)loading area
12. Structural integrity of cementation unit

E.6 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART AA REQUIREMENTS

Inspection and monitoring requirements for units subject to 40 CFR Part 264, Subpart AA, are addressed, if applicable, in the TA-specific Sections of this Attachment.

E.7 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART BB REQUIREMENTS

The Permittees shall inspect units subject to 40 CFR Part 264, Subpart BB, according to the schedule and procedures provided below

E.7.1 Requirements for Pumps in Light Liquid Service

1. The Permittees shall perform leak detection monitoring monthly using Reference Method 21 in 40 CFR Part 60.

2. The Permittees shall perform visual inspection for liquids dripping from the pump seal each week.

3. If a leak is detected, the Permittees shall initiate repairs no later than within 5 days and complete them as soon as possible, but no later than 15 days.

4. A delay of repair is allowed if the repair is technically infeasible without shutting down the unit, and/or if the leaking equipment is isolated from the unit and does not contain or contact hazardous waste with greater than or equal to 10% by weight organics.

E.7.2 Requirements for Pressure Relief Devices In Gas/Vapor Service

1. The Permittees shall measure and monitor devices to ensure that they are operated with no detectable emissions (less than 500 parts per million (ppm) above background) using Reference Method 21 in 40 CFR Part 60.

2. The Permittees shall perform measurement and monitoring as soon as practicable, but no later than 5 days after a pressure release.

3. A delay of repair is allowed if the repair is technically infeasible without shutting down the unit, or if the leaking equipment is isolated from the unit and does not contain or contact hazardous waste with greater than or equal to 10% by weight organics.

E.7.3 Requirements for Open-ended Valves or Lines

1. The Permittees shall ensure that open-ended valves or lines are equipped with a cap, blind flange, or plug.

2. The Permittees shall ensure that all caps, blind flanges, or plugs are sealed except during operations requiring movement of hazardous waste through the open-ended valve or line.

E.7.4 Requirements for Valves in Gas/Vapor or Light Liquid Service

The Permittees shall perform leak detection monitoring monthly using Reference Method 21 in 40 CFR Part 60. If no leaks are detected for two successive months, monitoring frequency may be changed to the first month of every succeeding quarter unless a leak is detected. Should that occur, monitoring frequency shall return to monthly until no leaks are detected for two successive months.

Alternatively, and following notification to the Department, if 2% or fewer valves are found to be leaking after two consecutive quarters, monitoring frequency may be changed to once every six months. If 2% or fewer valves are found to be leaking after five consecutive quarters, monitoring frequency may be changed to annually. Should the percentage of leaking valves exceed 2%, the Permittees shall perform monitoring monthly.

Alternatively, and following notification to the Department, no more than 2% of valves may be allowed to leak if the Permittees conduct performance testing pursuant to 264.1061 initially, annually, and upon the Department's request to ensure that the leak percentage is being met. Should use of this alternative discontinue, the Permittees shall notify the Department within 15 days.

If a leak is detected, the Permittees shall initiate repair(s) no later than within 5 days and complete them as soon as possible, but no later than 15 days. A delay of repair is allowed if the repair is technically infeasible without shutting down the unit, if the leaking equipment is isolated from the unit and does not contain or contact hazardous waste with greater than or equal to 10% by weight organics, if purged emissions from immediate repair would exceed emissions from delaying repair, or if insufficient valve repair supplies exist although adequately stocked normally and the next unit shutdown is within 6 months.

E.7.5 Requirements for Pressure Relief Devices in Light Liquid Service, Flanges and Other Connectors

The Permittees shall conduct monitoring within 5 days of identifying a potential leak by visual, audible, olfactory, or other method. If a leak is detected by an instrument reading of 10,000 ppm or greater, the Permittees shall initiate repairs within 5 days and complete them as soon as possible, but no later than 15 days. No monitoring is required for inaccessible, glass, or glass-lined connectors.

E.8 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS

The Permittees shall inspect units subject to 40 CFR Part 264, Subpart CC, according to the schedule and procedures provided below.

Container Levels that may be present at the storage areas are defined as follows:

Container Level 1- The volume of the container in direct contact with waste is greater than $0.1m^3$ and less than or equal to $0.46m^3$, or the volume of the container is greater than $0.46m^3$ and not in

light material service. The container must also be either: (1) compliant with the applicable Department of Transportation (DOT) regulations (40 CFR § 264.1086(f)); (2) equipped with a cover and closure devices that form a continuous barrier so that, when closed, no visible holes, gaps, or open spaces into the interior of the container are evident; or (3) an open-top container with an organic vapor suppressing barrier that precludes exposure of waste to the atmosphere.

Container Level 2- The volume of the container in direct contact with waste is greater than $0.46m^3$ and is in light material service. The container also must be either: (1) compliant with the applicable DOT regulations (40 CFR § 264.1086(f)); (2) capable of operation with no detectable organic emissions as determined by the procedure specified at 40 CFR § 264.1086(g); or (3) demonstrated to be vapor-tight within the past 12 months using 40 CFR 60, Appendix A, Method 27 and the procedure specified at 40 CFR § 264.1086(h).

Container Level 1 Inspection Requirements

The Permittees shall inspect and maintain containers in Container Level 1 as follows:

If waste is already in the container when received:

1. On or before the date the container is accepted at the facility, the Permittees shall perform a visual inspection of the container, cover, and closure devices for visible cracks, holes, gaps, and other open spaces into the interior when cover and closure devices are secured in closed position.

2. If a defect is detected, the Permittees shall initiate repair(s) within 24 hours and complete them as soon as possible, but no more than 5 days. If defect(s) are not completely repaired within 5 days, the Permittees shall remove waste and the container shall not be used until the defect(s) has been repaired.

If waste remains in storage for greater than or equal to 1 year:

1. The Permittees shall perform a visual inspection of the container at initial receipt and at least once every 12 months.

2. If a defect is detected, the Permittees shall initiate repair(s) within the 24 hours and complete them as soon as possible, but no later than 5 days. If the defect(s) is not completely repaired within 5 days, the Permittees shall remove the waste and the container shall not be used until the defect(s) have been repaired.

Container Level 2 Inspection Requirements

The Permittees shall inspect and maintain containers in Container Level 2 as follows:

If waste is already in the container when received:

1. On or before the date the container is accepted at the facility, the Permittees shall perform a visual inspection of the container, cover, and closure devices for visible cracks, holes, gaps, and other open spaces into the interior when cover and closure devices are secured in a closed position.

2. If a defect(s) is detected, the Permittees shall initiate repair(s) within 24 hours and complete them as soon as possible, but no later than 5 days. If defect(s) are not completely repaired within 5 days, the Permittees shall remove waste and the container shall not be used until the defect(s) have been repaired.

If waste remains in storage for greater than or equal to 1 year:

1. The Permittees shall perform a visual inspection of the container at initial receipt and at least once every 12 months.

2. If a defect(s) is detected, the Permittees shall initiate repair(s) within 24 hours and complete them as soon as possible, but no later than 5 days. If defect(s) are not completely repaired within 5 days, the Permittees shall remove the associated waste and the container shall not be used until the defect(s) have been repaired.

The Permittees shall minimize exposure of hazardous waste to the atmosphere in the process of waste transference in or out of containers.

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HAZARDOUS WASTE FACILITY INSPECTION RECORD FORM

[1] FACILITY:	[2] Site ID #:	TREATMENT, STORAGE, OR DISPOSAL UNIT (TSD)	[3] START DATE:	[4] END DATE:

[5] ☐ Containers ☐ Landfill ☐ Chemical Treatment ☐ Tank ☐ Miscellaneous Unit (OB/OD, Cementation)

PART I- Enter condition of the item inspected (*i.e.* **OK**, **NA** [Not Applicable], or **AR** [Action Required]) in column for day inspected.

ITEM	**INSPECTED FOR:**	**MON**	**TUE**	**WED**	**THU**	**FRI**	**SAT**	**SUN**
[6] NO UNIT USE	No waste stored							
[7] NO WASTE HANDLING	No waste handled (see instructions)							
All TSDs								
[8] COMMUNICATIONS EQUIPMENT	Availability and proper operating condition							
[9] WARNING SIGNS	Posted, legible, and bilingual							
[10] SECURITY	Good condition of fences, gates, locks, and other access control equipment							
[11] WORK SURFACES/ FLOORS/ROADS	Absence of conditions that could lead to an accident or spill							
[12] SPILL/FIRE EQUIPMENT	Present, appropriate, and in proper operating condition							
[13] EYEWASHES/ SAFETY SHOWERS	Proper operating condition							
[14] WIND SOCK	Proper operating condition and functional							
[15] SECONDARY CONTAINMENT	Integrity- No standing water/waste, erosion, or signs of a spill							
[16] (UN)LOADING AREA	No spills or deterioration							

[17] RUN-ON/OFF CONTROL	Integrity- no ponding, erosion, or damage							
Container Storage Units and/or Tanks (see instructions)								
[18] COVERS/LIDS OF CONTAINERS	Closed and secured properly							
[19] LABELS	Proper with start date, present & legible							
[20] COMPATIBILITY	Separated according to compatibility							
[21] INTEGRITY	No leakage, corrosion, or damage							
[22] AISLE SPACE/STACKING	Appropriateness and adequacy							

FACILITY:	Site ID #:	START DATE:	END DATE:

ITEM	INSPECTED FOR:	MON	TUE	WED	THU	FRI	SAT	SUN
[23]PALLETS AND RAISED CONTAINERS	Absence of conditions that could result in failure							
[24]TANK SYSTEMS	Discharge controls and fill level and no corrosion or leakage							
Other TSDs								
[25]SHAFTS/LANDFILL COVERS	Presence and condition of cover							
[26]OPEN BURNING UNITS	Condition of cover, and no erosion, leakage, or damage							
[27]OPEN DETONATION UNITS	Unit and vegetation condition and no erosion							
[28]CEMENTATION UNITS	Structural integrity and condition of equipment and systems							

	MON	TUE	WED	THU	FRI	SAT	SUN
[29] **DATE**							
[30] **TIME**							
[31] **INSPECTOR(S)**							

Part II- For any AR (Action Required) in PART I, describe below: action required, action taken, status, date, and time of action. Attach additional sheets if necessary. If more than one action is required, number each AR.

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Part III- Comments.

33

Part I

Weekly and daily inspection of TSDs will be conducted in accordance with the inspection plan in most recent Los Alamos National Laboratory (LANL) General Part B Permit Application or the LANL Hazardous Waste Facility Permit, as appropriate. Not all items in this section will apply to all facilities. An "NA" (not applicable) is required if the item does not apply. Facilities may shade parts of the form to indicate items that need to be completed only on a weekly basis. Holidays and Laboratory closures can also be noted (e.g., by writing "H" (for holidays) or "Closed" in the first box and drawing a line all the way down the page).

1. Location information, including TA, building, room (if applicable), and any other location descriptors that may be necessary (*e.g.*, TA-59-3-114 or TA-59-1-S, Dock).
2. A site identification number is assigned to every facility by the Resource Conservation and Recovery Act (RCRA) compliance personnel. This allows for ease in identification.
3. Start date of Monday for the week of record.
4. End date of Sunday for the week of record.
5. Check the appropriate box for the type of operation. Several boxes may be checked, if necessary, for those locations where inspections are combined on a single sheet. You must have prior approval from RCRA compliance personnel to combine inspections for more than one unit.
6. For container storage units only – "NO USE" may be checked (or marked "OK") if waste was not stored at the unit for the week in question. When this box is checked, the individual responsible for the inspection must only complete this box, the items related to site location (Items 1-5), and the inspector name section for that week (Items 29-31). If any hazardous or mixed waste is subsequently placed at the site for any reason, a full inspection must be performed immediately and then subsequently according to the appropriate inspection plan.
7.
    a. At a container storage unit if waste is in storage but no waste is handled at the unit for the week– "NO WASTE HANDLING" may be checked, but a weekly inspection in accordance with the appropriate inspection plan must be conducted.
    c. If a treatment unit is not conducting treatment for the week – "NO WASTE HANDLING" may be checked, but a weekly inspection in accordance with the appropriate inspection plan must be conducted.
    d. For a tank storage system unit, if no waste is being stored and the tank system is empty, "NO WASTE HANDLING" may be checked. However, a weekly inspection in accordance with the appropriate inspection plan must be conducted.
8. Communication equipment must be inspected in order to ensure availability and proper operating condition for each piece of equipment (*e.g.,* telephones, radios, and alarms). Equipment must be present in accordance with the appropriate contingency plan.
9. Required signs must be legible and prominently posted in accordance with 40 CFR § 264.14(c) and/or the permit as applicable.
10. Site security must be verified. Items such as fences, gates, locks, and other access control equipment (as appropriate) should be checked for proper operating condition.

11. Roads, process floors, and other work surfaces at TSDs must be inspected for any conditions that could lead to a spill or an accident.
12. Hazardous or mixed waste TSDs must have fire control and spill control equipment. Equipment must be present, in proper operating condition, and appropriate for the material in question. Hose bibs, where present, should be inspected for proper operating condition and adequate pressure. Outdoor fire-water supply systems must be checked for freezing and damage. Equipment must be inspected and present in accordance with the appropriate inspection and contingency plans.
13. Where present, eyewashes and safety showers must be inspected to ensure proper operating condition. Outdoor locations must be checked for freezing.
14. Wind socks, where present at outside TSDs, must be inspected to ensure that they are in proper operating condition/functional and checked for damage.
15. Secondary containment structures for hazardous or mixed waste operations must be inspected to verify proper operating condition and to ensure adequate capacity. Structures must also be inspected for the presence of standing water or hazardous/mixed waste or any other indication of a spill (*i.e.* discolored vegetation, soil, or concrete). For certain operations, secondary containment includes inspection of gloves, gloveboxes, hoods, and ventilation systems. For locations where inflatable "Porta Berms" are used, inspectors must ensure that they are adequately inflated. All monitoring and leak detection systems must also be checked.
16. Loading and unloading areas must be inspected daily when in use for signs of damage or deterioration that may lead to an accident or spill. This includes asphalt covered areas and areas where containers or tanks are handled or the contents thereof are transferred.
17. Run-on and runoff controls, wherever present, must be checked. The integrity should be inspected by looking for signs of damage, erosion, ponding, or any other conditions that could lead to a spill or an accident.
18. All tanks and containers used for storing hazardous or mixed waste must have the cover or lid securely in place. Containers are not considered to be closed until the lid/cover is fastened in the manner the manufacturer originally intended. However, the lid may be off of a tank or container while waste is being placed into or removed from a container.
19. All containers and tanks containing hazardous or mixed waste must be labeled with the words "HAZARDOUS WASTE," and EPA Hazardous Waste Numbers or hazardous waste constituents. They must also be marked with a legible accumulation start date. All containers must be dated when they arrive at the facility and no hazardous or mixed waste may be stored for over one year, unless specifically exempted.
20. All hazardous or mixed waste containers holding materials that may be incompatible with any other materials at that location must be separated from those materials by dikes, berms, or other physical barriers to prevent a possible reaction.
21. All containers and tanks must be checked for structural integrity, leakage, corrosion, or damage that may impact integrity. This includes checking the condition of all construction

materials, fixtures, seams, and auxiliary equipment. There are special inspection criteria for tank systems (see Item 24 below).

22. Adequate aisle space must be maintained to allow for inspection and for the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency. Containers of hazardous and mixed waste must be stored in a manner that ensures a minimum 2-foot aisle space and containers may not be stacked more than 3 high, unless otherwise specified for the facility (*i.e.* some units within the LANL Hazardous Waste Facility Permit must have an aisle space of 28 inches and only 55 gallon drums may be stored three high). Please consult RCRA compliance personnel for permit related questions.
23. Hazardous or mixed waste containers stored at TSDs must be on pallets, elevated, or otherwise raised to be protected from contact with accumulated liquid.

TANKS SYSTEMS:

24. For tank systems used for treatment or storage of hazardous or mixed waste, all aboveground portions of the tank system, including any and all ancillary plumbing, must be inspected for signs of leaking, corrosion, deterioration, or improper operation. Tanks must be operated with a minimum freeboard of 6 inches. If the tank system includes discharge controls, overtopping controls, tank level alarms, or other monitoring equipment, including leak detection equipment, all controls and relevant data must be checked to ensure they are operating properly and that operation is within design specifications for the system.

SHAFTS:

25. Shafts used for retrievable storage should have their covers securely in place and the surrounding area should show no evidence of erosion. Disposal shafts and shafts used for retrievable storage should have their covers securely in place and, during waste handling operations, guard rails must be installed and in good condition. Landfill covers must be inspected at least weekly and after storms for evidence of erosion, subsidence, and water intrusion.

OPEN BURNING UNITS:

26. Open burning units must be inspected for deterioration, leakage, vegetation in the immediate vicinity that could catch fire, and assure that the unit is covered when not in use. Inspectors must also look for explosives and debris not consumed during the burn.

OPEN DETONATION UNITS:

27. Open detonation units must be inspected for deterioration, leakage, or vegetation in the immediate vicinity that could catch fire. Inspectors must also look for explosives and debris not consumed by the detonation.

STABILIZATION UNITS:

28. The structural integrity and condition of equipment and systems must be inspected on stabilization units. Units must also be inspected for signs of leaking, corrosion, deterioration, or improper operation.

FOR ALL INSPECTIONS:

29. Record of the date of the current inspection. Only one date is given for each inspection, whether a team or an individual performs the inspection.
30. Record of the time of the current inspection. Only one time is given for each inspection, whether a team or an individual performs the inspection.
31. Legible and/or printed name of each inspector involved in the current inspection.

PART II

List any action required.

32. Document any action taken immediately and express any plans for future action to be taken. Also, ensure that previous ARs are closed out with completed actions described. If the AR has not been resolved, ensure that it is carried over to the current inspection. Status should be provided for both open and closed items. If necessary, attach additional sheets to inspection record form to efficiently cover the action taken or required. Initial any information or comments added, and if more than one action is required or conducted, assign a number to each AR.

PART III

Identify any comments.

33. Document informational comments and any status associated with the current inspection that does not require specific regulatory action or remedies.

TA-54

ATTACHMENT E

INSPECTION PLAN

TA-54
ATTACHMENT E
INSPECTION PLAN

This Attachment Section presents additional inspection requirements specific to the container storage units at Technical Area (TA) 54. The Permittees shall conduct inspections at the frequency specified in the general inspection Section to identify problems in time to correct them before they harm human health or the environment.

E.1 INSPECTION REQUIREMENTS FOR TRUPACT-II CONTAINERS

The Permittees shall visually inspect waste containers prior to their placement in the TRUPACT-II containers to ensure their integrity. The inspection shall include a close examination of the cover and closure devices for visible cracks, holes, gaps, or other open spaces into the interior of the waste container when the cover and closure devices are secured in the closed position. The TRUPACT-II shall be loaded with waste containers and sealed with a locking-ring closure mechanism. After the TRUPACT-II has been sealed, the Permittees shall inspect the outside of the TRUPACT-II to ensure its integrity and that there has been no human intervention.

TA-55

ATTACHMENT E

INSPECTION PLAN

TA-55
ATTACHMENT E
INSPECTION PLAN

This Attachment Section presents additional inspection requirements applicable to the waste management units at Technical Area (TA) 55. The Permittees shall conduct inspections at the frequency specified in the General Inspection Section to identify problems in time to correct them before they harm human health or the environment.

The Permittees shall perform daily inspections on separate forms for the fences at TA-55 and shall document them on separate forms..

E.1 TA-55 VAULT

The Vault is a container storage unit (CSU) located in the basement at TA-55-4 and waste containers in the Vault shall only contain mixed waste. The following inspection requirements are applicable to those rooms in the Vault that store mixed waste.

E.1.1 Non-Intrusive Inspection Systems

Inspection requirements are satisfied in part by the use of continuous air monitors (CAM) located in each individual storage room within the Vault to continuously monitor airborne radioactivity levels. If a problem with a container is identified by a CAM, the Permittees shall removed that container from the Vault and inspect it in an open-front hood.

The Permittees shall ensure that information obtained during inspections and all container transfers are noted on the Vault Traffic Log Book maintained at TA-55. The Permittees shall inspect the Vault Traffic Log Book weekly to verify receipt or transfer of mixed waste from the Vault. If mixed waste is not currently being stored in the Vault and the weekly inspection indicates that no mixed waste has been received, the Permittees shall mark the Inspection Record Form (IRF) “No Use” and complete it according to the IRF instructions.

E.1.2 Intrusive Inspection Procedures

The Permittees shall ensure that the central hallway of the Vault is inspected weekly when mixed waste is in storage. The Permittees shall inspect and note the following items in weekly inspections:

1. Vault Traffic Log Book (inspected for receipt or transfer of waste)
2. Communications equipment
3. Warning signs
4. Security
5. Work surfaces and floors in central corridor
6. Spill and fire equipment
7. Secondary containment

8. (Un)loading area
9. Visual inspection of storage rooms from hallway
10. Nuclear Materials Custodian contacted to verify no alarms or problems

When containers are placed into or removed from a storage room within the Vault, the Permittees shall inspect the following items in that storage room, as appropriate:

1. Vault Traffic Log Book (inspected for receipt or transfer of waste)
2. Communication equipment
3. Warning signs
4. Security
5. Work surfaces and floors
6. Spill and fire equipment
7. Secondary containment
8. (Un)loading area
9. Nuclear Materials Custodian contacted to verify no alarms or problems
10. Emergency equipment/lighting
11. Covers/lids of containers
12. Labels
13. Accumulation start date
14. Compatibility
15. Structural integrity of containers
16. Aisle spacing/stacking
17. Pallets/raised containers

The Permittees shall record inspection results on the IRF maintained at TA-55.

E.2 STORAGE TANK SYSTEM

The Permittees shall inspect the storage tank system components located at TA-55-4, Room 401, according to the schedule provided below.

E.2.1 Daily (During Operation)

The Permittees shall inspect the storage tank system components (including ancillary equipment) at least once each operating day. An operating day includes when waste is present in the tank. In daily inspections, the Permittees shall inspect and note the following items, as applicable:

1. Work surfaces and floors
2. Secondary containment structure
3. Structural integrity of tanks and ancillary equipment
4. Labels
5. (Un)loading areas
6. All portions of tank systems to detect corrosion or releases of waste and to detect any possible malfunctions to overfill/spill control equipment, tank monitoring, and leak detection systems and data from these systems

7. Proper operating condition of tank

E.2.2 Weekly

The Permittees shall inspect storage tank system components weekly for the following items, as applicable:

1. Warning signs
2. Work surfaces and floors
3. Secondary containment structures
4. Covers and lids of tanks
5. Labels
6. Structural integrity of tanks and ancillary equipment
7. (Un)loading areas
8. All portions of tank systems to detect corrosion or releases of waste and to detect any possible malfunctions to overfill/spill control equipment, tank monitoring, and leak detection systems and data from these systems
9. Proper operating condition of tank

E.3 STABILIZATION UNIT

The Permittees shall inspect the stabilization unit located at TA-55-4, Room 401 according to the schedule provided below.

E.3.1 Daily (During Operation)

The Permittees shall inspect the stabilization unit each operating day (*i.e.*, when mixed waste is treated in the unit). In the daily inspection of the stabilization unit, the Permittees shall inspect the following items, as applicable:

1. Work surfaces and floors
2. Secondary containment structures
3. Labels
4. Structural integrity of cementation unit
5. (Un)loading area
6. Communication equipment

C.3.2 Weekly

The Permittees shall inspect the stabilization unit weekly for the following items, as applicable:

1. Warning signs
2. Work surfaces and floors
3. Secondary containment structure
4. Labels
5. Structural integrity of cementation unit
6. (Un)loading area
7. Communication equipment

E.4 ADDITIONAL INSPECTION ITEMS

The Permittees shall ensure that the items listed below are inspected monthly and documented on a separate IRF:

1. Evacuation alarms
2. Ventilation alarms
3. Fire alarms
4. Fire pumps
5. Fire extinguishers
6. Eyewashes and safety showers

Additionally, the Permittees shall inspect the fences and TA-55 access controls daily.

E.5 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPARTS AA AND BB REQUIREMENTS

The TA-55 CSUs are not subject to the requirements of 40 CFR Part 264, Subparts AA and BB, because they do not operate applicable process vents or equipment.

ATTACHMENT F

PERSONNEL TRAINING PLAN

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ATTACHMENT F

PERSONNEL TRAINING

Attachment F describes the personnel training program for Los Alamos National Laboratory (LANL) permitted unit workers. The primary objective of the training program is to prepare personnel to operate and maintain safely those areas managing hazardous and/or mixed waste. This training program applies to all employees of the Permittees and any subcontractors who work regularly at LANL permitted units and manage hazardous and/or mixed waste. The degree of training varies with the job duties.

F.1 HAZARDOUS AND MIXED WASTE MANAGEMENT/RESPONSIBILITIES

Waste management activities and responsibilities at specific hazardous and/or mixed waste management units are handled by the appropriate LANL division or group. Waste management personnel within the Environmental Projects Associate Directorate are responsible for most centralized waste management activities at LANL. Hazardous waste compliance personnel are responsible for providing waste management regulatory guidance to all LANL personnel and operations. Other personnel at LANL who may provide assistance in various waste management activities are discussed in the following paragraph and in Attachment D (*Contingency Plan*).

Laboratory-contracted support services provide trained personnel to assist in waste-handling activities. The Permittees shall ensure that radiation protection, health physics, occupational medicine, industrial hygiene and safety, nuclear criticality safety, occurrence reporting, hazardous material response, meteorology and air quality, water quality and hydrology, ecology, and hazardous waste compliance personnel are trained in their respective specialties to provide emergency response support and that LANL security provides workers trained in traffic and site-access control.

The Emergency Management and Response (EM&R) personnel provide emergency planning and response at LANL and have the overall responsibility for LANL's Emergency Management Plan (EMP) training. Central training personnel are responsible for the analysis, design, development, and delivery of LANL-wide environment, safety, and health (ES&H) training.

Courses on hazardous and/or mixed waste are designed with substantial input from hazardous waste compliance personnel, hazardous waste operations personnel, and other subject matter experts, as appropriate.

F.2 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES

The training program instituted at the Facility includes a combination of Facility-wide courses, permitted unit-specific training, and on-the-job training (OJT). Facility-wide courses are provided internally or through external vendors and are usually classroom-based. Permitted unit-specific training may be developed and delivered within a particular permitted unit, and OJT

consists of supervised and documented training focused primarily on procedures performed by individual workers. Each of these types of training is described in Sections F.2.1 through F.2.3.

The Permittees shall ensure that all Facility employees and contract and support personnel who handle hazardous and/or mixed waste at permitted units receive the appropriate level of training within six months of their date of hire or transfer for work at a permitted unit. The Permittees shall not allow personnel to work in unsupervised waste handling positions at permitted units until they have successfully completed the appropriate level of training for their positions and responsibilities.

The Permittees shall ensure that records of Facility-wide training currently sponsored or administered by central training personnel are entered by that group into the Employee Development System (EDS), the official Facility training database, and that these records document that the required training has been successfully completed by the worker. The Permittees shall retain training records of former workers in accordance with Permit Section 2.12.2.

The Permittees shall ensure that the Facility-wide training program depicted in Table F-1 is carried out by the Permittees' central training personnel. Table F-1 includes a listing of the relevant training courses, a summary of topics, and a designation of the relevant courses for each job category. Categories of workers presented in Table F-1 include permitted unit hazardous/mixed waste workers, managers and supervisors of permitted unit hazardous/mixed waste workers, emergency responders, and uncontrolled area potential release site workers. Table F-2 summarizes the components of permitted unit specific training and OJT that workers receive, as applicable.

Permitted unit hazardous/mixed waste workers are responsible for handling hazardous/mixed wastes at a permitted unit. In addition, they are responsible for assisting in permitted unit spill and emergency response activities, as required.

Managers and supervisors of permitted unit hazardous/mixed waste workers are directly responsible for day-to-day operations related to permitted unit waste management activities. They are also responsible for assuring that personnel safety and training requirements are met.

Emergency Responders are trained emergency response personnel who respond to emergencies involving hazardous and/or mixed wastes. Emergency Responders also provide support for emergency response activities.

Uncontrolled Area Potential Release Site Workers conduct investigations and remedial activities at potential release sites. They are also responsible for proper waste management from generation to disposal, including waste characterization, treatment, and storage.

The Permittees shall review course content at least annually and shall update it as required to keep materials current with hazardous waste management regulations. The Permittees shall

maintain training materials of Facility-wide training courses on file in the ES&H Training Center and make them available for review by all hazardous/mixed waste management and handling personnel, and emergency response personnel. The Permittees shall maintain files listing the requisite skills, education, and training for workers who handle hazardous and/or mixed waste at each permitted unit, and the duties and responsibilities for each job description, as well as the name of each worker filling a job description, are maintained in accordance with Permit Section 2.12.2.

F.2.1 Facility-Wide Courses

The Permittees shall require certain hazardous waste management courses for permitted unit personnel, including Waste Generation Overview Live Training, Resource Conservation and Recovery Act (RCRA) Personnel Training, and RCRA Refresher Training.

The RCRA Personnel Training course shall provide an overview of state and federal hazardous waste management regulations, emphasizing compliance with the RCRA requirements that apply to job-related activities, such as the safe handling of hazardous and mixed waste. Instructors shall be trained in hazardous and mixed waste management programs and procedures and in RCRA. Central training personnel, with guidance from hazardous waste compliance personnel, shall provide an annual refresher of applicable hazardous waste management requirements. Permitted unit personnel who handle hazardous and/or mixed waste and/or clean up spills or releases of hazardous and/or mixed waste at permitted units, and the managers and supervisors of these workers, shall receive instruction on the topics listed in Table F-1. Personnel responsible for shipping or transporting hazardous and/or mixed waste shall receive supplementary training, as appropriate.

The Permittees shall ensure that training concerning the use of waste characterization documentation is included in the Waste Generation Overview Live course. This training shall be provided to appropriate personnel and provide detailed instructions on how to complete forms for characterizing wastes.

F.2.2 Unit-Specific Training

Waste-handling personnel shall participate in permitted unit-specific training at their particular work locations. Table F-2 addresses program requirements that ensure that hazardous and mixed waste management and handling personnel know the specific requirements for their particular facilities and are able to respond effectively to emergencies. The Permittees shall ensure that personnel become familiar with emergency procedures, equipment, and systems at their particular facility, including emergency and monitoring equipment use, inspection, repair, and replacement, as appropriate. The Permittees shall ensure that they also receive instruction on contingency plan contents and implementation (as they apply to their particular facility) including, but not limited to, communications or alarm systems, response to fires and explosions at their facility, key parameters for automatic waste-feed cutoff systems, shutdown of facility operations, and response to groundwater contamination incidents.

F.2.3 On-the-Job Training

The Permittees shall provide supervised and documented OJT, if developed, delivered by supervisors or other subject matter experts who are able to evaluate worker proficiency and determine appropriate training for the procedures required of each function-specific position. OJT topics may include implementation of permitted unit-specific procedures, maintenance of operating records, reporting requirements, and permitted unit-specific inspection requirements. Permitted unit emergency response personnel receive permitted unit-specific training regarding emergency response and shutdown procedures at the permitted unit to which they are assigned.

Only properly trained personnel may operate radiography equipment or conduct visual examinations (VE) of waste contents. Radiography and VE procedure operators shall receive on-the-job training in project requirements, system operations and standards, safe operating practices, application techniques, specific waste-generating practices, packaging configurations, parameter estimation, and identification of prohibited items. The Permittees shall train and test operators before they are qualified for radiography operation and VE, and shall requalify operators at least every two years.

F.2.4 Training Coordinator

The Central Training Division shall direct the Facility-wide ES&H training program and that the Division Leader (or designee) serves as the Training Coordinator for Facility-wide waste management training. The Training Coordinator shall be trained in the operation of hazardous and mixed waste management facilities, waste management practices, and emergency procedures and is responsible for coordinating training courses.

F.3 EMERGENCY TRAINING

If called upon by the EM&R Office, additional non-LANL emergency response personnel may assist the Facility Incident Commander at the scene of a hazardous or mixed waste emergency. These workers shall be trained in their specialties (*e.g.,* heavy equipment operation, hazardous material cleanups, traffic control, and security).

Permitted unit personnel involved in waste handling and emergency response shall be knowledgeable about appropriate building and operating area emergency procedures to ensure maximum protection of life and property and to mitigate the consequences of an emergency situation. These workers shall receive training in permitted unit-specific emergency procedures or participate in the Facility-wide emergency training program. Group leaders and immediate supervisors shall be responsible for ensuring that education and training in permitted unit-specific emergency procedures are provided to all personnel under their supervision. Training in permitted unit-specific emergency procedures is given by the operating group.

Immediate supervisors shall ensure that each new or transferred worker is informed on the general and specific emergency procedures related to the work area and that each worker is

advised of any changes to emergency procedures and that each worker is provided with an annual refresher of these procedures.

Specialized training shall be given to personnel assigned special functions or specific emergency duties. For example, emergency response personnel are required to attend training on the implementation of Attachment D (*Contingency Plan*), spill response, and Occupational Safety and Health Administration emergency response provisions. The EM&R Office shall provide training related to implementing LANL's EMP. In addition, permitted unit waste management and handling personnel shall participate in a training program in which they are instructed in emergency procedures pertinent to their work areas. The operating group is responsible for providing this site-specific instruction, which shall also include walk-throughs of the areas covered by the Contingency Plan.

F.4 IMPLEMENTATION OF TRAINING PROGRAMS

Waste Generation Overview Live is an introductory course that provides an overview of federal and state waste management regulations and Facility policies and procedures for waste management operations. The training addresses the information needed to identify and properly manage wastes that are subject to hazardous waste regulations in 40 CFR Parts 261, 264, and 268. Course topics include waste characterization and classification including identification of RCRA waste types and their determination, the information needed to characterize the wastes, and the documentation requirements for proper management of the wastes.

In addition, all permitted unit workers who handle hazardous and/or mixed waste are required to complete RCRA Personnel Training and annual RCRA refresher courses. These refresher courses update personnel on LANL procedures and changes in hazardous waste regulations and to provide them with an overview of their introductory training. Line managers and group leaders shall be responsible for ensuring that personnel participate in the appropriate introductory and annual training courses.

TABLE F-1

Facility-Wide Training Program Outline

Courses[a]	Permitted Unit[b] Hazardous/ Mixed Waste Worker	Manager/ Supervisor of permitted unit Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
HAZWOPER[c]: First Responder (Operations Level) (provides an overview of hazardous materials emergency response, including recognition and identification of hazardous materials and associated risks, required actions, and relationships with other emergency responders)			X[d]	
HAZWOPER: General Site Worker (40 hours) (provides general information on hazardous waste operations and emergency response for general site workers engaged in corrective action, remediation, or decontamination and decommissioning activities)				X
HAZWOPER: Refresher (provides general information on hazardous waste operations)			X	X
RCRA[e] Personnel Training (includes an overview of 40 CFR Parts 260-265, 268; the New Mexico Administrative Code, Title 20, Chapter 4, Part 1; Department of Transportation shipping regulations; internal and external protocol for facility	X	X	*[f]	*

Courses[a]	Permitted Unit[b] Hazardous/ Mixed Waste Worker	Manager/ Supervisor of permitted unit Hazardous/Mixed Waste Workers	Emergency Responder	Uncontrolled Area Potential Release Site Worker
inspections; operating equipment, communication systems, security systems; contingency plan; and emergency equipment use, inspection, and repair)				
RCRA Refresher Training (includes regulatory and legislative updates, occurrence reports and lessons learned, audit findings, modification/review of the contingency plan; provides required retraining)	X	X	*	*
Waste Generation Overview Live (includes waste management regulations and policies, definition of hazardous waste, wastes characterization and documentation, waste minimization, cycle of waste management at Los Alamos National Laboratory, storage and disposal)	X	X	X	X
Respirators: Air-Purifying (provides required annual retraining for operation and inspection of device, changing filters, donning and doffing)	*	*	X	*

Respirators: Self-Contained Breathing Apparatus (provides required annual retraining for operation and inspection, changing compressed air bottles, donning and doffing, safety features, care and cleaning, fitting)	*	*	X	*

[a] Additional training courses (not listed in this attachment) may also be taken by personnel depending on the types of hazards (*e.g.*, chemical) associated with a particular job description.

[b] TSF = Treatment and storage facility

[c] HAZWOPER = Hazardous Waste Operations and Emergency Response

[d] X indicates a required course.

[e] RCRA = Resource Conservation and Recovery Act

[f] * indicates that a course may be required for specific job tasks and/or work areas.

TABLE F-2

OUTLINE OF PERMITTED UNIT-SPECIFIC AND ON-THE-JOB TRAINING FOR TREATMENT AND STORAGE FACILITY OPERATIONS

Permitted unit-specific and/or on-the-job training (OJT) is provided to permitted unit workers to ensure that operations are performed in a safe manner and that actual job tasks are conducted in accordance with safe operating procedures.

Permitted unit-specific training will include, as applicable, the following topics:

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment
- Key parameters for automatic waste feed cut-off systems
- Communications or alarm systems
- Response to fires or explosions
- Response to groundwater contamination incidents
- Shutdown of operations.

OJT will include the following topics, as applicable:

- Implementation of facility-specific procedures
- Maintenance of operating records
- Reporting requirements
- Permitted unit-specific inspection requirements
- Operation of radiograph equipment
- Visual examination (VE) of waste contents.

OJT and facility-specific training must be documented by the sponsoring organization and training records must be maintained for a minimum of three years from the date that the trainee last worked at the permitted unit.

ATTACHMENT G.1
TECHNICAL AREA 3, BUILDING 29
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit that is comprised of Room 9010 and portions of Rooms 9020 and 9030 at Technical Area 3, Building 29 (TA-3-29) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The entire lower floor of TA-3-29 Room 9010 has been used for the storage of hazardous waste (*see* Figure G.1-1). The room measures 106 feet (ft), 9 inches (in.), by 21 ft, 8 in. and currently contains two enclosures as described in Permit Attachment A (*Technical Area Unit Descriptions*). The room also contains two stairways and a ramped area that leads to raised rooms; the stairways, the ramp, and the raised rooms are not part of the Room 9010 portion of the permitted unit. The wall of Room 9010 that is adjacent to the raised rooms ranges in height due to connection to these rooms. Portions of Room 9010 have a 48” high wall with a 42” high hand rail.

Room 9020 measures approximately 27 feet wide by 141 feet long; the area designated for hazardous waste storage is comprised of a part of the entire room consisting of: a portion of the floor; a portion of a wall; and a portion of a chain link fence (*see* Figure G.1-2) and measures 19 feet wide by 25 feet long. Also within the Room 9020 hazardous waste storage area is a floor drain that is connected to the Technical Area 50 Radiological Liquid Waste Facility. This drain is a design feature of the facility to protect facility and programmatic equipment in the event of a water release within the basement of TA-3-29. The drain will be required for facility use after closure of the permitted unit.

Room 9030 is approximately 62 feet wide by 141 feet long; the area designated for hazardous waste storage within Room 9030 measures approximately 30 feet long by 8 feet wide and is located in the southwest corner of the room (*see* Figure G.1-3). The floor is concrete and has been painted with an epoxy sealant.

The waste stored at the permitted unit consists of hazardous waste in both liquid and solid form since 1990 and has been subject to waste management regulations under the RCRA since July 25, 1990. Due to the scope of process operations at TA-3-29, the wastes stored include corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

Specific hazardous waste constituents stored at the permitted unit are included in Tables G.1-1, G.1-2, and G.1-3. Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include information about waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 50 cubic meters of waste have been stored in Room 9010, approximately 70 cubic meters of waste have been stored in Room 9020, and approximately 10 cubic meters of waste have been stored in Room 9030. Throughout the life of this Permit, it is estimated that an additional 27 cubic meters of waste will be stored in Room 9010, 38 cubic meters of waste will be stored in Room 9020, and 5 cubic meters of waste will be stored in Room 9030.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standards

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.1-4 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities will be completed within 180 days after the final receipt of waste. A closure certification report shall be submitted to the Department within 240 days of the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated surfaces and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and a structural assessment will

be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor and walls of the permitted unit for any existing cracks or conditions that indicate a potential for, or an actual, release of hazardous constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, the unit's surfaces and related equipment will be decontaminated, or removed, or both and managed according to Section 7.0 of this closure plan. Decontamination activities will ensure the removal of all waste residues and hazardous waste constituents from the permitted unit to meet the closure performance standards in Section 4.1.

All surfaces and related equipment that are removed and not intended for recycle will not require decontamination, will be considered solid and potentially hazardous waste when removed, and will be disposed of in accordance with Section 7.0.

5.3.1 Removal of Structures and Related Equipment

The following structures and related equipment will be removed after the structural assessment: the two room enclosures within Room 9010; and the chain-link fence that runs along the side of 9020.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces, structures, and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. Decontamination of the permitted unit's surfaces will include all features located within the unit (*e.g.*, walls, railings, stairways, ramps). There is no equipment located at the permitted unit that is expected to be left in place; however, if equipment is identified during the assessment that is expected to be left in place, it will be decontaminated in accordance with this section.

Decontamination of the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a

surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations rather than steam cleaning or pressure washing.

Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations within the basement. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposure to personnel due to potential releases of radiological materials and organic compounds within the enclosure. Enclosure of the area increases the risk of personnel exhaustion, because of the additional PPE, and the potential for workers to reach radiological work exposure limits. Therefore, wipe-down washing, rather than steam cleaning or pressure washing, will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary.

The entirety of the unit's floors will be decontaminated. Waste at the permitted unit is no longer stacked; however, past activities have allowed the stacking of 55-gallon drums. Including the height of pallets that may have been used, two stacked 55-gallon drums measure just over eight feet high. Therefore, to ensure that decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of 11 feet.

Ceilings of the permitted unit, walls above 11 feet, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above the height of 11 feet.

Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination. The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of small containers.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process. The floor drain in Room 9020 will be plugged before decontamination activities begin to ensure that none of the wash water solution enters the drain located on the floor.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.1-5 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be

used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the floor and from the walls (up to 11 feet) of the permitted unit. Verification wipe samples will be collected from random locations within each of the sample areas indicated on Figures G.1-1, G.1-2, and G.1-3 of this closure plan.

A total of 17 wipe samples will be collected from Room 9010; eight from the floor, four from each of the longer walls, and five from the shorter walls. A total of five wipe samples will be collected from Room 9020; two from the floor, two from the wall, and one from the floor drain. A total of four wipe samples will be collected from Room 9030; two from the floor and two from the wall.

If there is liquid found in the drain at the time of the assessment liquid samples will be collected in accordance with Section 6.2.1 of this closure plan.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquid samples will be collected and analyzed to determine if residual hazardous constituents remain in the drain at the permitted unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid sampler, a bacon bomb, a bailer, or by pouring liquid in sample containers.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limits.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification

sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.1-7.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.1-7 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to four (4) degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Tables G.1-1, G.1-2, and G.1-3). Tables G.1-1, G.1-2, and G.1-3 will be modified, as necessary, to incorporate changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.1-6. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.1-6. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan;

d. the capability to perform data reduction, validation, and reporting;

The selection of the analytical testing methods identified in Table G.1-6 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.1-8 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound and statistically valid and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries;

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.1-5 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.1-5, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.1-1

Hazardous Waste Constituents of Concern at Room 9010[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
	F006	Wastewater treatment sludge
Organic Compounds	D018, D022, D027, D029, D030, D032, D033, D034, D035, D036, D037, D038, D040, D041, D042	Benzene; Chloroform; 1,4-Dichlorobenzene; 1,1-Dichloroethylene; 2,4-Dinitrotoluene; Hexachlorobenzene; Hexachlorobutadiene; Hexachloroethane; Methyl ethyl ketone; Nitrobenzene; Pentrachlorophenol; Pyridine; Trichloroethylene; 2,4,5-Trichlorophenol; 2,4,6-Trichlorophenol
	F001, F002, F003, F004, F005	Trichloroethylene, Methyl ethyl ketone, Nitrobenzene, Pyridine

[a] Based on the permitted unit's Operating Record

Table G.1-2

Hazardous Waste Constituents of Concern at Room 9020[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
	F006	Wastewater treatment sludge
Organic Compounds	D018, D022, D027, D029, D030, D032, D033, D034, D035, D036, D037, D038, D040, D041, D042	Benzene; Chloroform; 1,4-Dichlorobenzene; 1,1-Dichloroethylene; 2,4-Dinitrotoluene; Hexachlorobenzene; Hexachlorobutadiene; Hexachloroethane; Methyl ethyl ketone; Nitrobenzene; Pentrachlorophenol; Pyridine; Trichloroethylene; 2,4,5-Trichlorophenol; 2,4,6-Trichlorophenol
	F001, F002, F003, F004, F005	Trichloroethylene, Methyl ethyl ketone, Nitrobenzene, Pyridine

[a] Based on the permitted unit's Operating Record

Table G.1-3

Hazardous Waste Constituents of Concern at Room 9030[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D008	Lead

[a] Based on the permitted unit's Operating Record

Table G.1-4

Closure Schedule for the Technical Area 3, Building 29 Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.1-5

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.1-5

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.1-5

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.1-6

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D [c]	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.

CVAA = Cold-vapor atomic absorption spectroscopy ; GFAA = Graphite furnace atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy; ug/L = micrograms per liter
GC/MS = Gas chromatography/mass spectrometry; mg/L = milligrams per liter

Table G.1-7

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			

Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.1-8

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

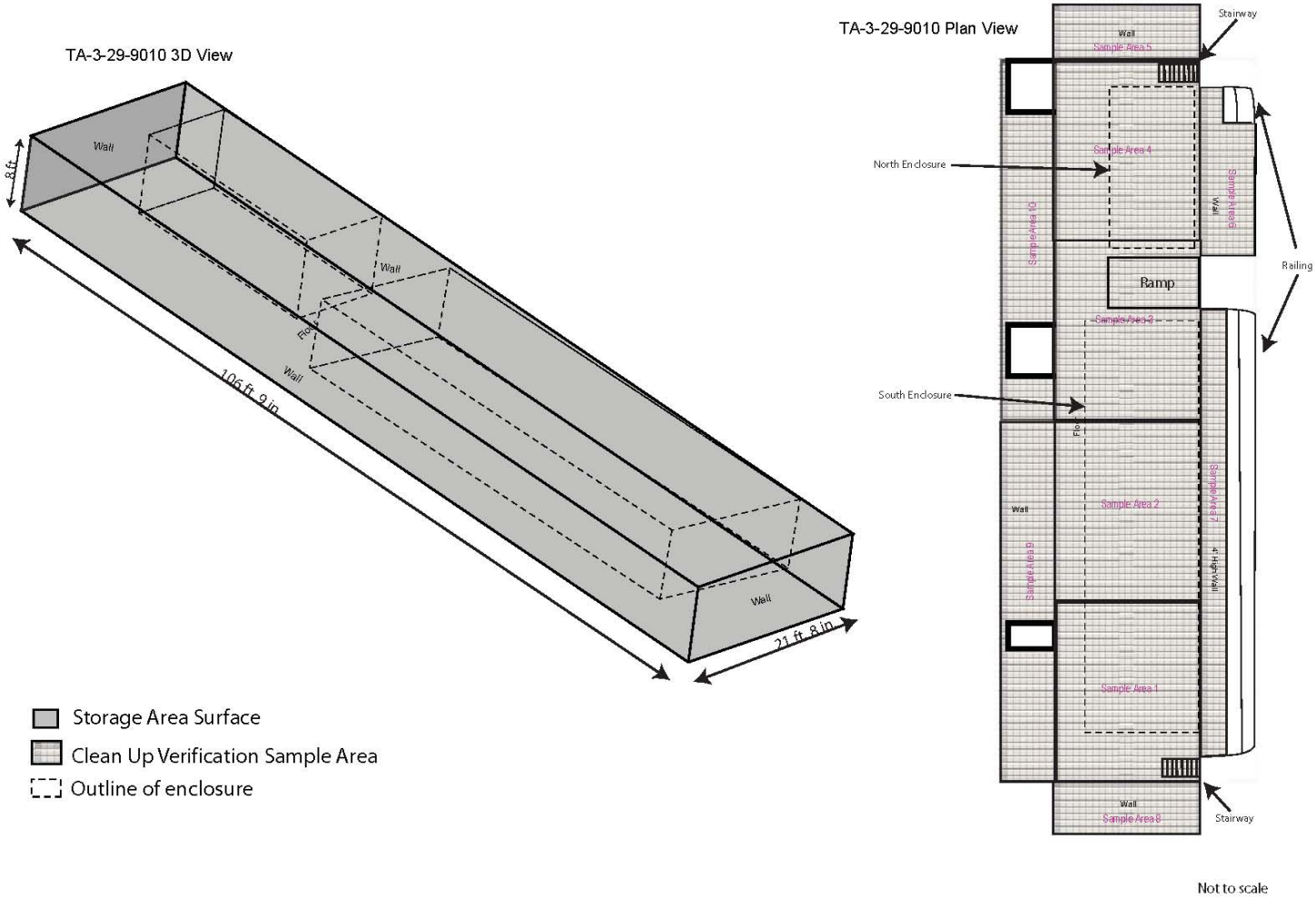

Figure G.1-1

Technical Area 3, Building 29, Room 9010

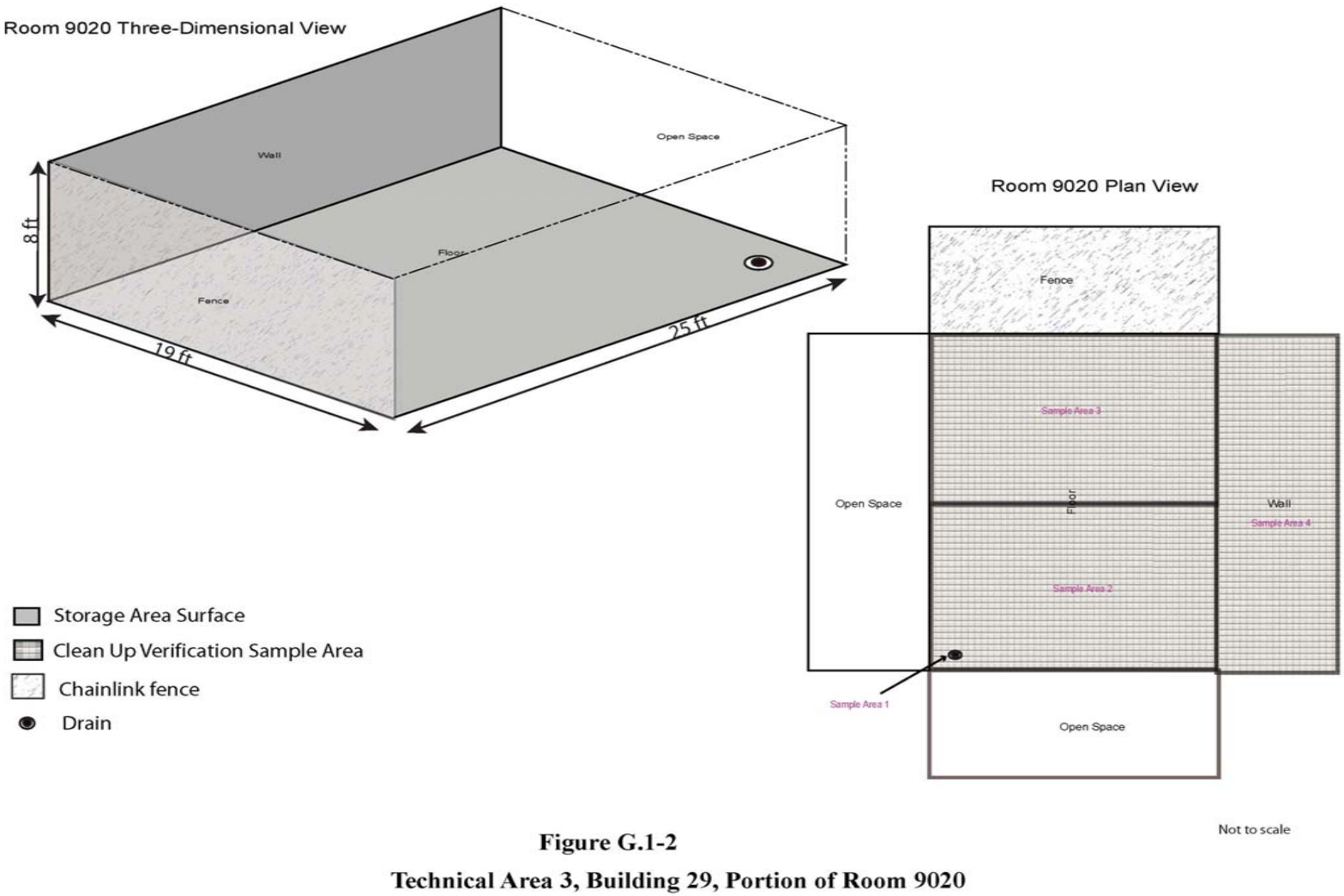

Figure G.1-2
Technical Area 3, Building 29, Portion of Room 9020

Figure G.1-2: Technical Area 3, Building 29, Room 9020 Grid Sampling Locations and Additional Sampling Locations

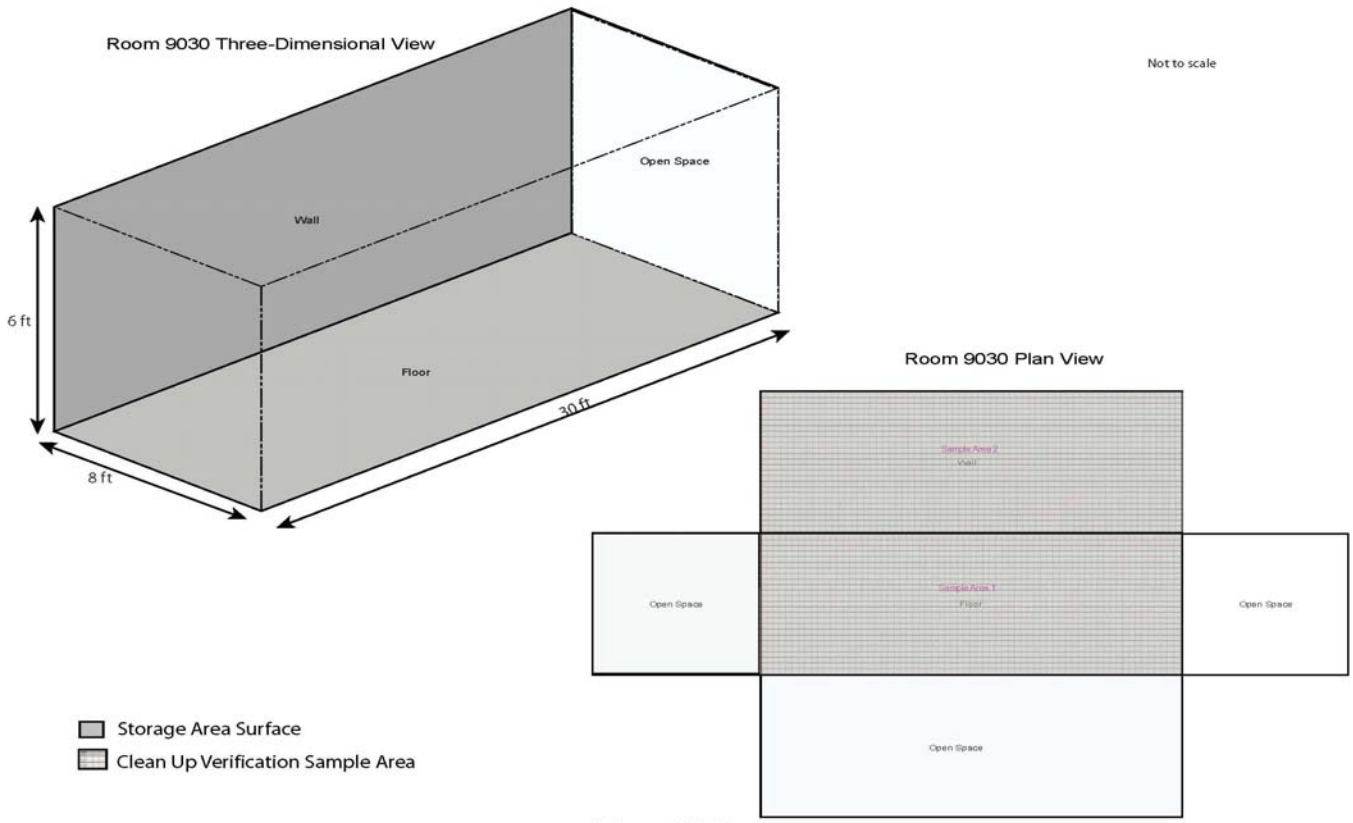

Figure G.1-3
Technical Area 3, Building 29, Portion of Room 9030

Figure G.1-3: Technical Area 3, Building 29, Room 9030 Grid Sampling Locations

ATTACHMENT G.4
TECHNICAL AREA 50, BUILDING 69
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit which is comprised of Rooms 102 and 103 at Technical Area (TA) 50, Building 69 (TA-50-69) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not described elsewhere in the Permit are described below.

The permitted unit consists of adjacent Rooms 102 and 103. Room 102, the main process room, measures approximately 45 feet (ft) wide and 52 ft long and contains a large glovebox which occupies a substantial portion of the room; the long dimension is oriented northwest-southeast. While the entirety of Room 102 may be used for storage, the primary area utilized for hazardous waste storage is an 11- by 11-ft roped-off section. The floor is concrete with an epoxy coating and there is an operational drain located in Room 102 in the northeast area near the north wall. There is a mezzanine above Room 102 which is not part of the permitted unit.

Room 103, the unloading area, measures approximately 18 ft wide and 19 ft long and is located adjacent to, and southeast of, Room 102. A 12-ft by 20-ft roll-up loading vehicle access door is located at the southernmost end of the room and an operational drain is located in the middle of the room. Both drains in the two rooms are operational for firewater collection and will drain into holding tanks located in the building.

The waste stored at the permitted unit consists of hazardous waste in both liquid and solid form since 1995 and has been subject to waste management regulations under RCRA. Due to the scope of process operations at the permitted unit, the wastes stored include those in solid and liquid form. Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 67,200 gallons of hazardous waste has been stored at the permitted unit over its active life. Throughout the life of this Permit, it is estimated that the maximum volume of inventory of waste for the projected lifespan of the permitted unit is 446,400 gallons.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standards

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.4-2 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR §

264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal, or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include, but not be limited to: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe the closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flatbed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and a structural assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor and walls of the permitted unit for any existing cracks or conditions that indicate the potential for, or an actual, release of hazardous constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, the unit's surfaces and related equipment will be decontaminated, or removed, or both and managed according to Section 7.0 of this closure plan. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous waste constituents from the permitted unit to meet the closure performance standards.

5.3.1 Removal of Structures and Related Equipment

All surfaces and related equipment that are removed and not intended for recycle will not require decontamination, will be considered solid and potentially hazardous waste when removed, and will be disposed of in accordance with Section 7.0.Removal of Structures and Related Equipment

The following related equipment will be removed after the structural assessment: the two gloveboxes; and the one lift rack located within Room 102.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces and related equipment that will be reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. Decontamination of the permitted unit's equipment will include, but not be limited to, the railings, the staircases, and the ladders, excluding the mezzanine in Room 102.

Decontamination of the permitted unit and its related equipment will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by pressure washing or steam cleaning with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

The entirety of the unit's floors will be decontaminated. Hazardous waste containers at the permitted unit are not stacked. Including the height of a pallet, a 55-gallon drum measures just over four feet high. To ensure that decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of seven feet.

Ceilings of the permitted unit, walls above seven feet, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic

hazardous waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above seven feet.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process. The floor drains in Rooms 102 and 103 will be plugged before decontamination activities begin to ensure that none of the wash water solution enters the firewater drains located on the floor.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.4-6 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one verification wipe sample from the floor and from the walls (up to seven feet) of the permitted unit. Samples will be collected from random locations within each of the sample areas indicated on Figures G.4-1 and G.4-2 of this closure plan.

A total of 13 wipe samples will be collected from Room 102; three from the floor; one from the drain; four from each of the longer walls; and five from the shorter walls. A total of seven wipe samples will be collected from Room 103; two from the floor; one from each of the walls; and one from the floor drain.

If there is liquid found in either of the drains at the time of the assessment liquid samples will be collected in accordance with Section 6.2.1 of this closure plan.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquid samples will be collected and analyzed to determine if residual hazardous constituents remain in the drains at the permitted unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid sampler, a bacon bomb, a bailer, or by pouring liquid in sample containers.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces and equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Solid Chip Sampling

Solid samples will be collected and analyzed to determine if residual hazardous constituents remain on the floor of the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.4-3.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed original chain-of-custody form to the Facility and it will become a part of the permanent sampling record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling method;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.4-3 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation

organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Table G.4-1 of this closure plan). Table G.4-1 will be amended at the time of closure, as necessary, to incorporate all changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.4-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.4-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.4-4 was based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with the QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated via the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and the potential for sample contamination associated with the sampling and analysis process which is described in the following sections. Information on calculations necessary to evaluate the QC results is also described below.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.4-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.4-6 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.4-6, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.4-1

Hazardous Waste Constituents of Concern in Technical Area 50, Building 69 Indoor Container Storage Unit

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver,
Organic Compounds	D018, D019, D021, D022, D026, D027, D028, D029, D030, D035, D036, D037, D038, D039, D040, D043 F001, F002, F003, F004, F005	Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, Cresol, 1,4-Dichlorobenzene, 1,2-Dichloroethylene, 2,4-Dinitrotoluene, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Tetrachloroethylene, Trichloroethylene, Vinyl Chloride Acetone, Methyl ethyl ketone, , Methylene Chloride, Toluene, MIBK, DBCP, Tetrachlrorethylene, 1,1,1-trichloroethane, Chlorinated Fluorocarbons, 1,1,2- Trichloro-1,1,2-Trifluoroethane, Ortho-dichlorobenzene, Trichlorofluoromethane, 1,1,2-Trichloroethane, Xylene, Ethyl acetate, Ethyl benzene, Ethyl ether, n-Butyl alcohol, Cyclohexanone, Methanol, Cresols, Cresylic acid, Nitroobenzene, Carbon disulfide, Isobutanol, Pyridine, 2-ethoxyethanol, 2-nitropropane

[a] Based on the permitted unit's Operating Record
MIBK = 4-methyl-2-pentanone
DBCP = 1,2-dibromo-3-chloropropane

Table G.4-2

Closure Schedule for the Technical Area 50, Building 69, Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.4-3

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
L = Liter
mL = milliter
HNO_3 = nitric acid
TCLP = Toxicity Characteristic Leaching Procedure
HCl = hydrochloric acid

Table G.4-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D [c]	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
mg/L = milligrams per liter
GFAA = Graphite furnace atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
ug/L = micrograms per liter.

Table G.4-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Table G.4-6

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid	Subtitle D landfill

Potential Waste Materials	Waste Types	Disposal Options
	waste	
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

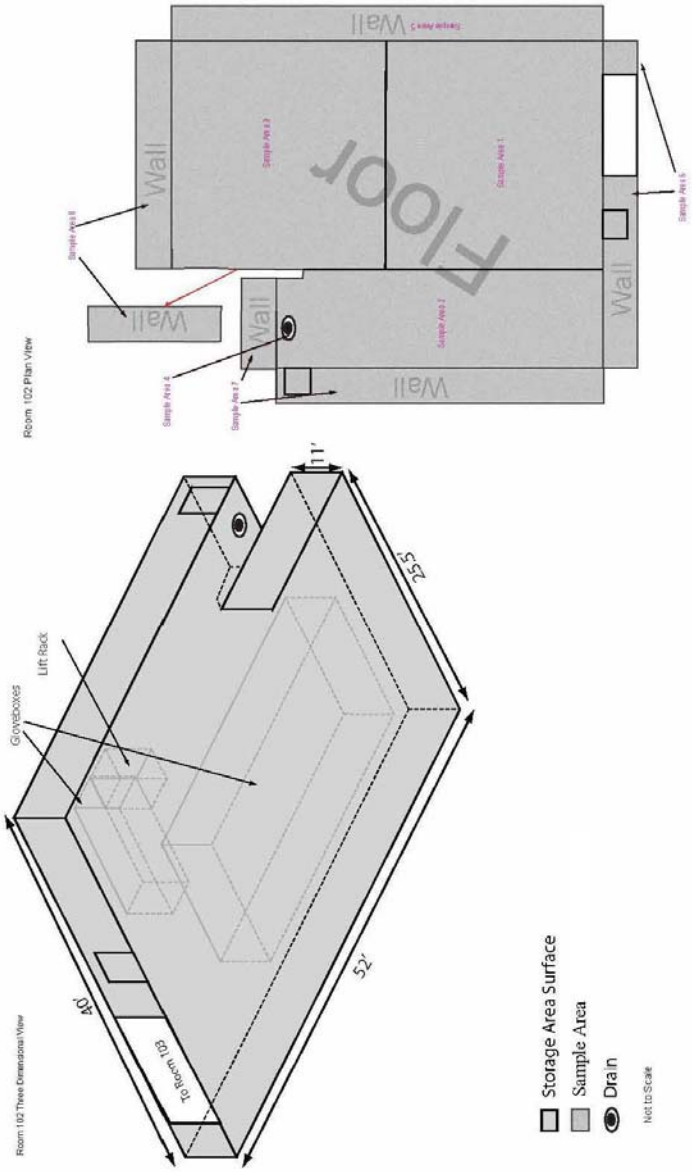

Figure G.4-1:
Technical Area (TA) 50, Building 69, Room 102 Container Storage Unit Sampling Grid and Additional Sampling Locations

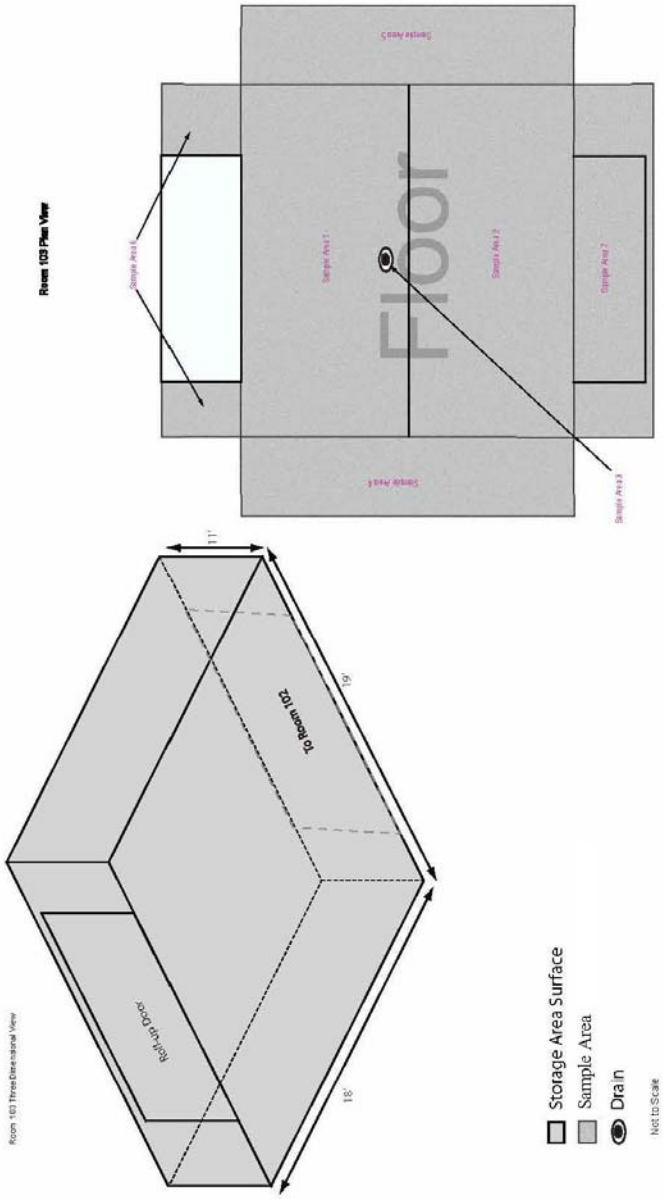

Figure G.4-2:
Technical Area (TA) 50, Building 69, Room 103 Container Storage Unit Sampling Grid and Additional Sampling Locations

ATTACHMENT G.5
TECHNICAL AREA 50, BUILDING 69
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at the Technical Area 50, Building 69 (TA-50-69) Outdoor Pad at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264 Subparts G and I for hazardous waste management units at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere in the Permit are described below.

The permitted unit is located outside in the southwest corner of TA-50-69 (*see* Figure G.5-1). It consists of a four inch thick, rectangular-shaped, asphalt pad measuring 90 ft long by 24 ft wide. Hazardous waste storage has occurred on the permitted unit and in the two transportainers (75 and 184) situated on the permitted unit. Each transportainer is anchored by concrete blocks at either end of the pad and each measure eight feet (ft) wide by 40 ft long and 8.5 ft high. The unit is sloped gently (1% to 5% slope) to the south-southeast draining towards the south fence along a gravel/soil/sediment berm. The berm provides drainage for precipitation and is elevated approximately six to eight inches above-ground level in an easterly direction.

The waste stored at the permitted unit consists of hazardous and mixed waste in both solid and liquid form. The permitted unit was constructed and began managing waste in 1982; it has been subject to waste management regulations under RCRA since July 25, 1990. The wastes stored include corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents. Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include information about hazardous waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 1,999 cubic meters (528,000 gallons) of waste has been stored at the permitted unit. Throughout the life of this Permit, it is estimated that an additional 4,330 cubic meters (1,144,000 gallons) of waste will be stored.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standards

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264, Subparts G and I.

Closure of the permitted unit will be deemed complete when: 1) all surfaces, structures, and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.5.2 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR §264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit structures, surfaces and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that soils, surfaces, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe the closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or additional sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goal of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the asphalt pad for any existing cracks or conditions that indicate the potential for, or an actual, release of hazardous constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations along with the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, the unit's structures and related equipment will be decontaminated, or removed, or both and managed according Section 7.0 of this closure plan. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards.

All surfaces and related equipment that are removed and not intended for recycle will not require decontamination, will be considered solid and potentially hazardous waste when removed, and will be disposed of in accordance with Section 7.0.

5.3.1 Removal of Structures and Related Equipment

The concrete blocks that support the transportainers will be removed before the assessment and disposed of accordingly. The asphalt pad and all the materials associated with the pad (*i.e.*, asphalt berm, minimum of 6 inches of the underlying soil, base course or fill used when constructing the pad) will be removed after the assessment. If, after the removal of the pad (and underlying soil and base course material), the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad (*e.g.*, additional concrete or base course materials), additional soil and materials will be removed.

At this time there is not any other related equipment at the permitted unit that is expected to be removed or left in place; however, if equipment is identified during the review and assessment, it will be removed in accordance with Permit Section 9.4.3.2 and this closure plan section.

5.3.2 Decontamination of Structures and Related Equipment

The two transportainers at the permitted unit are to be reused and will be decontaminated by steam cleaning or pressure washing with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. Portable berms, and other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.3.3 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.5-3 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Wipe Sampling Activities

Soil sampling and decontamination verification wipe sampling activities will be conducted at the permitted unit in order to verify that soils, structures, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment. In accordance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the floor, the ceiling, and from each wall of the transportainers (75 and 194) situated on the permitted unit (*see* Figure G.5-1 of this closure plan) for a total of 12 wipe samples. The precise locations for these wipe samples will be randomly determined at the time of sampling within the area of each surface.

In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples at the permitted unit at the following locations:

a. one sample on the northwest and southeast corners (*see* "biased sample location 1" and "biased sample location 2" on Figure G.5-1) of transportainer 75 and one sample on the northwest corner (*see* "biased sample location 3") of transportainer 194 for a total of three samples (*see* Permit Section 9.4.7.1.ii(1));

b. one sample every 900 square feet of the permitted unit for a total of four samples (*see* Permit Section 9.4.7.1.ii(2)); and

c. one sediment sample at the storm water discharge point (*see* "additional sample of berm sediment" on Figure G.5-1).

At the time of sampling, the precise locations of the grid samples will be randomly selected within each 900 square foot sampling box (*see* Figure G.5-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. If the review or assessment determines the need to obtain additional samples within the area of the sampling box (*e.g.*, at asphalt cracks), these sample collection locations will be in addition to the grid sampling locations.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures indentified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Soil and Sediment Sampling

Soils and sediment will be collected and analyzed to determine if hazardous constituents are present in soils at the permitted unit. Soil and sediment samples will be collected using a spade, scoop, auger, or trowel or other equipment as specified in approved methods for the type of analytes (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.5-5.

6.2.2 Wipe Sampling

Surface wipe samples will be collected to determine if residual hazardous constituents remain in the transportainers at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and

defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed original chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line and the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.5-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for the all the hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Table G.5-1 of this closure plan). Table G.5-1 may be modified, as necessary, to incorporate any changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.5-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.5-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control/records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.5-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of interest;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling and analysis process, and are described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.5-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis* Plan), and Facility waste management procedures. Closure activities may generate different types of waste materials: these wastes are listed with potential disposal options in Table G.5-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.5-3, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.5-1

Hazardous Waste Constituents of Concern at the Technical Area 50, Building 69, Outdoor Container Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver,
Organic Compounds	D018, D019, D021, D022, D026, D027, D028, D029, D030, D035, D036, D037, D038, D039, D040, D043	Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, Cresol, 1,4-Dichlorobenzene, 1,2-Dichloroethylene, 2,4-Dinitrotoluene, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Tetrachloroethylene, Trichloroethylene, Vinyl Chloride
	F001, F002, F003, F004, F005	Acetone, Methyl ethyl ketone, , Methylene Chloride, Toluene, MIBK, DBCP, Tetrachlrorethylene, 1,1,1-trichloroethane, Chlorinated Fluorocarbons, 1,1,2- trichloro-1,1,2-trifluoroethane, ortho-dichlorobenzene, Trichlorofluoromethane, 1,1,2-trichloroethane, Xylene, Ethyl acetate, Ethyl benzene, Ethyl ether, n-butyl alcohol, Cyclohexanone, Methanol, Cresols, Cresylic acid, Nitroobenzene, Carbon disulfide, Isobutanol, Pyridine, 2-ethoxyethanol, 2-nitropropane

[a] Based on the unit Operating Record

Table G.5-2

Closure Schedule for the Technical Area 50, Building 69, Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.5-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt and concrete	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid	Either an authorized on-site radioactive waste

Potential Waste Materials	Waste Types	Disposal Options
	waste	disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.5-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method	Test Methods/ Instrumentation	Target Detection Limit [a]	Rationale
Metal Analysis				
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	Determine the metals concentration in the samples.
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

[a] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.5-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			

Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.5-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

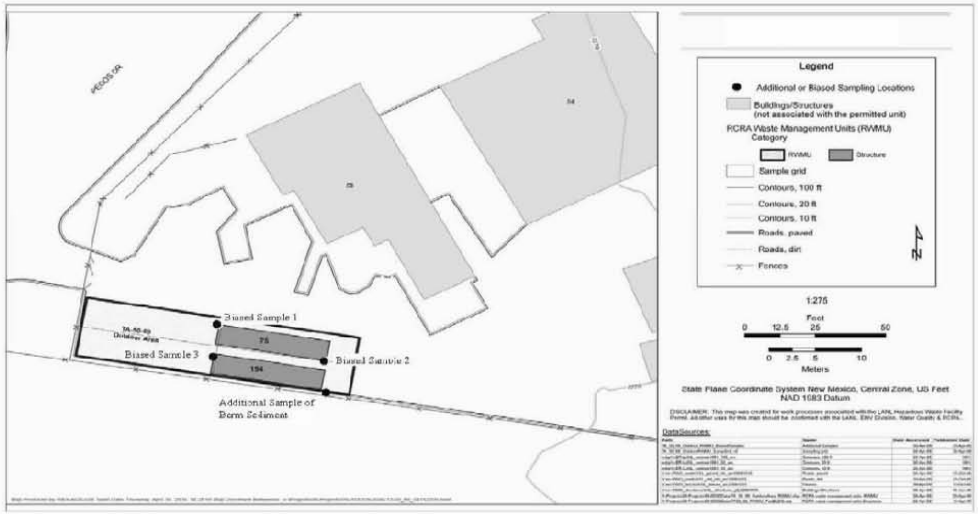

Figure G.5-1: Technical Area (TA) 50, Building 69, Outdoor Container Storage Unit Sample Grid and Additional Sampling Locations

ATTACHMENT G.6
TECHNICAL AREA 54, AREA G, PAD 1
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at Technical Area (TA)-54, Area G, Pad 1 at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8 to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). This section of the closure plan provides a description of the permitted unit which is located in the north-eastern portion of Area G and is comprised of an asphalt pad with three structures (Building 412 (the Decontamination and Volume Reduction System (DVRS), the Mobile Visual Examination and Repackaging (MOVER), and support trailer for the MOVER) situated on it.

The irregularly-shaped asphalt pad is approximately 358 feet (ft) long and 213 ft wide or approximately 76,000 square feet. The pad, which is sloped 1% to 1.5% to the south and south-east for drainage, consists of a four to six inch (in) layer of asphalt over the underlying base course overlying fill (minimum six inches of tuff). The pad has three structures associated with it: Building 412 (DVRS); the MOVER; and the MOVER's support trailer. Storage of mixed waste occurs only on the Pad and in Building 412.

Dome 226, which was decommissioned in October 2009, was located on the eastern portion of the permitted unit. The dome was approximately 286 ft long and 89 ft wide, was built of an aluminum framework of trusses covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric anchored with bolts to the pad's concrete ring wall and had a surface area of about 22,300 square ft. The interior floor perimeter of the dome was surrounded with a 6-inch-high, 6-inch-wide asphalt curb and was equipped with personnel doors and a roll-up door on the south end for vehicle access. A ramp was located at the vehicle entrance to the dome, which allowed vehicles and container handling equipment to pass safely over the interior curb which prevented run-on into the dome. At the southern end of the dome was a drain connecting to the recessed sump in Pad 9's Dome 229. This fire protection drain system consists of a 10 in. line running southeast from where Dome 226 was located with secondary connecting drains from Domes 232 and 231. The purpose of this drain system was to provide additional fire water collection capacity in the event of an emergency. The sump and drain have been plugged to prevent storm water from entering the system at the drainage point. . Building 412 is a one story building that is approximately 220 ft long by 60 ft wide or 13,200 square ft. This building is currently used for storage and volume reduction of bulky mixed waste. It consists of two structures: an internal primary confinement structure that houses mixed waste processing operations; and an external confinement building, which contains the primary confinement structure. The building itself provides protection from the elements and a temperature-controlled space for the internal structures and associated process equipment. There are roll-up vehicle-access loading doors on

the north and south ends of the building and personnel access doors on the north, east, and south for support of operations. The floor and foundation of the building are concrete and the floor is painted with an epoxy sealant. The concrete slab is above grade to direct potential run-on away from the building. The floor in the building is sloped to a sump that has a grating cover to provide traction and a level working surface.

The primary confinement structure is housed entirely within the building and consists of interconnected enclosures. The primary confinement is approximately 150 ft long by 50 ft wide by 16 ft high and sits directly on the sealed concrete floor. The primary confinement interlocks in a self supporting steel framework that can be assembled into multiple configurations. It is equipped with both large roll-up doors so that personnel, equipment, and material can access the primary confinement and move from one enclosure to the next. Equipment in the enclosures includes gloveboxes, dismantling tools (*e.g.*, power saws, hammers, pry bars), shearing and bailing equipment. Building 412 contains fire protection piping as well as heating and ventilation ducting.

The MOVER is a 10 x 40-ft transportainer that contains a glovebox utilized to visually examine and repackage the contents of high activity transuranic waste drums. The MOVER unit is a certified DOT 7A Type A Container (CPC 1998). The MOVER is classified as a Type II (000) structure per NFPA 220, *Standard on Types of Building Construction*. Interior walls are constructed as double-walled for containment purposes with sealed and polished stainless steel interior for ease of decontamination. The outside walls of the MOVER are constructed of carbon steel. The walls are insulated with cellulose, which is manufactured under Consumer Product Safety Commission performance criteria mandating fire standards. The interior and exterior of the MOVER are non-flammable metal with steel stud construction. All electrical systems are designed to the National Electrical Code.

The MOVER is comprised of 3 rooms consisting of a control room, a glovebox operations room, and the drum entry room. The control room provides space for personnel entry, a portal radiation monitor, and system controls. There are doors between each section to isolate each room. Doors are kept closed during the glovebox operations to maintain negative pressure in the unit. Airflow direction is maintained so that air flows from areas of low contamination to areas of potentially higher contamination before being exhausted through the HEPA ventilation system. The unit has continuous air and fixed head monitors, intercom system, fire protection system, HVAC, and lighting.

The glovebox operation room contains the glovebox, drum lifter, HEPA filters and differential pressure-monitor panel. The drum entry room is located at one end of the trailer. This room provides space for four standard 55-gallon drums on transport dollies. Transuranic waste drums are bagged into the glovebox and opened. The contents are examined and then bagged out into another drum(s). Nonconformance items are identified and bagged out into a third drum. The empty parent drum and newly filled drum(s) are then removed from the MOVER unit.
The glovebox is 12feet long, 2.75 feet high and the end is 2.3 feet wide at the top. The glovebox component is fabricated from Type 304L stainless steel and includes a HEPA ventilation system.

The MOVER support trailer is a 8 x 20 ft metal trailer that houses ventilation blowers and monitored discharge system, the fire suppression system, and electrical distribution system for the MOVER.

The permitted unit has been used for the storage of both liquid and non-liquid mixed waste and has stored the following waste types: solidified inorganic solids; leached process residues; salts and cement paste; ash; dewatered aqueous sludge; chemical treatment sludge; soils; combustible debris (*e.g.*, plastics, rubber, laboratory trash, building debris); and heterogeneous debris.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include information about hazardous waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 1,458,500 gallons of hazardous waste has been stored at the permitted unit to date. Throughout the life of this Permit, it is estimated that an additional 1,760,000 gallons of hazardous waste will be stored.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standards

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I.

Closure of the permitted unit will be deemed complete when: 1) all surfaces, structures, and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.6.1 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit structures, surfaces and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that soils, surfaces, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe the closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport from the permitted unit. Appropriate shipping documentation will be prepared for the wastes during transport. All hazardous waste containers will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting decontamination and sampling activities, the Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any finding(s) or action(s) that may influence closure activities or additional sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of any spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the asphalt pad for any existing cracks or conditions that indicate the potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Surfaces, Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's structures and related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous waste constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Surfaces, Structures, and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

Building 412 (and its ancillary equipment), the MOVER, and its support trailer will be removed before the assessment. The asphalt pad, and all the materials associated with the pad (*e.g.*, concrete ringwall, sump, minimum of six inches of the base course and soil underlying the pad), will be removed after the assessment and before soil samples are collected. If, after the removal of the pad (and underlying soil and base course material), the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad (*e.g.*, additional concrete or base course materials), additional soil and materials will be removed. If it is determined to be appropriate at the time of the structural assessment, soil samples may be collected through the asphalt (before the pad and its materials have been removed) from areas where contamination is suspected (*i.e.*, locations of stains or known spills).

In the event that alternative closure requirements, in accordance Permit Section 9.2.2.2, are applied to the closure of this permitted unit, the Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (Order) (*see* Permit Section 9.3)) beneath the permitted unit.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces, structures, and related equipment that will be reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. This includes: the gloveboxes, enclosure components, the cabinets in Building 412; bailing equipment; portable air monitors; all electronic devices and tools; and spill cleanup equipment containers in Building 412, the MOVER, and the support trailer. This list of equipment requiring decontamination may be revised during the review and assessment which would result in an amendment to this closure plan.

Water-resistant equipment and operating machinery (*i.e.*, the gloveboxes, enclosure components, and cabinets) not sensitive to water intrusion will be decontaminated by steam cleaning, or pressure washing, with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water and mixed in accordance with the manufacturer's recommendation. All other equipment at the permitted unit that is sensitive to water intrusion (*i.e.*, the bailing equipment, portable air monitors, electronic devices or tools, and spill cleanup equipment containers) will be decontaminated by washing using a wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water and mixed in accordance with the manufacturer's recommendation.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. The sump in the DVRS building will be plugged before decontamination activities begin to ensure that none of the wash water solution enters the drain on the floor. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment. Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste, as summarized in Table G.6-2, in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling and analytical methods as well as the quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Sampling Activities

Soil sampling and decontamination verification sampling activities will be conducted at the permitted unit in order to verify that soils, structures, and related equipment at the permitted unit meet the closure

performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit.

In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of wipe samples from the walls, the floor, and the ceiling of the MOVER for a minimum of five wipe samples.

In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples at the following locations:

a. one sample every 250 square feet in the loading/unloading zone outside the MOVER (*see* Permit Section 9.4.7.1.ii(1));

b. one sample every 900 square feet of the permitted unit for a total of 64 soil samples (*see* Permit Section 9.4.7.1.ii(2));

c. one sample just off the southeast edge of the permitted unit where stormwater runs off the pad (*see* Permit Section 9.4.7.1.ii(3));

    1. if the soil sample collected at the southeast edge of the permitted unit detects hazardous constituents, ten samples shall be collected along the swale between the permitted unit and Pad 10 (*see* Permit Section 9.4.7.1.ii(8)) (*see* Figure G.6-2).

d. one sample at the rock check dam at the far southeast end of Area G where stormwater discharges (*see* Permit Section 9.4.7.1.ii(3));

    1. if the soil sample collected at the rock check dam detects hazardous constituents, ten samples shall be collected along the swale between the permitted unit and Pad 10 (*see* Permit Section 9.4.7.1.ii(8)) (*see* Figure G.6-2).

e. one sample at the floor drain at the south end of the permitted unit underlying the removed Dome 226 and one sample at the sump in Building 412 (*see* Permit Section 9.4.7.1.ii(5)); and

f. one sample at all the joints and intersections of the ten inch fire protection drain line running southeast and then east toward Pad 9 TWISP domes (*see* Permit Section 9.4.7.1.ii(7)).

Figures G.6-1 and G.6-2 illustrate these respective sampling locations at the permitted unit.

If there is liquid found in either the drain lines or the sumps at the time of the assessment liquid samples will be collected in accordance with Section 6.2.1 of this closure plan.

At the time of sampling, the precise locations of the grid samples will be randomly selected within each 900 square foot sampling box (*see* Figure G.6-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. If the review or assessment determines the need to obtain additional samples within the area of the sampling box (*e.g.*, at asphalt cracks), these sample collection locations will be in addition to the grid sampling locations.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquids will be collected and analyzed to determine if residual hazardous constituents remain in the drain lines or sumps at the permitted unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid waste sampler, a bacon bomb, a bailer, or by pouring liquid into sample containers.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on structures and equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Soil Sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in soils at the permitted unit. Soil samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analytes (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.6-4.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed original chain-of-custody form to the Facility and it will become a part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.6-4 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in 40 CFR Part 261 Appendix VIII and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. This list may be modified, as necessary, to incorporate any changes as a result of the permitted unit's records review and history of hazardous waste constituents managed at the unit. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.6-3 which presents analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses. If any

of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2 of this closure plan. The analytical laboratory will have:

a. a documented comprehensive QA/ QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.6-3 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling and analysis process which is described in the following sections. Information on calculations necessary to evaluate the QC results is also described below.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.6-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.6-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.6-2, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

LANL, 1999. "Screening Level Ecological Risk Assessment Methods," LA-UR-99-1406, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2006. "Technical Background Document for Development of Soil Screening Levels," Rev. 4.0, June 2006, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.6-1

Closure Schedule for the Technical Area 54, Area G, Pad 1 Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.6-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.6-3

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method	Test Methods/ Instrumentation	Target Detection Limit [a]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

compounds (TIC)				
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

[a] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.6-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4°C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			

Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4°C	

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

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

°C = degrees Celsius
HNO_3 = nitric acid
HCl = hydrochloric acid
L = Liter
mL = milliliter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.6-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant
at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.
[b] Collected only if reusable sampling equipment used.

Table G.6-6

List of Equipment at the Technical Area 54, Area G, Pad 1 Outdoor Container Storage Unit

Equipment	Decontamination	Disposal
Drum venting and associated equipment	X	
Electrical infrastructure	X	X
Equipment and spill cleanup equipment containers	X	
Air pallets	X	
Container pallets	X	X
Communication equipment	X	X
Access barriers and chains	X	X
Gloveboxes	X	X
Portable air monitors	X	X
Enclosure components	X	X
Electronic devices or tools	X	
Cabinets	X	
Bailing equipment	X	

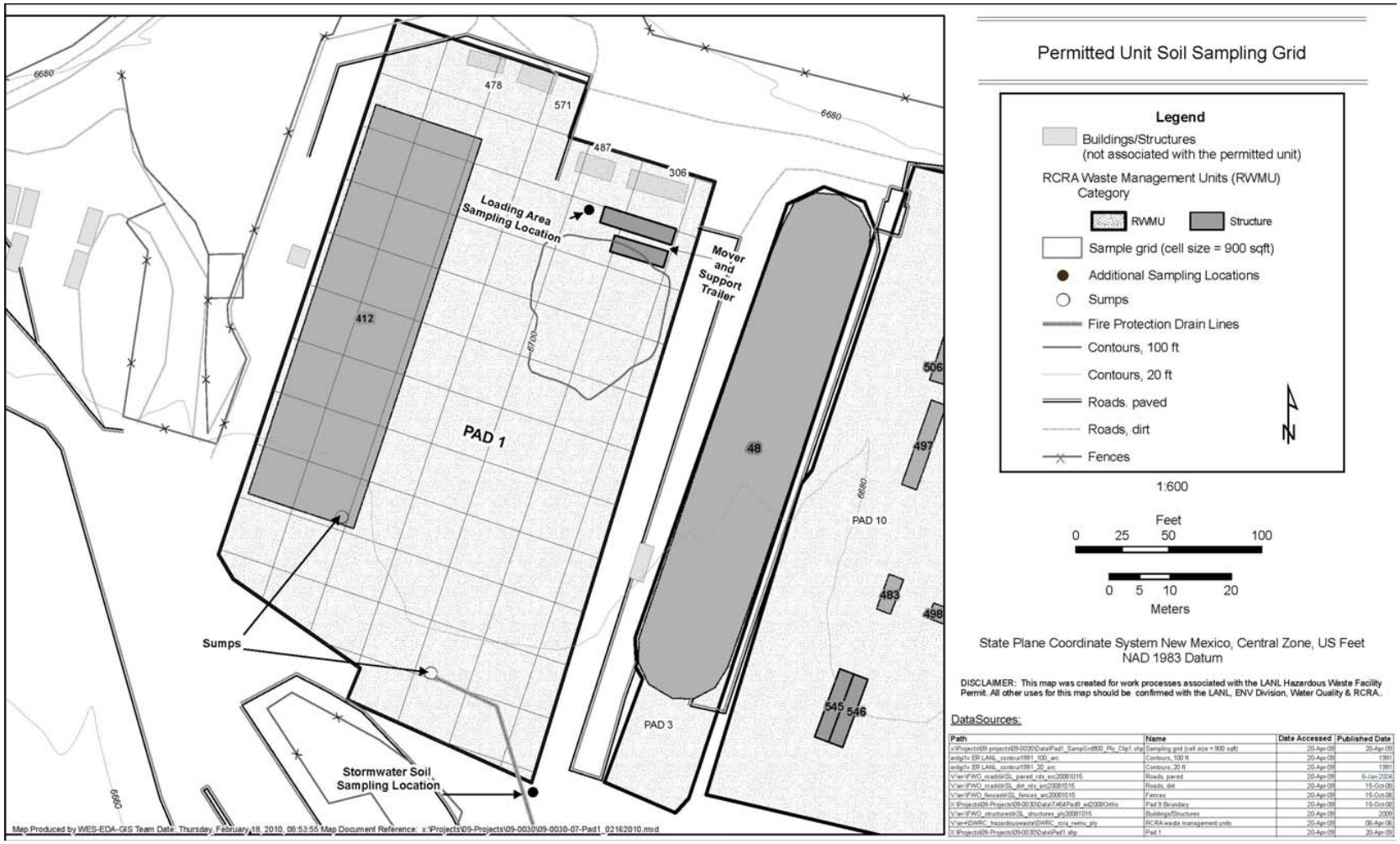

Figure G.6-1: Technical Area 54, Area G, Pad 1 Outdoor Container Storage Unit Grid Sampling Locations

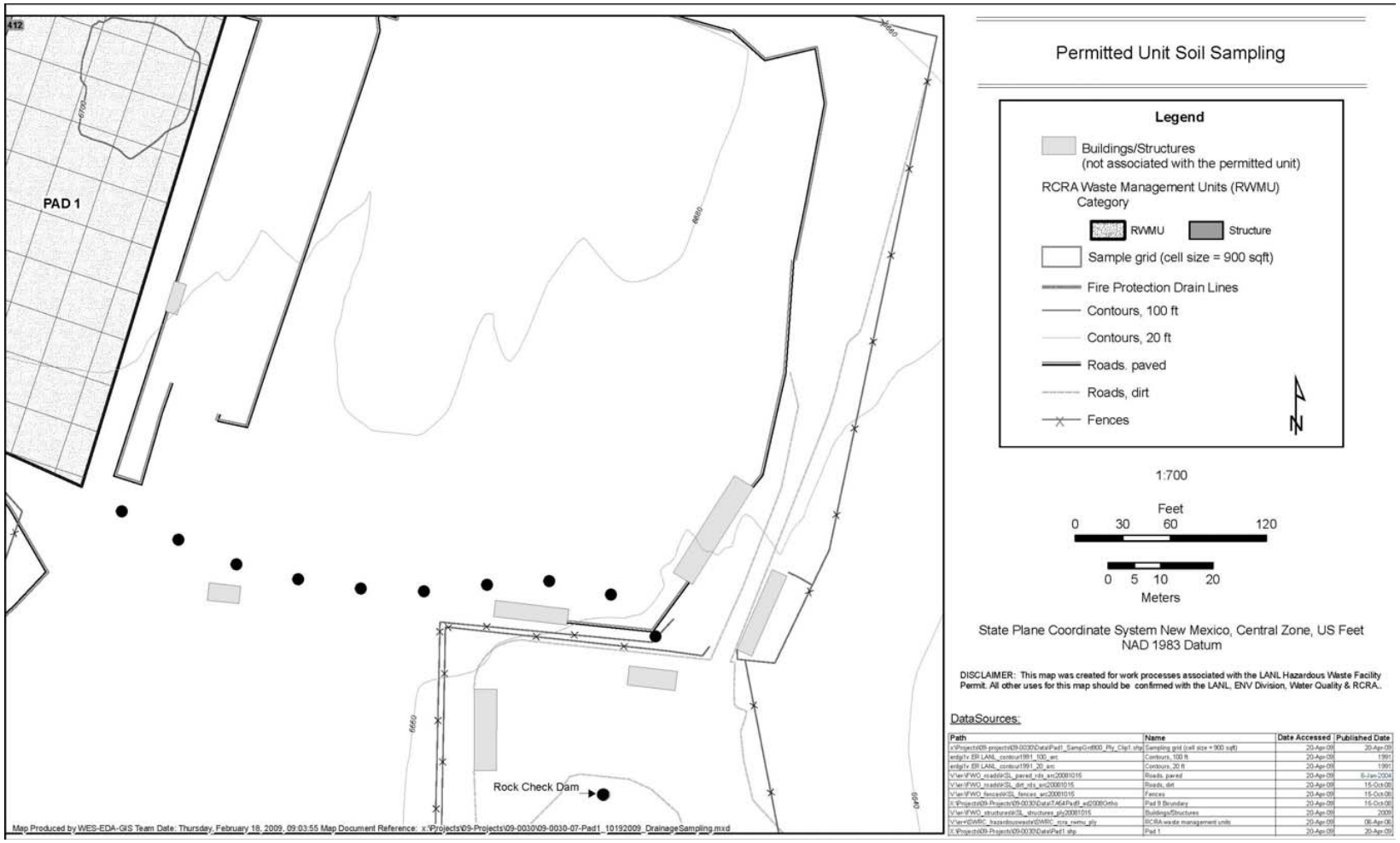

Figure G.6-2: Technical Area 54, Area G, Pad 1 Outdoor Container Storage Unit Drainage Sampling

ATTACHMENT G.7
TECHNICAL AREA 54, AREA G, PAD 3
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at Technical Area (TA)-54, Area G, Pad 3 at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8 to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit, which is an asphalt pad that measures 339 feet long and 50 feet wide or approximately 17,000 square feet, is located in the eastern portion of Area G and was constructed in 1980. It consists of a four to six inch layer of asphalt over the underlying base course overlying fill (minimum six inches of tuff) and is sloped from 1% to 1.5% to the south for drainage. It has one structure associated with it: Dome 48 which is the only place where the storage of mixed waste occurs.

Dome 48 has been used for the storage of hazardous waste in both liquid and solid form since 1980. It is an aluminum framework of trusses covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric that is anchored to the pad with standard drift pins. It is 285 feet long by 50 feet wide and covers a surface area of approximately 14,300 square feet. The dome is equipped with a double-panel rolling door at the south end and eight personnel doors, located approximately every 80 ft along the dome's length, which allow for adequate access both by vehicles and personnel. The interior perimeter of the dome is surrounded by a 6-inch-high, 8-inch-wide asphalt curb which helps prevent run-on into and runoff from the dome. An asphalt ramp located at the vehicle entrance allows vehicles and container handling equipment to pass safely over the curb.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*), include information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 1,026,500 gallons of hazardous waste has been stored at the permitted unit to date. Throughout the life of this Permit, it is estimated that an additional 1,283,000 gallons of hazardous waste will be stored.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standards

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I.

Closure of the permitted unit will be deemed complete when: 1) all structures, surfaces, and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides a schedule of closure activities (*see also* Table G.7-1 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Soil sampling and decontamination verification sampling will be conducted to demonstrate that soils and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe the procedures to be used for closure of the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport from the permitted unit. Appropriate shipping documentation will be prepared for the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any finding(s) or action(s) that may influence closure activities or additional sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of any spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the asphalt pad for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the SAP (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

Dome 48 (and its ancillary equipment) will be removed before the structural assessment. The asphalt pad, and all the materials associated with the pad (*e.g.*, curbing ramps, minimum of six inches of the base course and soil underlying the pad), will be removed after the structural assessment. If, after the removal of the pad (and underlying soil and base course material), the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad (*e.g.*, additional concrete or base course materials), additional soil and materials will be removed. If it is determined to be appropriate at the time of the assessment, soil samples may be collected through the asphalt (before the pad and its materials have been removed) from areas where contamination is suspected (*i.e.*, locations of stains or known spills).

In the event that alternative closure requirements, in accordance Permit Section 9.2.2.2, are applied to the closure of this permitted unit, he Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (Order) (*see* Permit Section 9.3)) beneath the permitted unit.

5.3.2 Decontamination of Equipment

All related equipment that will be reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. This includes: the equipment cabinets; bailing equipment; portable air monitors; all electronic devices and tools; and spill cleanup equipment containers from within Dome 48. This list of equipment requiring decontamination may be revised during the review and assessment which would result in an amendment to this closure plan.

Water resistant equipment and operating machinery (*e.g.*, the cabinets) and not sensitive to water intrusion at the permitted unit will be decontaminated by steam cleaning or pressure washing with a

solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water and mixed in accordance with the manufacturer's recommendations. All other equipment at the permitted unit that is sensitive to water intrusion (*i.e.*, the bailing equipment, portable air monitors, electronic devices or tools, and spill cleanup equipment containers) will be decontaminated by washing using a wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water and mixed in accordance with the manufacturer's recommendations.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.7-2 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, quality assurance and quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Wipe Sampling Activities

Soil sampling and decontamination verification wipe sampling activities will be conducted at the permitted unit in order to verify that the soils at the permitted unit and that equipment related to the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment related to the permitted unit.

In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples at the following locations:

a. one soil sample every 900 square feet of the permitted unit for a total of 22 soil samples (*see* Permit Section 9.4.7.1.ii(2);

b. one sample just off the southeast edge of the permitted unit where stormwater runs off the pad (*see* Permit Section 9.4.7.1.ii(3));

1. if the soil sample collected at the southeast edge of the permitted unit detects hazardous constituents, then nine samples shall be collected along the swale between the permitted unit and Pad 10 (*see* Permit Section 9.4.7.1.ii(8)) (*see* Figure G.7-2); and

c. one sample at the rock check dam at the far southeast end of Area G where stormwater discharges (*see* Permit Section 9.4.7.1.ii(3));

1. if the soil sample collected at the rock check dam detects hazardous constituents, then nine samples shall be collected along the swale between the permitted unit and Pad 10 (*see* Permit Section 9.4.7.1.ii(8)) (*see* Figure G.7-2).

Figures G.7-1 and G.7-2 illustrate these respective sampling locations.

At the time of sampling, the precise locations of the grid sample will be randomly selected within each 900 square foot sampling box (*see* Figure G.7-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. If the review or assessment determines the need to obtain additional samples collected within the area of the sampling box (*e.g.*, at asphalt cracks), these sample collection locations will be in addition to the grid sample locations.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Soil Sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in soils at the permitted unit. Soil samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analytes (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.7-4.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed original chain-of-custody form to the Facility and it will become a part of the permanent sampling record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.7-3 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility

documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. This list may be modified, as necessary, to incorporate any changes as a result of the permitted unit's records review and history of hazardous waste constituents managed at the unit. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.7-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.7-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/ QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.7-5 was based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC

samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling and analysis process which are described in the following sections. Information on calculations necessary to evaluate the QC results is also described below.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.7-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. the physical form of the waste;

c. results from QC samples such as blanks, spikes, and calibrations;

d. reference to standard methods or a detailed description of analytical procedures; and

e. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.7-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water

solution. Disposable equipment and other small equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.7-2.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

LANL, 1999. "Screening Level Ecological Risk Assessment Methods," LA-UR-99-1406, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2006. "Technical Background Document for Development of Soil Screening Levels," Rev. 4.0, June 2006, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.7-1

Closure Schedule for the Technical Area 54, Area G, Pad 3 Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.7-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.7-3

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method	Test Methods/ Instrumentation	Target Detection Limit [a]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

[a] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type; CVAA = Cold-vapor atomic absorption spectroscopy; FLAA = Flame atomic absorption spectroscopy; GC/MS = Gas chromatography/mass spectrometry; GFAA = Graphite furnace atomic absorption spectroscopy; ICP-AES = Inductively coupled plasma-atomic emission spectrometry; mg/L = milligrams per liter; ug/L = micrograms per liter;

Table G.7-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner Solid Media: 125-mL Glass	Aqueous Media: HNO_3 to pH <2 Cool to 4°C Solid Media: Cool to 4°C	180 Days
Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner Solid Media: 125-mL Glass	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C Solid Media: Cool to 4°C	28 Days
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	14 days
Semi-Volatile Organic Compounds			
Target Compound Semi-	Aqueous Media:	Aqueous Media:	Seven days from field

volatile Organic Compounds	Four 1-L Amber Glass with Teflon-Lined Lid	Cool to 4 °C	collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media:	Solid Media:	
	250-mL Glass	Cool to 4°C	

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

[b] Information obtained from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, USEPA, 1986 and all approved updates; °C = degrees Celsius; L = Liter; HNO_3 = nitric acid; mL = milliliter; HCl = hydrochloric acid; TCLP = Toxicity Characteristic Leaching Procedure

Table G.7-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a]For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.
[b]Collected only if reusable sampling equipment used.

Table G.7-6

List of Equipment at the Technical Area 54 Area G, Pad 3 Outdoor Containers Storage Unit

Equipment	Decontamination	Disposal
Equipment and spill kit cabinets	X	X
Container pallets	X	X
Communication equipment	X	X
Access barriers and chains	X	X

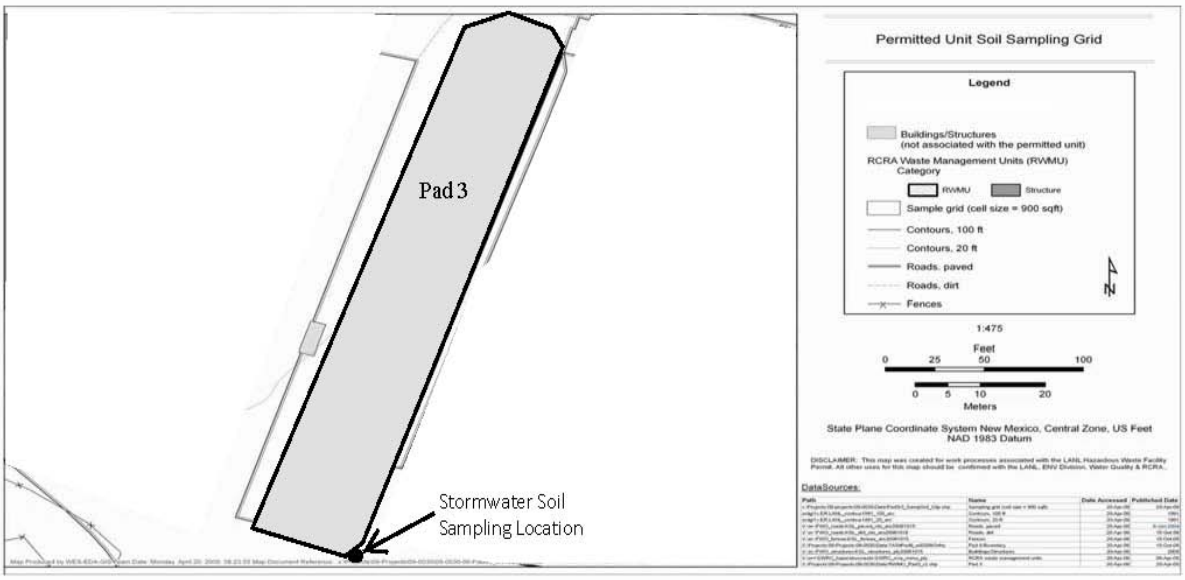

Figure G.7-1: Technical Area 54, Area G, Pad 3 Outdoor Container Storage Unit Sampling Grid Locations

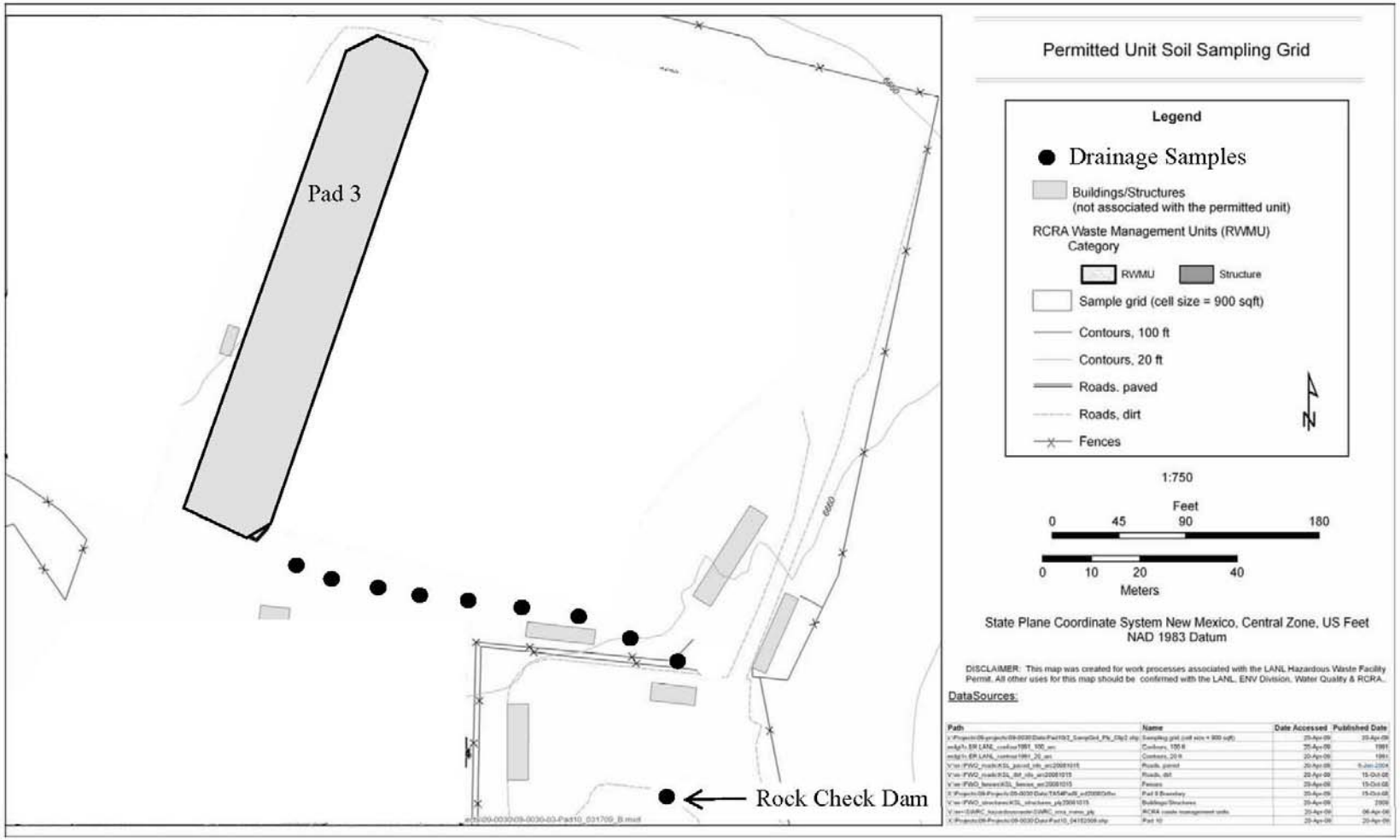

Figure G.7-2: Technical Area 54, Area G, Pad 3 Outdoor Container Storage Unit Drainage Sampling Locations

ATTACHMENT G.8
TECHNICAL AREA 54, AREA G, PAD 5
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at Technical Area (TA)-54, Area G, Pad 5 at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264 Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8 to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit, which measures 850 feet long and 224 feet wide, is located in the western portion of Area G. It is four inches thick, is sloped 1-2%, and is comprised of three asphalt pads (Pad 5 and older Pads 7 and 8). There are ten structures associated with the permitted unit: two domes (Domes 224 and 49) and eight sheds (sheds 144, 145, 147, 177, 1027, 1028, 1040, and 1041). Rainwater flow at the permitted unit is directed across the pad by slope and drainage structures (*i.e.*, supplemental check berm, culvert, and sediment traps).

Storage Domes 49 and 224 are used for the storage of hazardous waste. They are built of an aluminum framework of trusses covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric and are anchored to the permitted unit with drift pins and anchor bolts.

Dome 49 is 440 ft long and 60 ft wide, and has a peak height of approximately 26 ft. The dome is equipped with a double-panel rolling door at its north end and has six personnel doors to allow for adequate access both by vehicles and by personnel. The interior perimeter of the dome is surrounded by a 6-inch-high, 8-inch-wide asphalt curb, which helps prevent run-on into, and run-off from, the dome.

Dome 224 is approximately 110 ft long and 60 ft wide, with a peak height of 26 ft. It is equipped with a single-panel roll-up door at the north end and four personnel doors to allow adequate access by vehicles and by personnel. A 1-ft, 8-inch wide by 2-ft, 4-inch deep concrete ring wall designed for secondary containment of liquids surrounds the interior of Dome 224. The asphalt floor is sloped 0.5% towards a concrete sump in the center of the dome. The floor, sump, and curbs are lined with a double layer of HDPE to contain any liquids that might accumulate.

Storage sheds 144, 145, 146, and 177 are prefabricated sheds constructed of steel each measuring six foot long, five foot wide and nine foot high and are elevated by design to prevent run-on. Access to each shed is obtained through a single door where each shed is equipped with a single compartment. Each shed is

constructed with a liquid-tight sump to prevent runoff and to contain any potential leaks or spills. The floor of each shed is constructed of steel coated with chemically-resistant epoxy paint and has a metal grate that covers the entire sump area. Containers are placed directly on the metal grates.

Storage Sheds 1027, 1028, 1029, and 1041 are prefabricated sheds constructed of steel each measuring approximately 23 ft long, nine foot wide and 8.5 ft high. Each shed is equipped with three sets of double doors on one side of the shed for ease of access and have liquid-tight sumps to prevent runoff and contain any potential leaks or spills. The floor of each shed is constructed of a metal grate that covers the sump areas. Containers are placed directly on the metal grates, which prevents contact with liquids that may have accumulated in the sumps. The interior of each shed and sump is coated with chemically-resistant epoxy paint.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include information about waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 2,993,000 gallons of hazardous waste has been stored at the permitted unit to date. Throughout the life of this Permit, it is estimated that an additional 3,741,000 gallons of hazardous waste will be stored.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standards

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I.

Closure of the permitted unit will be deemed complete when: 1) all structures, surfaces, and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.8-1 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that soils beneath the permitted unit and structures and equipment related to the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe the procedures to be used for closure of the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other

appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous waste will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of any spills or chronic conditions identified in the Operating and Inspections Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floors, walls, and ceilings in the sheds and inspecting asphalt pad for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (*see* Section 6.0 in this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's structures and related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

The following structures and related equipment will be removed before the assessment: the tensioned-fabric membranes on the dome structures and the aluminum beams, trusses, and ancillary equipment

supporting the domes. The asphalt pad, the materials associated with the asphalt pad (*e.g.*, concrete ringwall, sump structures, and any HDPE liners), and a minimum of six inches of the base course and soil underlying the asphalt pad shall be removed after the assessment. If after removal of the pad (and underlying soil and base course material) the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad, additional soil and materials will be removed. If it is determined to be appropriate at the time of the assessment, soil samples may be collected through the asphalt (before the pad and its materials have been removed) from areas where contamination is suspected (*i.e.*, locations of stains or known spills).

In the event that alternative closure requirements, in accordance Permit Section 9.2.2.2, are applied to the closure of this permitted unit, the Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (Order) (*see* Permit Section 9.3)) beneath the permitted unit.

5.3.2 Decontamination of Structures and Related Equipment

All structures and related equipment that will be reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. This includes: all eight storage sheds; the portable air monitors; all electronic devices and tools; and spill cleanup equipment containers from within the domes (*see* Table G.8-6). This list of equipment requiring decontamination may be revised during the review and assessment which would result in an amendment to this closure plan.

Equipment and operating machinery that is not sensitive to water intrusion, such as the storage sheds and equipment cabinets, will be decontaminated by pressure washing or steam cleaning with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water and mixed in accordance with the manufacturer's recommendation. All other equipment at the permitted unit that is sensitive to water intrusion (*i.e.* portable air monitors, electronic devices or tools, spill cleanup equipment containers) will be decontaminated by washing using a wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment. Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.8-2 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance and quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Sampling Activities

Soil sampling and decontamination verification sampling activities will be conducted at the permitted unit in order to verify that soils at the permitted unit, that structures, such as the storage sheds situated on the permitted unit, and equipment related to the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment related to the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the following areas in each of the eight storage sheds:

a. every wall;

b. each floor;

c. each ceiling; and

d. each sump.

A total of 56 wipe samples will be collected. If there is liquid found in any of the sumps at the time of sample collection, liquid samples will be collected in accordance with Section 6.2.1 of this closure plan.

In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples at the following locations:

e. one soil sample in front of each of the storage sheds for a total of eight samples (*see* Permit Section 9.4.7.1.ii(1));

f. one soil sample every 900 square feet of the permitted unit for a total of 95 samples (*see* Permit Section 9.4.7.1.ii(2));

g. one sample at the sump located in Dome 224 (*see* Permit Section 9.4.7.1.ii(5)); and

h. nine samples to address stormwater runoff (*see* Permit Section 9.4.7.1.ii(3) and discussion below for rationale of sample locations).

Figure G.8-1 illustrates these sampling locations.

If there is liquid found in the sump in Dome 224 at the time of the assessment a liquid sample will be collected in accordance with Section 6.2.1 of this closure plan.

At the time of sampling, the precise locations of the grid samples will be selected randomly from within each 900 square foot sampling box (*see* Figure G.8-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. If the review or assessment determines the need to obtain additional samples within the area of the sampling box (*e.g.*, at asphalt cracks), these sample locations will be in addition to the grid sample locations.

Individual sample locations to address stormwater runoff have been sited by the specific drainage conditions at the permitted unit and are numbered from ‘1-9’ on Figure G.8-1. Sample numbers ‘1’ and ‘2’are situated to intercept water drainage from former Pad 7; ‘1’ is located at a small supplemental check

berm while '2' is at the main culvert draining from former Pad 7. Sample numbers '3', '8', and '9' address drainage from former Pad 8; '3' is located in the area in front of the main door of Dome 224 while 8 and 9 address the drainage from the rest of former Pad 8 on the east side where it is directed by the slope of that pad. Sample numbers '4', '5', '6', and '7' address the potential discharge points for drainage from the permitted unit (Pad 5) and Dome 49; '4' is located on the north side of the main door of Dome 49, '5' and '6' are situated in sediment traps located in the drainage from the west side of the permitted unit; and '7' is located in a combined drainage area for the east side of the permitted unit and west side of former '7.'

6.2 Sample Collection Procedures

Samples will be collected in accordance with the Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquids will be collected and analyzed to determine if residual hazardous constituents remain in the sumps in the storage sheds at the permitted unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid waste sampler, a bacon bomb, a bailer, or by pouring liquid into sample containers.

6.2.2 Wipe Sampling

Wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on structures or related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Soil and Sediment Sampling

Soil and sediment samples will be collected and analyzed to determine if hazardous constituents are present in the soils and sediment at the permitted unit. Samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analytes (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.8-4.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as

necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become a part of the permanent sampling record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.8-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.8-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.8-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2 of this closure plan. The analytical laboratory will have:

a. a documented comprehensive QA/ QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.8-4 was based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling and analysis process, and are described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.8-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.8-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.8-2, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

LANL, 1999. "Screening Level Ecological Risk Assessment Methods," LA-UR-99-1406, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2006. "Technical Background Document for Development of Soil Screening Levels," Rev. 4.0, June 2006, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.8-1

Closure Schedule for the Technical Area 54, Pad 5, Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 days
	-20 days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.8-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.8-3

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

compounds (TIC)				
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

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

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.8-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4°C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4°C	

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

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

°C = degrees Celsius
HNO_3 = nitric acid
HCl = hydrochloric acid
L = Liter
mL = milliliter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.8-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Table G.8-6

List of Permitted Unit Equipment

Equipment	Decontamination	Disposal
Equipment and spill kit cabinets	X	X
Container pallets	X	X
Communication equipment	X	X
Access barriers and chains	X	X

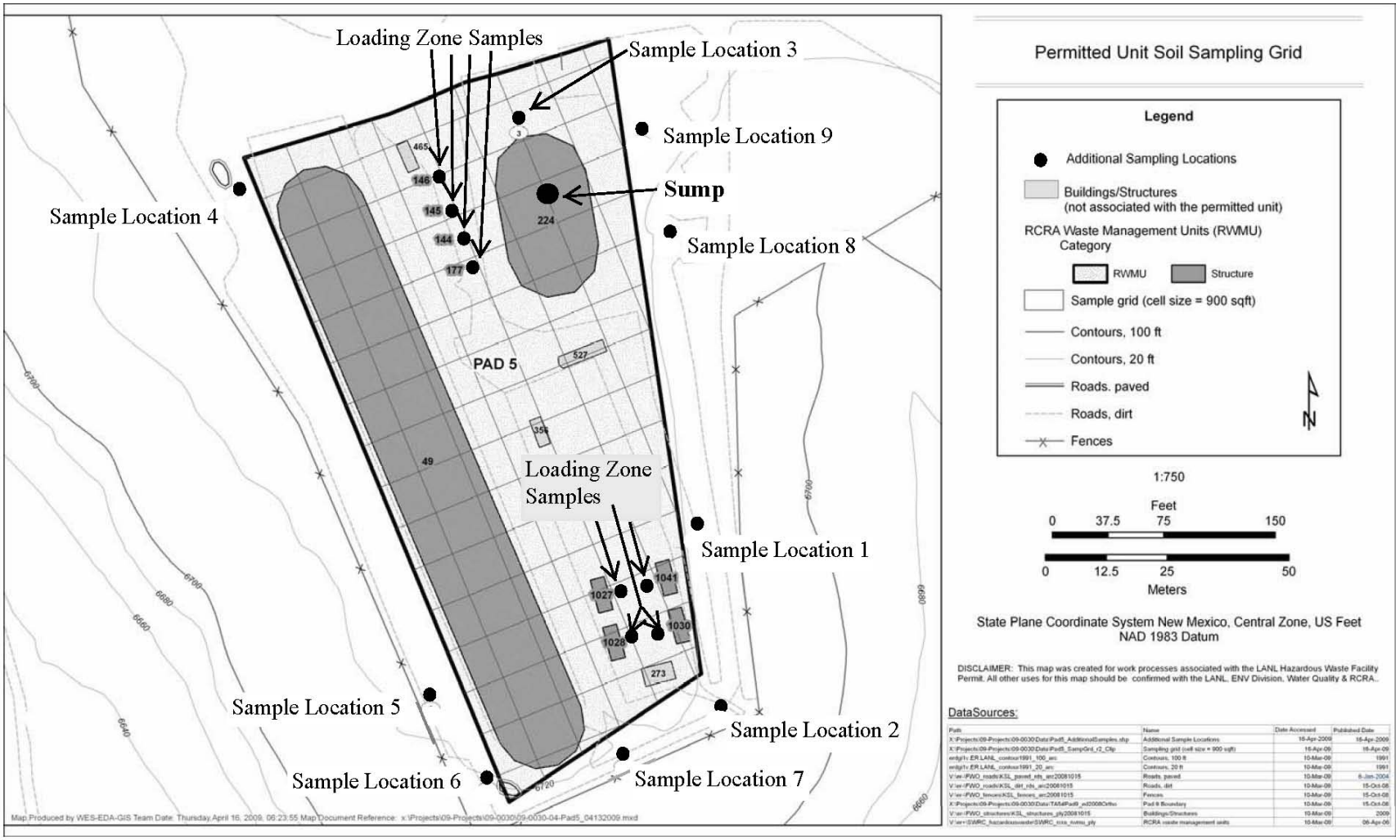

Figure G.8-1: Technical Area 54, Area G, Pad 5, Outdoor Container Storage Unit Soil Sampling Grid and Additional Sampling Locations

ATTACHMENT G.9
TECHNICAL AREA 54, AREA G, PAD 6
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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G.9-1	Technical Area 54, Area G, Pad 6 Outdoor Container Storage Unit Sampling Grid and Additional Sampling Locations

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at Technical Area (TA)-54, Area G, Pad 6 at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere with the Permit are described below.

The permitted unit is comprised of Pad 6 and is located in the north-central portion of Area G. The pad measures 633 feet long and 99 feet wide or approximately 62,700 square feet. The pad consists of a four to six inch layer of asphalt over the underlying base course overlying fill (minimum six inches of tuff). The pad is sloped from 1% to 1.5% to the south and east for drainage. Additional drainage is directed to the north and east. Rainwater flow at the permitted unit is directed primarily across the pad by the southward slope and into a ditch that runs parallel to the south side of the pad and then drains to the south side of Area G. Secondary rainwater flow is directed to the north/northeast portion of the pad.

Hazardous waste in both liquid and solid form is stored in Domes 153 and 283 on the pad and within transportainer 491 on the south end of the permitted unit; none of these structures are equipped with sumps. The two storage domes (an aluminum framework of trusses covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric) on the permitted unit vary in size. Dome 153 is 326 feet long by 60 feet wide, covers a surface area of approximately 19,600 square feet, has a double-panel rolling door located at the west end, and has ten personnel doors located approximately every 40 to 125 feet along its length. Dome 283 is 260 feet long by 60 feet wide, covers an area of approximately 15,600 square feet, has a double-panel rolling door located at the east end, and has ten personnel doors located approximately every 50 feet along its length. The base of each dome is secured with standard drift pins. A 6-inch by 8-inch high asphalt curb surrounds the interior floor perimeter of both domes and provides run-on and run-off protection. The curb is designed to retain any liquids that may accumulate within the domes. An asphalt ramp is located at the vehicle entrance (*i.e.*, double-panel rolling door) to each dome which allows vehicles and container handling equipment to pass safely over the curb.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include information about waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 2,867,000 gallons of hazardous waste has been stored at the permitted unit to date. Throughout the life of this Permit, it is estimated that an additional 3,584,000 gallons of hazardous waste will be stored.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents;

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater;

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I.

Closure of the permitted unit will be deemed complete when: 1) all structures, surfaces, and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.9-1 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be

conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that soils, surfaces, structures, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe the procedures to be used for closure of the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any finding(s) or action(s) that may influence closure activities or additional sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of any spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor, walls, and ceiling in the transportainer (491) as well as inspecting the asphalt pad for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's structures and related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit in order to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

The tensioned-fabric membranes on the dome structure as well as the aluminum beams, trusses, and ancillary equipment supporting the domes will be removed before the structural assessment. The asphalt pad, the materials associated with the asphalt pad (curbing and ramps), and a minimum of 6 inches of the base course and soil underlying the asphalt pad will be removed after the assessment. If after the removal of the pad (and underlying soil and base course material) the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad, additional soil and materials will be removed. If it is determined to be appropriate at the time of the assessment, soil samples may be collected through the asphalt (before the pad and its materials have been removed) from areas where contamination is suspected (*i.e.*, locations of stains or known spills).

In the event that alternative closure requirements, in accordance Permit Section 9.2.2.2, are applied to the closure of this permitted unit, the Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (Order) (*see* Permit Section 9.3)) beneath the permitted unit.

5.3.2 Decontamination of Structures and Equipment

All structures and related equipment that will be reused by the Facility will be decontaminated (*see* Table G.9-6) in accordance with Permit Section 9.4.3.1. This includes: the transportainer; the equipment cabinets; the portable air monitors; all the electronic devices and tools; and the spill cleanup equipment

containers. This list of equipment requiring decontamination will be revised during the review and assessment (*see* Section 5.2 of this closure plan).

Equipment and operating machinery that is not sensitive to water intrusion, such as the transportainer and equipment cabinets, will be decontaminated by steam cleaning or pressure washing with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. All other equipment at the permitted unit that is sensitive to water intrusion (*i.e.*, portable air monitors, electronic devices or tools, and spill cleanup equipment containers) will be decontaminated by washing using a wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment. Portable berms, or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.9-2, in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements of Permit Section 9.4.7 and describes the sampling, analysis, quality assurance and quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Wipe Sampling Activities

Soil sampling and decontamination verification wipe sampling activities will be conducted at the permitted unit in order to verify that soils, surfaces, structures, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of one wipe sample from each wall, floor, and ceiling of the transportainer (491) for a minimum of 6 wipe samples.

In compliance with Permit Section 9.4.7.1.ii.a, this closure plan will ensure the collection of soil samples in the following locations:

a. one soil sample in front of the transportainer (491) (*see* Permit Section 9.4.7.1.ii.a(1));

b. one soil sample every 900 square feet of the permitted unit for a total of 68 samples (*see* Permit Section 9.4.7.1.ii.a(2)); and

c. three soil samples to address stormwater runoff (*see* Permit Section 9.4.7.1.ii.a(3) and discussion below for rationale of sample locations).

Figure G.9-1 illustrates these sampling locations.

At the time of sampling, the precise locations of the grid samples will be randomly selected within each 900 square foot sampling box (*see* Figure G.9-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. If the review or assessment determines the need to obtain additional samples collected within the area of the sampling box (*e.g.*, at asphalt cracks), these sample locations will be in addition to the grid sample locations.

Individual sample locations to address stormwater runoff have been sited by the specific drainage conditions at the permitted unit and are numbered from '1-3' on Figure G.9-1. Sample number '1' will be collected just off the southern portion of the pad in the ditch. Sample number '2' will be collected just off the northern portion of the pad. Sample number '3' will be collected at the sediment trap located northeast of the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed used to determine if residual hazardous constituents remain on the structures and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Soil Sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in soils at and in the vicinity of the permitted unit. Soil samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analytes (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.9-5.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed original chain-of-custody form to the Facility and it will become a part of the permanent sampling record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.9-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility

documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.9-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.9-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/ QC program;

b. technical analytical expertise;

c. a document control/records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.9-3 was based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling

and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.9-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials: these wastes are listed with potential disposal options in Table G.9-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.9-2, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

LANL, 1999. "Screening Level Ecological Risk Assessment Methods," LA-UR-99-1406, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2006. "Technical Background Document for Development of Soil Screening Levels," Rev. 4.0, June 2006, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.9-1

Closure Schedule for the Technical Area 54, Area G, Pad 6 Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	Day 100
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.9-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Verification water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	RLWTF

Table G.9-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.9-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.9-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.9-3

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

compounds (TIC)				
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

[a] EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.9-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4°C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			

Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4°C	

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

[b] Information obtained from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, EPA, 1986 and all approved updates.

°C = degrees Celsius
HNO_3 = nitric acid
HCl = hydrochloric acid
L = Liter
mL = milliliter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.9-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Table G.9-6

List of Equipment at the Technical Area 54, Area G, Pad 6 Outdoor Container Storage Unit

Equipment	Decontamination	Disposal
Any storage transportainers on Pad 6	X	X
Equipment and spill kit cabinets	X	X
Container pallets	X	X
Communication equipment	X	X
Access barriers and chains	X	X

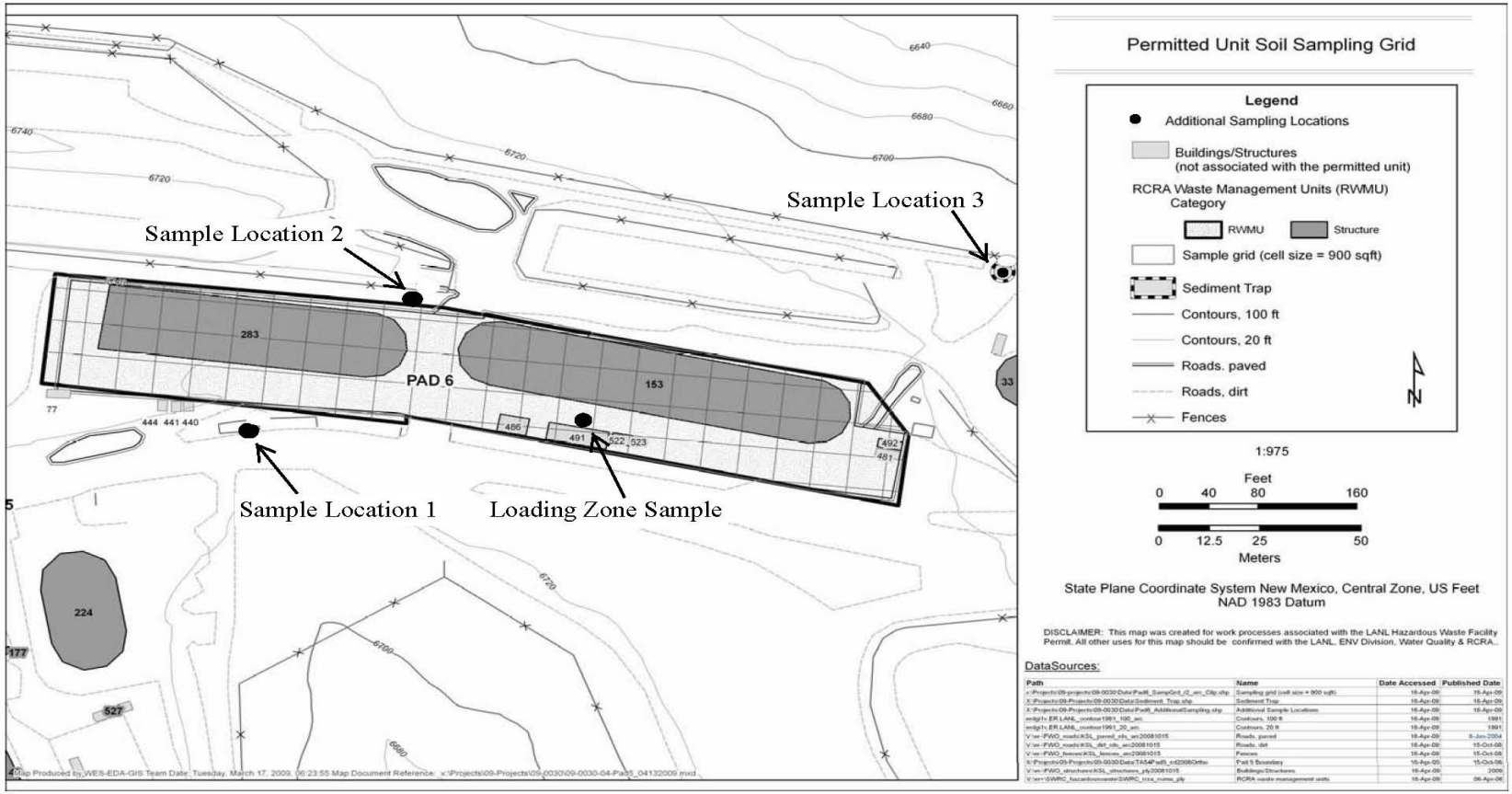

Figure G.9-1: Technical Area 54, Area G, Pad 6 Outdoor Container Storage Unit Sampling Grid and Additional Sampling Locations

ATTACHMENT G.10
TECHNICAL AREA 54, AREA G, PAD 9
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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G.10-1	Technical Area 54, Area G, Pad 9 Outdoor Container Storage Unit Grid Sampling and Additional Sampling Locations

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at Technical Area (TA)-54, Area G, Pad 9 at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8 to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit is comprised of an asphalt pad which is located in the eastern end of Area G. It was constructed in 1993, consists of a four to six inch layer of asphalt over the underlying base course overlying fill (minimum six inches of tuff), and measures 570 feet long and 275 feet wide, or approximately 158,000 square feet. It is constructed with curbing on the west and east sides and is sloped from 1% to 1.5% to the east and south-east for drainage. Rainwater flow is directed across the pad by the eastward slope and through small PVC drains spaced at 55 foot intervals in the curbing along the east side of the pad. The slope below the curbing is protected with rock and concrete. Concrete curbing also extends along the west and partially the south sides of the pad and ends at a concrete and rock drainage structure. The remainder of the south side of the pad is uncurbed. Four domes (Domes 229, 230, 231, 232), one transportainer (362), and two storage sheds (484 & 574) are situated on it (*see* Figure G.10-1). The two storage sheds are not used for the storage of hazardous waste.

The permitted unit has stored the following waste types: solidified inorganic solids; leached process residues; salts and cement paste; ash; dewatered aqueous sludge; chemical treatment sludge; soils; combustible debris (*e.g.*, plastics, rubber, laboratory trash, building debris); and heterogeneous debris. Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

2.1 Permitted Unit Domes

The four storage domes and the transportainer (362) at the permitted unit have been used for the storage of hazardous waste in both liquid and solid form since 1994. The domes (an aluminum framework of trusses covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric) are 246 feet long by 89 feet wide and cover a surface area of approximately 20,400 square feet each. The base of each dome is secured with anchor bolts to a concrete ring wall that surrounds the interior floor perimeter and

provides run-on and run-off protection. The ring wall is designed to retain any liquids that may accumulate within the domes. Each dome has several personnel doors around the perimeter of the dome and a larger vehicle access door and ramp on the west end.

Dome 231 contains a Perma-Con® modular panel containment structure (68 feet long x 28 feet wide) used for the remediation of transuranic waste prior to shipment to the Waste Isolation Pilot Plant. Domes 229 and 232 have been used only for the storage of non-liquid hazardous waste and Dome 230 and 231 have been used for the storage of both liquid and non-liquid hazardous waste.

2.1.1 Domes 229, 231, and 232 Fire Water Collection System

The permitted unit has a fire water collection system that collects water from Domes 232, 231, and Dome 226 on Pad 1. The system was designed to provide an augmented fire water collection capability to limit run-off of fire suppression waters from the domes if the volume of water during a fire exceeded their collection capacity. Fire suppression water from the domes is collected via a pipeline that runs from Pad 1 and down the east side of the permitted unit below the asphalt. The pipeline is sloped to provide gravity flow. The southeast portions of Domes 231 and 232 have three drain inlets each and Dome 226 has two drain inlets on the south end that connect to this pipeline. The pipeline terminates in the concrete walled semi-circular collection sump (lined with high density polyethylene plastic) in the east end of Dome 229. The semi-circular sump, which measures 70 feet by 28 feet and 26 inches in depth, is not intended for secondary containment of liquid waste and has not been used as such based on review of the permitted unit's Operating Record.

2.1.2 Dome 230 Secondary Containment

Dome 230 has a concrete walled semi-circular sump (lined with high density polyethylene plastic) at the east end of the dome and double high density polyethylene layers under the pad that act as secondary containment for liquid waste. The design of the sump is similar to that of Dome 229 as described above except that the sump in Dome 230 is not connected to an external drain system. The maximum capacity of accumulated liquids within the concrete sump and the curbed area of the dome are approximately 48,000 gallons.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 6,400,000 gallons of hazardous waste has been stored at the permitted unit to date. Throughout the life of this Permit, it is estimated that an additional 9,000,000 gallons of hazardous waste will be stored.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standards

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the

cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

e. minimize the need for further maintenance;

f. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

g. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I.

Closure of the permitted unit will be deemed complete when: 1) all structures and related equipment have been decontaminated or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.10-1 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR §264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit structures and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that soils, surfaces, structures, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe the procedures to be used for closure of the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport from the permitted unit. Appropriate shipping documentation will be prepared for the wastes during transport. Containers holding hazardous waste will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any finding(s) or action(s) that may influence closure activities or additional sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of any spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floors, walls, and ceilings in the transportainer and the PermaCon®, as well as inspecting the asphalt pad, for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan

(SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and applicable sampling procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's structures and related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

The PermaCon® and the tensioned-fabric membranes on the domes (as well as the aluminum beams, trusses, and ancillary equipment supporting the domes) will be removed before the assessment. The asphalt pad, the materials associated with the asphalt pad *(e.g.*, concrete ringwall, sumps, liner) and a minimum of six inches of the base course and soil underlying the asphalt pad will be removed after the assessment.

If after the removal of the pad (and underlying soil and base course material) the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad, additional soil and materials will be removed. If it is determined to be appropriate at the time of the assessment, soil samples may be collected through the asphalt (before the pad and its materials have been removed) from areas where contamination is suspected (*i.e.*, locations of stains or known spills).

In the event that alternative closure requirements, in accordance Permit Section 9.2.2.2, are applied to the closure of this permitted unit, the Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (Order) (see Permit Section 9.3)) beneath the permitted unit.

5.3.2 Decontamination of Equipment

All structures and related equipment that will be reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. This includes: the transportainer; the portable air monitors; all electronic devices and tools; and the spill cleanup equipment containers from within the domes (*see* Table G.10-6). This list of equipment requiring decontamination will be revised, if necessary, during the review and assessment.

Equipment and operating machinery that is not sensitive to water intrusion, such as the transportainer and the equipment cabinets in Dome 231 will be decontaminated by pressure washing or steam cleaning with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. All other equipment at the permitted unit that is sensitive to water intrusion (*i.e.*, portable air monitors, electronic devices or tools, PPE, portable eyewashes, spill cleanup

equipment containers) will be decontaminated by washing using a wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment. Portable berms, or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment), will collect excess wash water and provide containment during the decontamination process. The fire suppression water drains in domes 229, 231 and 232 will be plugged so as to not allow wash water to enter.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and equipment that cannot be decontaminated will be containerized and managed as waste, as summarized in Table G.10-2 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance and quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Sampling Activities

Soil sampling and decontamination verification sampling activities will be conducted at the permitted unit in order to verify that soils, structures, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the walls, the floor, and the ceiling of the transportainer for a total of 6 wipe samples.

In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples in the following locations:

a. one sample in front of the transportainer (*see* Permit Section 9.4.7.1.ii(1));

b. one sample every 900 square feet of the permitted unit for a total of 170 samples (*see* Permit Section 9.4.7.1.ii(2));

c. one sample to the south of the permitted unit at the stormwater discharge drainage location ('sample location 1') (*see* Permit Section 9.4.7.1.ii(3));

d. one sample at the discharge point in the sump in Dome 229 for the fire water collection system ('sample location 2') (*see* Permit Section 9.4.7.1.ii(4));

e. one sample at each location (eastern portion of the permitted unit) where the slope of the permitted unit ends in soil below each PVC drain for a total of ten samples (*see* Permit Section 9.4.7.1.ii(4));

f. one sample at each drain in Domes 232 and 231 and one sample at each sump in Dome 229 and 230 for a total of eight samples (*see* Permit Section 9.4.7.1.ii(5));

g. one sample at the joints and intersections of the fire water collection system piping (*see* Permit Section 9.4.7.1.ii(7)); and

h. one sample, at 30 foot intervals, just off the southern end of the permitted unit along the uncurbed portion of the drainage structure for a total of five samples (*see* Permit Section 9.4.7.1.ii(8)).

All soil sample locations are illustrated on Figure G.10-1.

If liquid is present in any of the drains, sumps, or piping at the time of the assessment, a liquid sample will be collected in accordance with Section 6.2.1 of this closure plan.

At the time of sampling, the precise locations of the grid samples will be randomly selected within each 900 square foot sampling box (*see* Figure G.10-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. If the review or assessment determines the need to obtain additional samples collected within the area of the sampling box (*e.g.*, at asphalt cracks), these sample locations will be in addition to the grid sample locations.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquid samples will be collected and analyzed to determine if residual hazardous constituents are present in the drains, sumps, or pipes at the permitted unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid waste sampler, a bacon bomb, a bailer, or by pouring liquid into sample containers.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the structures and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Soil Sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in soils at the permitted unit. Soil samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analytes (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.10-4.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request/chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory

analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become a part of the permanent sampling record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.10-4 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.10-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.10-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2 of this closure plan. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.10-3 was based on the following considerations:

e. the physical form of the waste;

f. constituents of concern,

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling and analysis process, and are described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.10-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.10-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.10-2, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

LANL, 1999. "Screening Level Ecological Risk Assessment Methods," LA-UR-99-1406, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2006. "Technical Background Document for Development of Soil Screening Levels," Rev. 4.0, June 2006, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.10-1

Closure Schedule for the Technical Area 54, Area G, Pad 9 Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal 100 or days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.10-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.10-3

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

compounds (TIC)				
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

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

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.10-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4°C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			

Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4°C	

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

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

°C = degrees Celsius
HNO_3 = nitric acid
HCl = hydrochloric acid
L = Liter
mL = milliter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.10-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Table G.10-6

List of Equipment at the Technical Area 54, Area G, Pad 9 Outdoor Container Storage Unit

Equipment	Decontamination	Disposal
PermaCon® in Dome 231 and associated equipment	X	
Transportainer	X	
Two storage sheds	X	
Equipment and spill kit cabinets	X	
Air pallets	X	
Container pallets	X	X
Communication equipment	X	X
Access barriers and chains	X	X

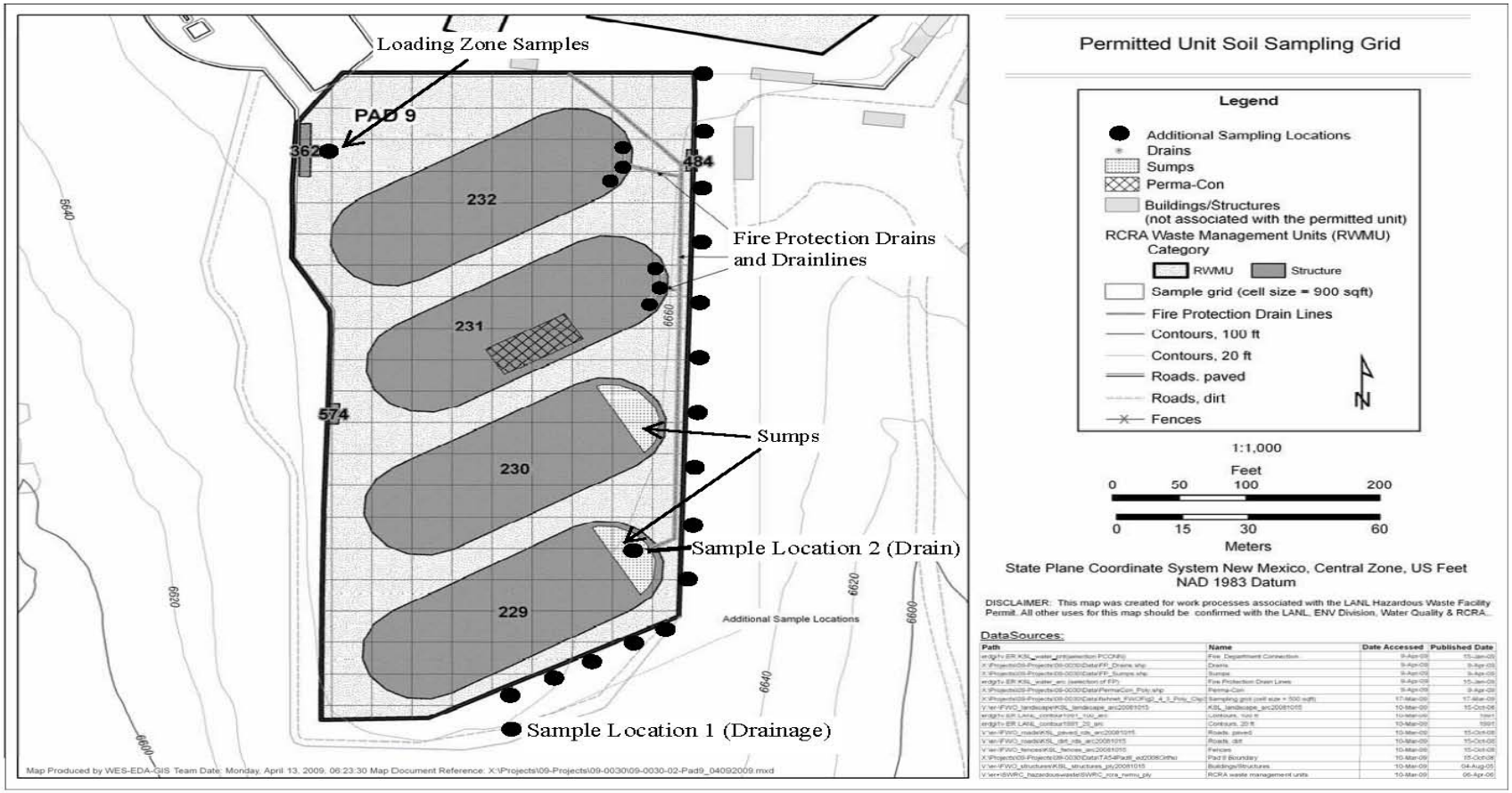

Figure G.10-1: Technical Area 54, Area G, Pad 9 Outdoor Container Storage Unit Grid Sampling and Additional Sampling Locations

ATTACHMENT G.11
TECHNICAL AREA 54, AREA G, PAD 10
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at Technical Area (TA)-54, Area G, Pad 10 at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit, which is an asphalt pad that measures 350 feet (ft) long and 250 ft wide (approximately 89,600 square ft), is located on the eastern end of Area G. The irregular-shaped, asphalt pad (Pad 10) is 4-6 inches (in.) thick and overlies approximately six inches of underlying base course and overlies about six inches of tuff fill. The permitted unit was constructed in 2003 and covers two previously existing pads (Pads 2 and 4). It is constructed with curbing on the north and partially the east sides and is sloped from approximately 1% to 1.5% to the east and south-east for drainage.

Transuranic waste characterization trailers are situated on the permitted unit and hazardous waste containers are stored near the trailers for staging associated with the waste characterization. Large portions of the permitted unit are also used for storage of feed stock empty drums for the transuranic waste characterization activities. Storage of oversized mixed wastes in transportainers and metal boxes also occurs on the permitted unit. The current hazardous waste storage activities at the permitted unit include the following structures:

TA54-0497, RTR2 - The Real-Time Radiography (RTR) system #2 is designed to provide X-ray examination of the contents of a waste drum. The unit has been located on Pad 10 in support of the DOE Carlsbad Central Characterization Project (CCP) operations.

TA54-0498, LANL HENC - The High-Efficiency Neutron Counter (HENC) is designed to provide a passive neutron and gamma measurement of transuranic waste in 55-gallon containers. The HENC supported the Transuranic Waste Characterization Project and Project 2010 and subsequently CCP operations from 2004 to the present.

TA54-0506, MCS HENC - The Canberra MCS HENC is functionally identical to the TA-54-0498 HENC and provides passive neutron and gamma assays of 55-gal waste drums.

TA 54-0547, Super High Efficiency Neutron Coincidence (SuperHENC) counter - Trailer TA-54-0457 houses a high efficiency neutron counter designed to handle large waste containers. It is designed to provide a passive neutron and gamma measurement of large transuranic waste containers like standard waste boxes. The SuperHENC will support the Facility's Transuranic Waste Characterization Project and Central Characterization Project operations beginning in 2010.

TA54-0545 and 546, Storage trailers - Heated transportainers used for waste container storage and equilibration prior to characterization.

The above structures are used for non-destructive assay (NDA) techniques associated with the radioactive characterization for the Waste Isolation Pilot Plant certification of waste containers or in support of those activities. The characterization provided by the NDA monitoring techniques does not involve opening the waste containers. The other trailers and structures provide: 1) shelter for the radioassay equipment, 2) enclosed areas to stabilize the waste containers being assayed; and 3) external containment for the waste within the structures.

The following structures are situated on the permitted unit as support structures and according to the Facility Operating Record have never stored hazardous waste:

TA54-0365, Office Building, Formerly MTGS - TA54-0365 formerly housed the MTGS. The MTGS was a gamma assay system prototype developed by the Permittees. The instrument was salvaged in 2007 and the trailer was converted to office space.

TA54-0483, Source Storage Trailer - TA54-0483 serves as a storage area for calibration sources needed by the NDA systems.

TA54-1059, Storage Trailer - TA54-1059 has been used to store miscellaneous NDA equipment, such as container turn-tables and equipment stands.

The permitted unit has been used for the storage of mixed waste in solid form with small quantities of liquid form waste since 2004. The hazardous waste stored at the permitted unit has been: solidified inorganic solids; leached process residues; salts and cement paste; ash; dewatered aqueous sludge; chemical treatment sludge; soils; combustible debris (*e.g.*, plastics, rubber, laboratory trash, building debris); and heterogeneous debris.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include additional information about waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 800,000 gallons of hazardous waste has been stored at the permitted unit to date. Throughout the life of this Permit, it is estimated that an additional 1,375,000 gallons of hazardous waste will be stored at the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I.

Closure of the permitted unit will be deemed complete when: 1) all structures and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.11-1 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur ain accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate structures and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that soils, surfaces, structures, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Part 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards have been achieved; and submittal of a final closure certification report. The following sections describe the procedures to be used for closure of the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport from the permitted unit. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous waste will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any finding(s) or action(s) that may influence closure activities or additional sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of any spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspection of the floors, walls, and ceilings of the RTR2, the LANL HENC, the MCS HENC, the SuperHENC, the storage trailers (545 & 546), and the asphalt pad for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (*see* Section 6.0 in this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's structures and related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

The asphalt pad, the materials associated with the asphalt pad (curbing and ramps), and a minimum of six inches of the base course and soil underlying the asphalt pad shall be removed after the assessment. If after the removal of the pad (and underlying soil and base course material) the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad, additional soil and materials will be removed. The Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (Order) (*see* Permit Section 9.3)) beneath the permitted unit. The option of removing small areas of asphalt at sampling locations where contamination is suspected (*i.e.*, spill or staining sites) to allow sampling without disturbing the surrounding area prior to the general removal of the pad will be assessed at the time of the assessment.

5.3.2 Decontamination of Structures and Related Equipment

All structures and related equipment that will be reused by the Facility will be decontaminated (*see* Table G.11-6) in accordance with Permit Section 9.4.3.1. This includes the RTR2, the LANL HENC, the MCS HENC, the SuperHENC, and the two storage trailers (545 & 546). This list of equipment requiring decontamination will be revised, as appropriate, during the review and assessment.

Equipment and operating machinery that is not sensitive to water intrusion, such as the transportainers (that are used only for the storage of hazardous waste) and the storage cabinets, will be decontaminated in their entirety by steam cleaning or pressure washing with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. All other

equipment at the permitted unit that is sensitive to water intrusion (*i.e.*, hazardous waste management areas within the trailers which are used for waste characterization, portable air monitors, electronic devices or tools, and spill cleanup equipment containers) will be decontaminated by washing using a wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment.

Portable berms, or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.11-2 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, quality assurance and quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Wipe Sampling Activities

Soils sampling and decontamination verification wipe sampling activities will be conducted at the permitted unit in order to verify that soils, structures, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from each wall, floor, and ceiling of the RTR2, the LANL HENC, the MCS HENC, the SuperHENC, and the two storage trailers (545 and 546) for a total of 36 samples. The locations of these sample collection points will be determined randomly within the area of each surface. Sample collection will be particularly biased to target areas beneath any waste management equipment such as turntables or conveyors.

In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples in the following locations:

a. one sample at the loading and unloading areas (sample locations 3, 4, 5, 6, 7, 8, 9, 10, and 11 as illustrated on Figure G.11-1) of each of the aforementioned structures for a total of nine samples (*see* Permit Section 9.4.7.1.ii(1));

b. one soil sample every 900 square feet of the permitted unit for a total of 100 samples (*see* Permit Section 9.4.7.1.ii(2));

c. eight samples along the swale between the permitted unit and Pad 9 (*see* Permit Section 9.4.7.1.ii(8));

d. one sample just off the south-east edge of the permitted unit where stormwater is directed across the pad by the south and eastward slope, is collected by trench drains southeast of the pad, and discharges from that system to a drain ('sample location 1' on Figure G.11-1). The soil sample will be collected from the point at which the water contacts soil beneath the drain (*see* permit section 9.4.7.1.ii(3)); and

e. one sample at the rock check dam ('sample location 2' on Figure G.11-1) at the far south-east end of Area G where stormwater discharges (*see* Permit Section 9.4.7.1.ii(3)).

At the time of sampling, the precise locations of the samples will be randomly selected within each 900 square foot sampling box (*see* Figure G.11-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. If the review or assessment determines the need to obtain additional samples collected within the area of the sampling box (*e.g.*, at asphalt cracks), these sample locations will be in addition to the grid sample locations.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporate guidance from the United States EPA (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on structures and equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Soil and Sediment Sampling

Soil and sediment samples will be collected and analyzed to determine if hazardous constituents are present in soils at the permitted unit. Soil samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analytes (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.11-4.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed original chain-of-custody form to the Facility and it will become a part of the permanent sampling record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.11-4 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility

documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.11-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.11-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/ QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.11-3 was based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling

and analysis process and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.11-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units; transfer of data between recording media; and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample

b. the physical form of the waste;

c. results from QC samples such as blanks, spikes, and calibrations;

d. reference to standard methods or a detailed description of analytical procedures; and

e. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.11-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water

solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.11-6, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

LANL, 1999. "Screening Level Ecological Risk Assessment Methods," LA-UR-99-1406, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2006. "Technical Background Document for Development of Soil Screening Levels," Rev. 4.0, June 2006, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.11-1

Closure Schedule for the Technical Area 54, Area G, Pad 10 Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.11-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.11-3

Summary of Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

compounds (TIC)				
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

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

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter

Table G.11-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4°C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4°C	

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

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

°C = degrees Celsius
HNO_3 = nitric acid
HCl = hydrochloric acid
L = Liter
mL = milliliter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.11-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Table G.11-6

List of Equipment at the Technical Area 54, Area G, Pad 10 Outdoor Container Storage Unit

Equipment	Decontamination	Disposal
Characterization trailer waste staging equipment (turntables, conveyors)	X	
Any storage structures on Pad 10	X	
Equipment and cabinets	X	X
Container pallets	X	X
Communication equipment	X	X
Access barriers and chains	X	X
Electrical support infrastructure		X

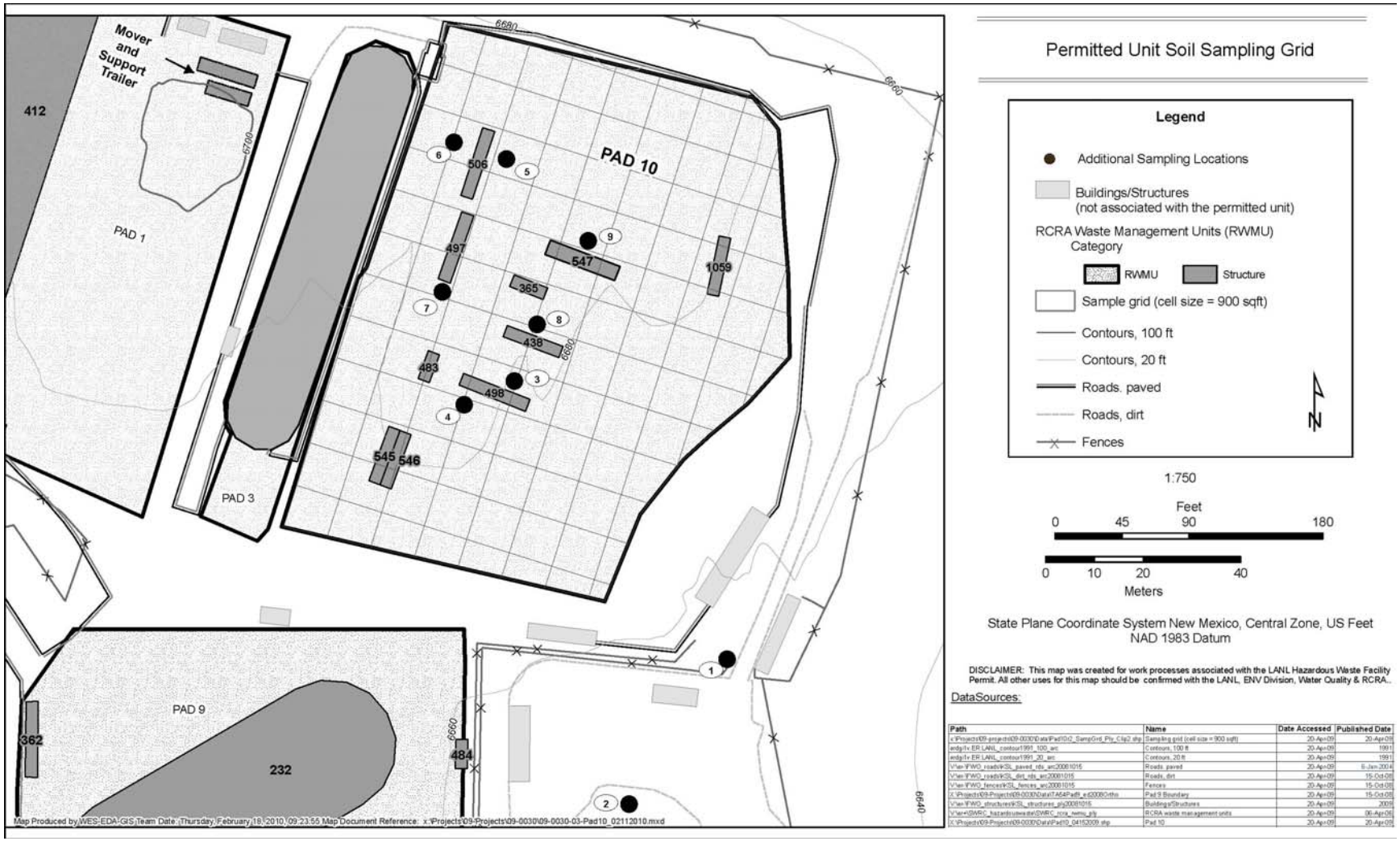

Figure G.11-1: Technical Area 54, Area G, Pad 10 Outdoor Container Storage Unit Sampling Grid and Additional Sampling Locations

ATTACHMENT G.12
TECHNICAL AREA 54, AREA G, PAD 11
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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G.12-1	Technical Area 54, Area G, Pad 11 Outdoor Container Storage Unit Grid Sampling and Additional Sampling Locations

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at Technical Area (TA)-54, Area G, Pad 11 at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located the permitted unit and not discussed within the Permit are described below.

The permitted unit, which was constructed in 1998, is located in the western portion of Area G and consists of an asphalt pad that measures 478 feet long and 137 feet wide or approximately 65,500 square feet. It consists of four inches of asphalt built over underlying base course which overlies a minimum of six inches of tuff fill. It also has a dome (Dome 375) and a High Energy Real-Time Radiography transportainer (HERTR) situated on it. Hazardous waste is stored only in the Dome 375.

The permitted unit is sloped from 1% to 2% to the south/southeast for drainage and has curbing on the south and east sides as well. Drainage is directed to a series of four 5 inch-wide by 27 foot-long drains, all connected to two underground 8-inch diameter polyvinyl chloride pipes which discharge to a concrete lined ditch located near the southeast corner of the pad.

The permitted unit stores hazardous waste in both liquid and solid form in Dome 375. The dome, which is an aluminum framework of trusses covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric, is 300 feet long by 100 feet wide and covers a surface area of approximately 30,000 square feet. It is anchored with anchor bolts to the interior concrete ring wall and is equipped with two double-panel rolling doors, one at the east end of the dome and the other on the west end. It also has 14 personnel doors located approximately every 31 to 57 feet along the dome's length. These doors allow for adequate access both by vehicles and by personnel. The interior perimeter of the dome is surrounded by a concrete ring wall, which helps prevent run-on into and runoff from the dome. Asphalt ramps located at the vehicle entrances allow vehicles and container handling equipment to pass safely over the curb.

The High Energy Real-Time Radiography (HERTR) transportainer, which sits on a concrete pad, is located on the eastern portion of Pad 11 and has an approximate footprint of 50 feet by 50 feet. It consists of two structures, a portable control room and a re-locatable X-ray vault constructed of modular concrete walls and blocks for shielding. Containers to be examined are loaded on the west side of the structure.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*), include information about waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

To date, no hazardous waste has been stored at the permitted unit. The estimated volume for the maximum inventory of waste managed over the projected lifespan of the permitted unit is 1,501,000 gallons.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I.

Closure of the permitted unit will be deemed complete when: 1) all structures, surfaces, and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.12-1 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that the soils, surfaces, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards have been achieved; and submittal of a final closure certification report. The following sections describe the procedures to be used for closure of the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport from the permitted unit. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting decontamination and sampling activities, the Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any finding(s) or action(s) that may influence closure activities or additional sampling locations.

5.2.1 Records Review

The Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of any spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the asphalt pad for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Equipment and Structures

In accordance with procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's structures and related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*) and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

The tensioned-fabric membranes on the dome structure, the aluminum beams, trusses, and ancillary equipment supporting the dome will be removed before the assessment. The asphalt pad, the materials associated with the asphalt pad (curbing and ramps), and a minimum of six inches of the base course and soil underlying the asphalt pad will be removed after the assessment. If after the removal of the pad (and underlying soil and base course material) the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad, additional soil and materials will be removed. If it is determined to be appropriate at the time of the assessment, soil samples may be collected through the asphalt (before the pad and its materials have been removed) from areas where contamination is suspected (*i.e.*, locations of stains or known spills).

In the event that alternative closure requirements, in accordance Permit Section 9.2.2.2, are applied to the closure of this permitted unit, the Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (Order) (*see* Permit Section 9.3)) beneath the permitted unit.

5.3.2 Decontamination of Structures and Related Equipment

The HERTR, as well as equipment and operating machinery that is not sensitive to water intrusion, such as the equipment cabinets, will be decontaminated by steam cleaning using water or pressure washing with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water. Other equipment that is sensitive to water intrusion such as the portable air monitors, electronic devices and tools, and spill cleanup equipment containers in the dome, will be cleaned with a wipe-down wash with a solution

consisting of a surfactant detergent (*e.g.*, Alconox®) and water. Table G.12-8 in this closure plan lists the equipment needing decontamination. This list will be revised during the review and assessment as necessary.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment. Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution. Residue, disposable equipment, and equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.12-3 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance and quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Sampling Activities

Soil samples and decontamination verification sampling activities will be conducted at the permitted unit in order to verify that soils and equipment at the permitted meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment related to the permitted unit. In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples from the following locations:

a. one sample at the loading zone area (*see* Permit Section 9.4.7.1.ii(1));

b. one sample every 900 square feet of the permitted unit for a total of 80 samples (*see* Permit Section 9.4.7.1.ii(2));

c. one sample at the discharge points (in the concrete-lined ditch) of the two 80 foot long underground pipes that collect run-off at Pad 11 for a total of four samples (*see* Permit Section 9.4.7.1.ii(4)); and

d. one sample at all joints and intersections of the two 80 foot long underground pipes that collect run-off at Pad 11 for a total of 16 samples (*see* Permit Section 9.4.7.1.ii(7)).

Figure G.12-1 illustrates these proposed soil sampling locations.

If liquid is present in any of the drains or piping at the time of the assessment, liquid samples will be collected in accordance with Section 6.2.1 of this closure plan.

At the time of sampling, the precise locations of the grid sample will be randomly selected within each 900 square foot sampling box (*see* Figure G.12-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. If the review or assessment determines the need to obtain additional samples within the area of the sampling box (*e.g.*, at asphalt cracks), these sample locations will be in addition to the grid sample locations.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the Permit Section 9.4.7.1 and procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquid samples will be collected and analyzed to determine if residual hazardous constituents remain in the drains or piping at the permitted unit. Liquid sampling will be conducted using glass or plastic tubes, a composite liquid waste sampler, a bacon bomb, a bailer, or by pouring liquid into sample containers.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed used to determine if residual hazardous constituents remain on surfaces, structures, or equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Soil Sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in soils at or in the vicinity of the permitted unit. Soil samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analyte (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.12-4.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become a part of the permanent record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.12-4 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in 40 CFR Part 261 Appendix VIII and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.12-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.12-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/ QC program;,

b. technical analytical expertise,

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.12-5 was based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986), or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample constituents associated with the sampling and analysis process and are described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.12-7 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials: these wastes are listed with potential disposal options in Table G.12-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.12-2, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

LANL, 1999. "Screening Level Ecological Risk Assessment Methods," LA-UR-99-1406, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2006. "Technical Background Document for Development of Soil Screening Levels," Rev. 4.0, June 2006, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.12-1

Closure Schedule for the Technical Area 54, Area G, Pad 11 Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.12-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.12-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.12-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.12-3

Summary of Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

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

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.12-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4°C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			

Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4°C	

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

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

°C = degrees Celsius
HNO_3 = nitric acid
HCl = hydrochloric acid
L = Liter
mL = milliliter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.12-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Table G.12-6

List of Equipment at the Technical Area 54, Area G, Pad 11 Outdoor Container Storage Unit

Equipment	Decontamination	Disposal
Equipment and spill kit cabinets	X	X
Container pallets	X	X
Communication equipment	X	X
Access barriers and chains	X	X

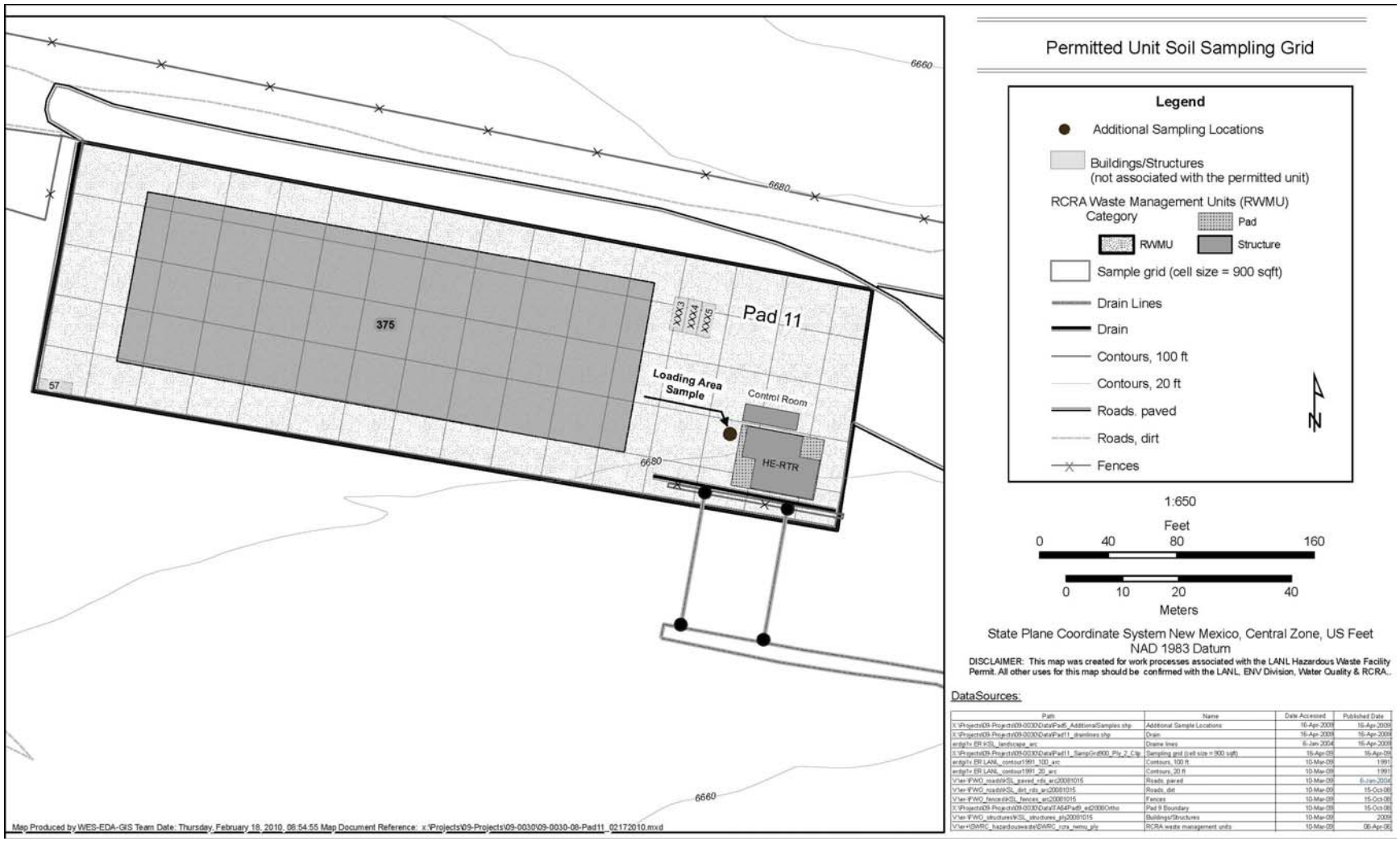

Figure G.12-1: Technical Area 54, Area G, Pad 11 Outdoor Container Storage Unit Grid Sampling and Additional Sampling Locations

ATTACHMENT G.13
TECHNICAL AREA 54, AREA G, STORAGE SHED 8
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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LIST OF FIGURES

FIGURE NO.	TITLE
G.13-1	Technical Area 54, Area G, Storage Shed 8, Indoor Container Storage Unit Dimension and Sump Sampling Location

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit called Storage Shed 8 which is located at Technical Area 54 (TA-54-8) Area G at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit is a steel-framed building with a concrete floor located on the north-central side of Technical Area 54, Area G which sits on a concrete supporting pad. It is rectangular-shaped and measures 40 feet (ft) by 16 ft, or approximately 640 square ft. The permitted unit is completely enclosed except for two garage-type, roll-up metal doors and a personnel door on the south wall. Along the inside perimeter of the permitted unit is a 2 inch (in)-high metal barrier on the floor along the west, north, and east walls and a rounded concrete barrier along the south wall. Centered between the two roll-up doors and 6 inches from the south wall is a sump in the floor with a wire mesh covering which measures 27.5 square inches. In the northwest inside corner of the permitted unit is a 6 in high by 6 in wide concrete barrier enclosing a rectangular area that measures 15 ft 5 in by 5 ft 11in. This area contains a cabinet labeled "Lead-Acid Batteries for Recycle" which has batteries to be recycled as well as fire extinguishers in it.

The waste typically stored at the permitted unit includes mixed waste in solid and liquid form. The permitted unit was constructed in 1979 and has been subject to hazardous waste management regulations under RCRA since July 25, 1990. Specific hazardous waste constituents that have been stored at the permitted unit are included in Table G.13-1 of this closure plan. Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 57,000 gallons of waste has been stored in the permitted unit. Throughout the life of this Permit it is estimated that a total of 71,300 gallons of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264, Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table 13-2 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 § CFR 264.112(d)(1)) and closure activities will begin according to the requirements of 40 § CFR 264.112(d)(2)). However, pursuant to 40 CFR §264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste , the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that surfaces, related equipment, and soils at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Part 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and a structural assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor and walls of the permitted unit for any existing conditions that indicate a potential for release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, the unit's surfaces and related equipment will be decontaminated, or removed, or both and managed according to Section 7.0 of this closure plan. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards.

All surfaces and related equipment that are removed and not intended for recycle will not require decontamination, will be considered solid and potentially hazardous waste when removed, and will be disposed of in accordance with Section 7.0.

5.3.1 Removal of Structures and Related Equipment

The metal walls and the metal roof will be removed before the structural assessment. The materials making up the concrete floor, the sump, the concrete supporting pad, as well as any materials associated with the concrete pad (*e.g.*, asphalt, curbing, base course) will be removed after the structural assessment.

5.3.2 Decontamination of Surfaces, Structures, and Related Equipment

At this time, there is no equipment located at the permitted unit that is expected to be left in place; however, if equipment is identified during the assessment that is expected to be left in place, it will be decontaminated.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This sampling and analysis plan addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Sampling Activities

Soil sampling and decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces, related equipment and soils at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment.

If there is liquid found in the sump at the time of the assessment at least one liquid sample will be collected in accordance with Section 6.2.1 of this closure plan.

In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of four soil samples at the permitted unit from the following locations:

a. immediately off the concrete pad in front of each roll-up door (*see* Permit Section 9.4.7.1.ii(1));

b. every 900 square feet beneath the permitted unit after it, and the concrete pad, are removed (*see* Permit Section 9.4.7.1.ii(2)); and

c. one sample directly beneath the location of where the sump was located (*see* Permit Section 9.4.7.1.ii(5)).

These sample locations are illustrated in Figures G.13-1 and G.13-2.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this sampling and analysis plan which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquid samples will be collected and analyzed to determine if residual hazardous constituents remain in the sump at the permitted unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid waste sampler, a bacon bomb, a bailer, or by pouring liquid into sample containers.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods*,(NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification

sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Soil sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in soils at the permitted unit. Soil samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analyte (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.10-5.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper. Residue, disposable decontamination equipment, and reusable decontamination equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form will be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line and the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and,

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.13-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier; air carrier; or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.13-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.13-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 7.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control/records management plan; and,

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.13-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of interest;

g. required detection limits (*e.g.*, regulatory thresholds); and,

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results. QA/QC samples will be collected in accordance with the most recent and appropriate Facility sampling plan incorporating guidance from the EPA (EPA, 2002), DOE (DOE, 1995), or other Department-approved procedures.

6.4.2.1 Field Quality Control

The field QC samples that will be collected include trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.13-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units; transfer of data between recording media; and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw date printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials, which are listed with potential disposal options in Table G.13-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.13-3, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

LANL, 2003a. “Los Alamos National Laboratory General Part B Permit Renewal Application, Revision 2,0” LA-UR-03-5923, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.13-1

Hazardous Waste Constituents of Concern at the Technical Area 54, Area G, Storage Shed 8, Indoor Container Storage Unit

Category	EPA Hazardous Waste Numbers	Specific Constituents [a]
Toxic Metals	D008	Lead
Volatile Organic Compounds	F001	Trichloroethylene

[a] Based on the permitted unit's Operating Record

Table G.13-2

Closure Schedule for the Technical Area 54, Area G, Storage Shed 8, Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.13-3

Potential Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.13-3

Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.13-3

Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.13-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	Determine the metal concentration in the samples.
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.13-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Lead	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

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

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

°C = degrees Celsius
HNO_3 = nitric acid
HCl = hydrochloric acid
mL = milliliter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.13-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC, metals	One sample daily	Not Applicable

[a] For VOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used

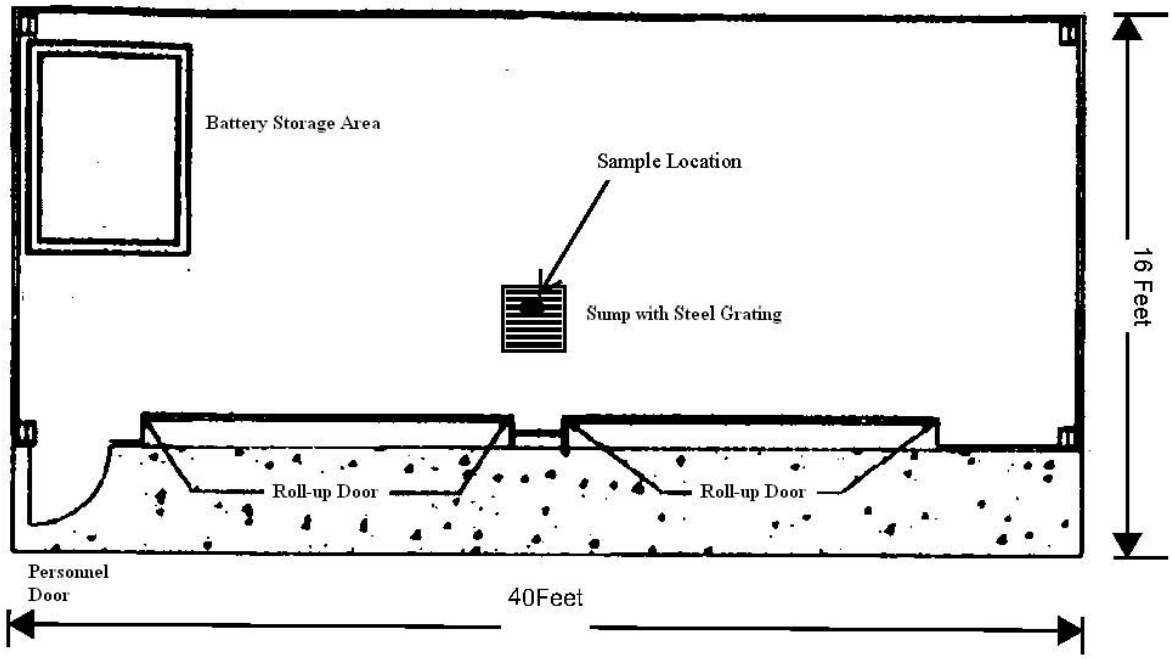

Figure G.13-1: Technical Area 54, Area G, Storage Shed 8, Indoor Container Storage Unit Dimension and Sump Sampling Location

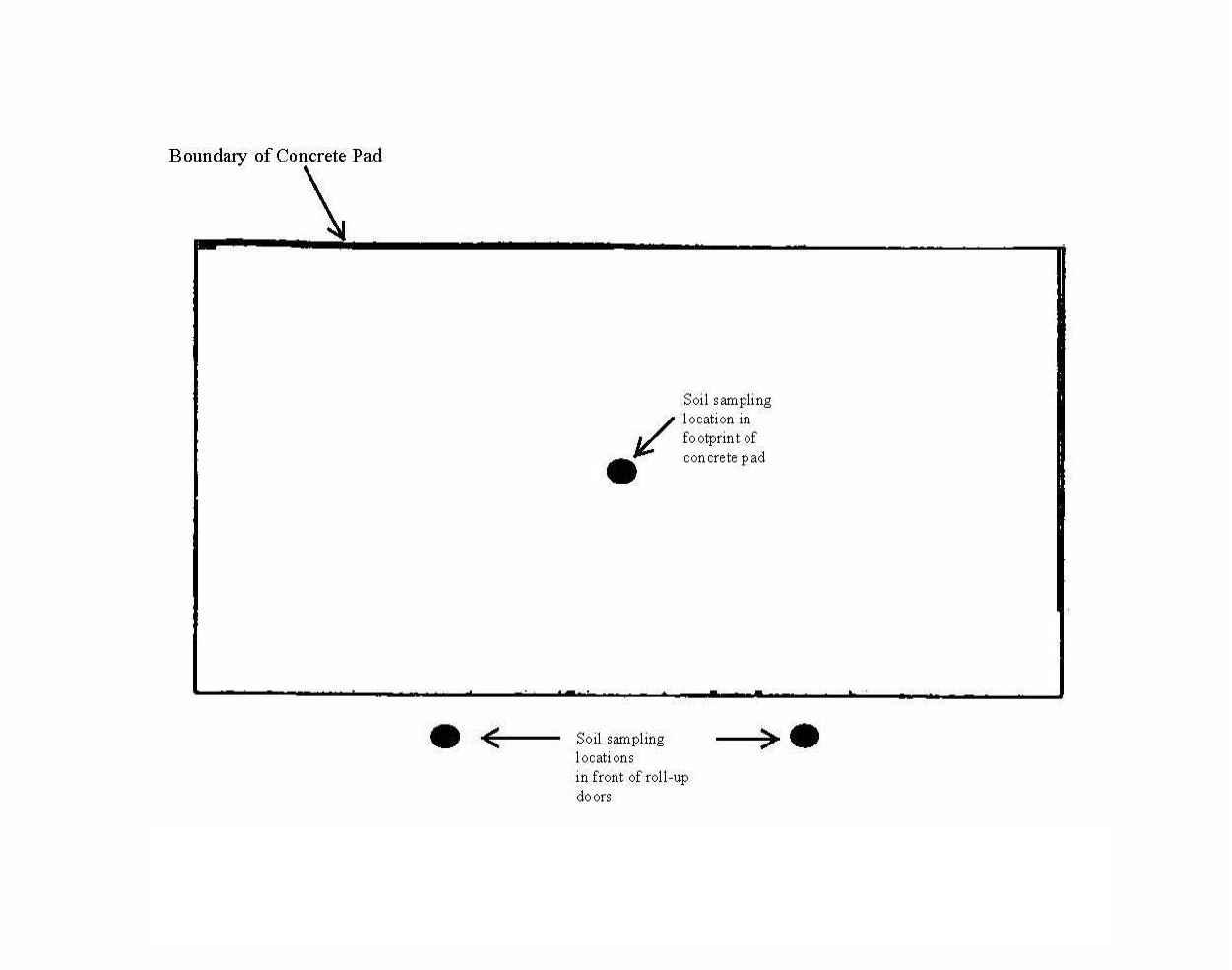

Figure G.13-2: Technical Area 54, Area G, Storage Shed 8, Indoor Container Storage Unit Soil Sampling Locations

ATTACHMENT G.14
TECHNICAL AREA 54, AREA G, BUILDING 33
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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FIGURE NO.	TITLE
G.14-1	Technical Area 54, Area G, Building 33, Indoor Container Storage Unit Grid Sampling and Additional Sampling Locations

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit at Technical Area (TA)-54, Area G, Building 33 (Drum Preparation Facility) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of a specific unit, this closure plan may be amended in accordance with Permit Section 9.4.8 to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit, which is located in the north-central portion of Area G, consists of a storage dome with an attached concrete-block building (Building 33) both of which are situated on an eight inch thick concrete pad surrounded on the south central portion by an asphalt apron. The concrete pad overlies six inches of base course. The permitted unit is used for waste storage and preparation activities for transuranic and mixed transuranic waste destined for shipment to the Waste Isolation Pilot Plant for disposal.

The dome, which is 157 feet (ft) long and 50 ft wide, with a peak height of 24 ft, is built of an aluminum framework of trusses covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric. The dome's aluminum frame is directly connected to Building 33, which extends approximately five ft into the dome. The concrete-block building attached to the dome is approximately 40 ft long and 34 ft wide. Two personnel doors are located in Building 33; one on the west side and one on the east side. Two overhead doors are located on the north side of the building to allow free movement of personnel and container-handling equipment between the building and the dome. The area of the dome and the building totals approximately 8,570 square ft.

The interior perimeter of the dome is surrounded with a 6-inch-high, 8-inch-wide concrete curb to prevent run-on and runoff. The concrete pad in the dome is also sloped to a 6-inch-wide centralized concrete drainage trench that is covered with 12-inch-wide steel grating. The trench slopes toward a steel sump located at the east end of the dome. The rooms in the attached building contain drains that are connected to this main drainage system. Two additional trenches located in the two storage rooms in Building 33 are perpendicular to, and drain into, the main trench. The concrete floors of these rooms also slope inward to prevent runoff.

The central drainage trench in the dome connects to a sump in the eastern end of the dome. The steel sump is located within a concrete basin and is approximately 14 ft long by 6.5 ft wide by 5 ft deep with a capacity of 3,473 gallons. A primary holding tank, associated with the sump, is located in a concrete basin that is 15 ft long by 12 ft wide by 5.5 ft deep and has a capacity of approximately 7,405 gallons. A secondary holding tank associated with the sump is located in a separate concrete basin that is 12 ft long by 12 ft wide by 5.5 ft deep and has a capacity of approximately 5,924 gallons. The basins are designed to contain any spills or leaks resulting from potential overflow or breach of the holding tanks.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 515,550 gallons of waste has been stored in the permitted unit. Throughout the life of this Permit it is estimated that a total of 649,500 gallons of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent,

professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to and approved by the Department.

4.2 Closure Schedule

This closure plan is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.14-1 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 § CFR 264.112(d)(1)) and closure activities will begin according to the requirements of 40 § CFR 264.112(d)(2)). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of a modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that soils, surfaces, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport from the permitted unit. Appropriate shipping documentation will be prepared for the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of any spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor and walls of the concrete-block room as well as the floor in the dome for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Equipment and Structures

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's surfaces and related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All surfaces and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

The following structures and related equipment will be removed before the assessment: the dome; the aluminum beams, trusses, and ancillary equipment supporting the dome; and the walls and metal roof of the attached concrete-block building. The following structures and related equipment will be removed after the structural assessment: the concrete pad; any materials associated with the concrete pad (*e.g.*, concrete ringwall, sump structures, asphalt, curbing, base course, soil underlying pad); the floor of the attached building; and any surrounding asphalt.

If after the removal of the pad (and underlying soil and base course material) the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad, additional soil and materials will be removed. If it is determined to be appropriate at the time of the assessment, soil samples may be collected through the asphalt (before the pad and its materials have been removed) from areas where contamination is suspected (*i.e.*, locations of stains or known spills).

In the event that alternative closure requirements, in accordance Permit Section 9.2.2.2, are applied to the closure of this permitted unit, the Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (Order) (*see* Permit Section 9.3)) beneath the permitted unit.

5.3.2 Decontamination of Surfaces, Structures, and Related Equipment

All surfaces and related equipment that will be reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. Decontamination of the permitted unit's surfaces will include all features located within the unit. This includes: the tanks; the equipment cabinets; the drum venting equipment; the portable air monitors; the electronic devices or tools; and spill cleanup equipment containers. The list of equipment requiring decontamination may be revised during the review and assessment which would result in an amendment to this closure plan.

Equipment and operating machinery that is not sensitive to water intrusion, such as the tanks and equipment cabinets, will be decontaminated by pressure washing or steam cleaning with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water and mixed in accordance with the manufacturer's recommendation. All other equipment at the permitted unit that is sensitive to water intrusion (*i.e.*, drum venting equipment, portable air monitors, electronic devices or tools, spill cleanup equipment containers) will be decontaminated by washing using a wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution. Residue, disposable equipment, and equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.14-2 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This sampling and analysis plan addresses the specific requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Sampling Activities

Soil sampling and decontamination verification sampling activities will be conducted at the permitted unit in order to verify that the soils, surfaces, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment related to the permitted unit. In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples at the permitted unit at the following locations:

a. one sample every 900 square feet beneath the permitted unit after the pad is removed for a total of eleven samples (*see* Permit Section 9.4.7.1.ii(2));

b. five soil samples to address stormwater runoff (*see* Permit Section 9.4.7.1.ii(3)):

    i. one from the northwest end of the permitted unit identified as 'sample location 1';

    ii. one from the north end of the permitted unit identified as 'sample location 2';

    iii. one from the southeast end of the permitted unit identified as 'sample location 3'; and

c. two from each of the areas immediately off the concrete in front of each roll-up door identified as 'sample location 4'and 'sample location 5'(*see* Permit Section 9.4.7.1.ii(1));

d. one sample at each of the drainage points in the concrete-block building for a total of four samples (*see* Permit Section 9.4.7.1.ii(5));

e. one sample beneath the sump at the southeast end of the permitted unit (*see* Permit Section 9.4.7.1.ii(5));

f. one sample at all joints and intersections of the underground drainage system (*see* Permit Section 9.4.7.1.ii(7)); and

g. one sample every 30 ft beneath the axis of the trench that runs the length of the dome for a total of five samples (*see* Permit Section 9.4.7.1.ii(8)).

A total of 24 samples will be collected from soils beneath the permitted unit as illustrated in Figure G.14-1.

If there is liquid found in the trench drains or the dome sump at the time of the assessment, liquid samples will be collected in accordance with Section 6.2.1 of this closure plan.

At the time of sampling, the precise location of the grid samples will be randomly selected within each 900 square foot sampling box (*see* Figure G.14-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. This sampling strategy will result in a minimum of eleven samples taken from the soils beneath the permitted unit. If the review or assessment determines the need to obtain additional samples within the area of the sampling box (*e.g.*, at concrete or asphalt cracks), these sample locations will be in addition to the grid sampling locations.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this sampling and analysis plan which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquids will be collected and analyzed to determine if residual hazardous constituents remain in the drain lines or sumps at the permitted unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid waste sampler, a bacon bomb, a bailer, or by pouring liquid into sample containers.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces or related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample methods will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Soil Sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in soils at the permitted unit. Samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in the approved methods for the type of analytes (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.14-4.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form will be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request/chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become a part of the permanent sampling record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross outs must be made with a single line and the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.14-4 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier; air carrier; or freight. All off-site transportation will be processed through the Facility packaging and transportation

organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.14-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.14-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Permit Section 7.5.2. The analytical laboratory will have:

a. a documented comprehensive QA/ QC program;

b. technical analytical expertise;

c. a document control/records management plan; and,

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.14-3 was based on the following considerations:

e. the physical form of the waste;

f. constituents of interest;

g. required detection limits (*e.g.*, regulatory thresholds); and,

h. information requirements (*e.g.*, waste classification).

6.4.1.1 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling and analysis process, and are described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.1.2 Field Quality Control

The field QC samples that will be collected include trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.14-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and

submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.1.3 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.2 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units; transfer of data between recording media; and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.3 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and,

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials: these wastes are listed with potential disposal options in Table G.14-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.14-2, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a final closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

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Table G.14-1

Closure Schedule for the Technical Area 54, Area G, Building 33, Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.14-2

Potential Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill

Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.14-3

Summary of Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

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

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter

Table G.14-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4°C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			

Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4°C	

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

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

°C = degrees Celsius
HNO_3 = nitric acid
HCl = hydrochloric acid
L = Liter
mL = milliliter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.14-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Table G.14-6

List of Equipment at the Technical Area 54, Area G, Building 33 Indoor Container Storage Unit

Equipment	Decontamination	Disposal
Drum venting and associated equipment	X	X
Electrical infrastructure	X	X
Equipment and spill kit cabinets	X	X
Container pallets	X	X
Communication equipment	X	X
Access barriers and chains	X	X

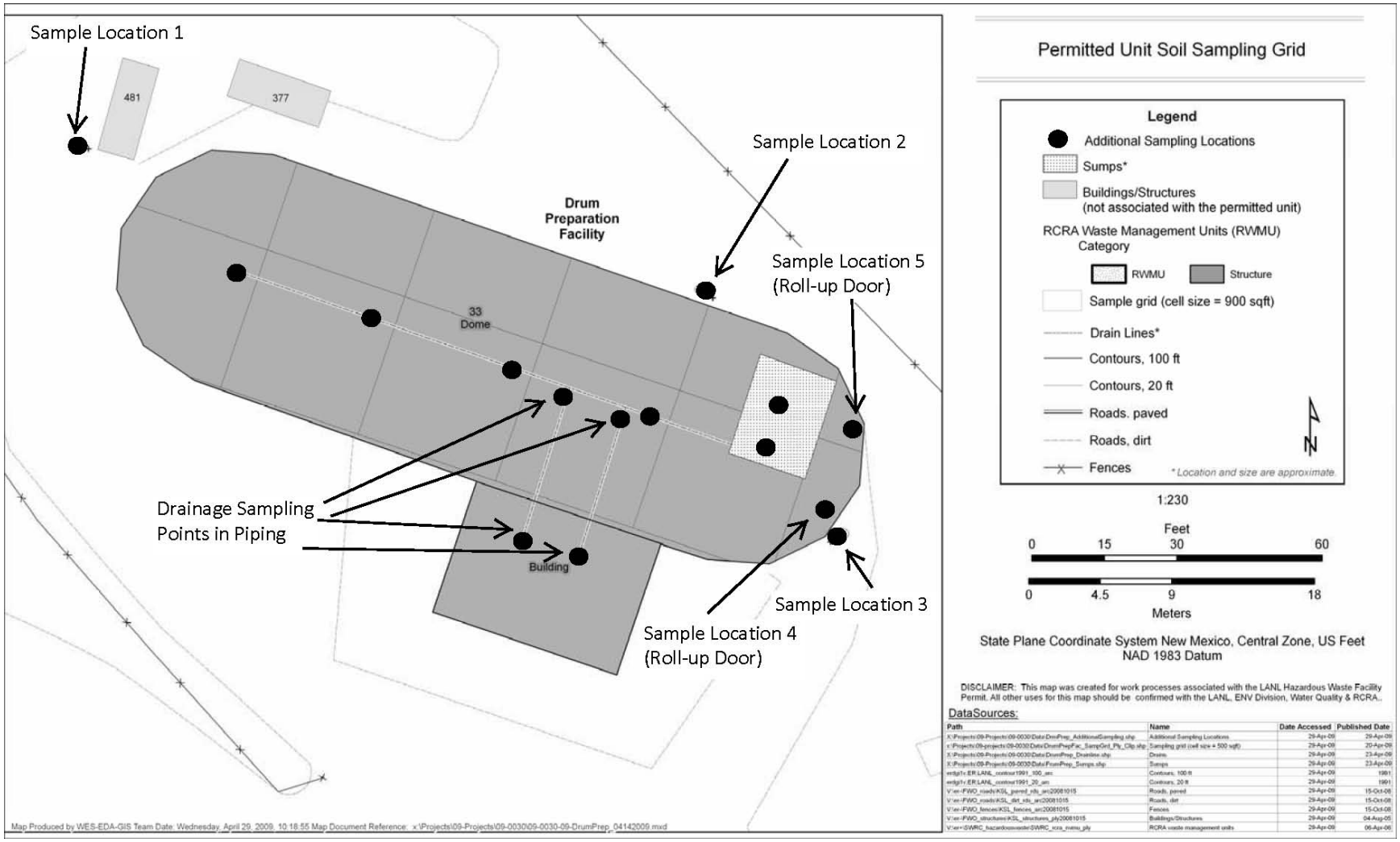

Figure G.14-1: Technical Area 54, Area G, Building 33, Indoor Container Storage Unit Grid Sampling and Additional Sampling Locations

ATTACHMENT G.15
TECHNICAL AREA 54, AREA L
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at Technical Area (TA)-54, Area L at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions to the plan, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit consists of an approximately 110,500 square feet (ft^2) asphalt pad covered area within the fence line at Area L. The permitted unit has several structures associated with it that store hazardous and mixed waste in solid and liquid form: one dome (Dome 215); three portable waste storage buildings (Storage Sheds 68, 69, and 70); one storage shed (Shed 31); one building (Building 39 and containment pad); and four covered storage pads (Pad 32, Pad 35, Pad 36, and Pad 58).

The permitted unit consists of a four to six inch-thick asphalt pad, which overlies a base course, is sloped 1 to 1.5% to facilitate drainage, and has a 6-inch-high, 8-inch-wide asphalt berm in some areas to prevent run-on and runoff.

Storage Dome 215 is 60 ft wide, 266 ft long, and 26 ft high with an area of approximately 15,960 ft^2. The dome is an arch frame-supported, stressed-membrane structure of modular construction with an aluminum framework and an ultraviolet, stabilized, plasticized polyvinyl chloride fabric covering equipped with 14 personnel doors and two roll-up doors. The dome is anchored to the concrete ring wall with anchor bolts and the flooring is equipped with a six inch (in.) high by eight in. wide concrete ring wall that surrounds the perimeter of the dome. The dome also has a ramp at the dome's vehicle entrance which allows vehicles and container handling equipment to pass safely over the ring wall. Both the ring wall and the ramp prevent run-on into the dome. Any liquid that might accumulate within Dome 215 (*e.g.*, liquids resulting from fire-suppression activities) is contained within the ring-walled area. Liquid that may result from fire-suppression activities and that is in excess of the capacity inside the ring wall is collected in a double-walled holding tank connected to the eastern side of the dome by a double-walled pipe.

Canopy 216, decommissioned in March 2010, was 33 ft wide by 120 ft long with an area of approximately 3,960 ft^2. The canopy consisted of a rigid aluminum frame anchored to a sloped asphalt pad which supported a tensioned membrane. All waste containers that were stored in Canopy 216, including gas cylinders, were stored on pallets or were otherwise elevated (*e.g.*, metal supports, wooden

timbers, baskets) to prevent contact with accumulated liquids. All liquid wastes were stored on secondary containment pallets.

The three portable waste storage buildings (Storage Sheds 68, 69, and 70) are steel prefabricated sheds measuring 23 ft long, nine ft wide and 8.5 ft high each with an area of approximately 128 ft^2. The sheds are elevated by design to prevent run-on and are each constructed with a liquid-tight sump covered by metal grates, to ensure containment of any potential leaks or spills and to prevent runoff. Containers are placed directly on the metal grates, which prevent contact with liquids that may have accumulated in the sumps. The interior of each shed and sump is coated with chemically-resistant epoxy paint. Access to the storage compartments in each shed is obtained through three sets of double doors.

Storage Shed 31 is a prefabricated shed constructed of steel that measures approximately 14 ft long, 13 ft wide and eight ft high with an area of approximately 180 square ft. It sits on a concrete foundation that has a raised edge and is surrounded by asphalt which is sloped away from the shed to prevent run-on. The shed has three separate liquid-tight recessed sumps in the concrete foundation that are each covered with a steel grate. Containers are stored on the steel grates which prevent contact with liquids that may have accumulated in the sumps. The sumps and the concrete foundation are coated with chemically-resistant paint.

Storage Pad 32 consists of a bermed (by a 1-ft-wide, 6- to 8-inch-high concrete curb) concrete pad that is 116.5 ft long by 15.5 ft wide with an area of approximately 1800 ft^2. The bermed area, which prevents run-on of storm water, is divided into six separate containment cells to segregate wastes with different hazard classes. The containment cells are separated by metal partitions above the flooring and each consists of a recessed sump covered with grate flooring on which containers are stored; this prevents contact with liquids that may have accumulated in the sumps. The concrete sumps are treated with chemical-resistant epoxy filler-sealer and protective coating which provides an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The pad is covered by a 117.75-ft-long by 25.75-ft-wide canopy which provides protection from the weather.

Storage Pad 35 consists of a concrete pad that measures 31.5 ft long by 31.5 ft wide with an area of approximately 1050 ft^2. The pad has a six inch high concrete berm that prevents run-on and runoff of liquids. The bermed area has an elevated ramp on one side to allow access for equipment to move waste containers. The ramp also helps to prevent run-on of precipitation and runoff of any accumulated liquids. The concrete berms and the base of the concrete pad are treated with chemical-resistant epoxy filler-sealer and protective coating. The pad is covered by a 136 ft long by 48 ft wide canopy that provides protection from the weather.

Storage Pad 36 is a 33 ft long by 31.5 ft wide concrete pad with an area of approximately 1050 ft^2. The pad is surrounded by a one foot wide berm that varies from six inches to a single foot in height. The berm prevents run-on and runoff of liquids. The berm and the base of the concrete pad are treated with chemical-resistant epoxy filler-sealer and protective coating which provides an impervious seal to contain any leaks, spills, or accumulation of precipitation. The pad also contains a Perma-Con® structure which is constructed of a four ft wide by eight or four ft long 22-gauge stainless-steel panels that interlock in a self-supporting structural steel framework. The Perma-Con® is 28 ft wide by 28 ft long by 12 ft high and is equipped with a 20 ft long observation room that attaches to the main enclosure. The main enclosure has two personnel doors and an eight ft wide roll-up door. The floor in the main enclosure consists of the concrete pad covered with multiple layers of heavy duty plastic sheeting taped together and extended approximately a foot up the sides of the Perma-Con®. The Perma-Con® has a tarp covering its roof to provide additional protection from the elements and preventing the influx of precipitation including snow melt. The pad is covered by a 136 ft long by 48 ft wide canopy that provides protection from the weather.

Storage Pad 58 measures 33 ft long by 31.5 ft wide with an area of approximately 1050 ft^2. The pad has a foot wide berm that varies from six inches to a foot in height. The bermed area has an elevated ramp on one side to allow access for equipment to move waste containers; both the berm and the ramp provide protection from run-on and run-off of precipitation and any accumulated liquids. The berm and the base of the concrete pad are treated with chemical-resistant epoxy filler-sealer and protective coating. This provides an impervious seal that will contain any leaks, spills, or accumulation of precipitation. Stored waste containers are elevated on pallets to prevent contact with any potential accumulated liquids. Storage Pad 58 is covered by a 136-ft-long, 48-ft-wide canopy that provides protection from the weather.

Building 39, which measures 40 ft long by 40 ft wide, is a metal panel building set on a concrete foundation with a metal canopy attached to the south side of the building. The rectangular metal canopy measures 83 ft long by 46 ft wide and covers the concrete pad on which it sits. The combined unit has a surface area of approximately 3,450 ft^2. There are two areas associated with Building 39 that provide secondary containment: Room 101 (located inside Building 39); and a containment pad (located at the south end of Building 39). The 878 ft^2 Room 101 has a six in. high concrete curb that surrounds the room. The curb and floor are treated with chemical-resistant epoxy filler-sealer and protective coating which provides an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The containment pad, which consists of two sections, is covered by a metal canopy that provides protection from the weather. The eastern section of the containment pad is constructed of asphalt and measures 83 ft long by 23 ft wide; the western section is approximately 58 ft long by 16 ft wide and is surrounded by a one foot high concrete curb that prevents run-on and runoff of liquids. The concrete floor and curb are treated with chemical-resistant epoxy filler-sealer and protective coating.

Area L has stored the following waste types: spent solvents; paints and related wastes; photographic and photocopier wastes; corrosive liquids; solid metals and metallic compounds; off-specification commercial chemical products; gas cylinders; solidified inorganic solids; leached process residues; chemical salts and cement paste; ash; dewatered aqueous sludge; chemical treatment sludge; soils; combustible debris (*e.g.*, plastics, rubber, laboratory trash, building debris); and heterogeneous debris.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include information about waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

The estimated volume for the maximum inventory of waste managed over the active life of the permitted unit to date is 1,958,000 gallons. Approximately 2,216,000 gallons of waste is expected to be stored at the permitted unit over the active life of this Permit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standards

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the

cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I.

Closure of the unit will be deemed complete when: 1) all structures, surfaces, and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.15-1 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Soil sampling and decontamination verification sampling will be conducted to demonstrate that soils, surfaces, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit can not proceed according to schedule, the Permittees will notify the Department in accordance with the extension requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport from the permitted unit. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous waste will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment of the unit will be conducted to determine any finding(s) or action(s) that may influence closure activities or additional sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of any spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floors, walls, and ceilings of storage buildings 68, 69, and 70, Storage Shed 31, and Building 39, the floors in Dome 215, where Canopy 216 was located, and covered storage pads 32, 35, 36, and 58, and the floor of the permitted unit for any existing cracks or conditions that indicate a potential for release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Equipment and Structures

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's structures and related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

The following structures and equipment will be removed before the structural assessment: Dome 215; equipment related to the dome and canopy (*e.g.*, tensioned-fabric membranes, aluminum beams, trusses, ancillary equipment); and Building 39. The following structures and equipment will be removed after the structural assessment: the permitted unit (the asphalt pad at Area L within the fence line and its related materials (*e.g.*, asphalt, concrete ringwall, foundations, minimum of six inches of the base course, soil underlying the asphalt)); concrete storage pads 32, 35, 36, and 58; all the materials associated with the four concrete storage pads; and the double-walled holding tank.

If after the removal of the pad (and underlying soil and base course material) the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the permitted unit, additional soil and materials will be removed. If it is determined to be appropriate at the time of the assessment, soil samples may be collected through the asphalt (before the pad and its materials have been removed) from areas where contamination is suspected (*i.e.*, locations of stains or known spills).

In the event that alternative closure requirements, in accordance Permit Section 9.2.2.2, are applied to the closure of this permitted unit, the Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (Order) (*see* Permit Section 9.3)) beneath the permitted unit.

5.3.2 Decontamination of Equipment

All structures and related equipment that will be reused by the Facility will be decontaminated (*see* Table G.15-6 of this closure plan) in accordance with Permit Section 9.4.3.1. This includes: the storage sheds (68, 69, 70, and 31); the PermaCon®; the equipment cabinets; the portable air monitors; all the electronic devices and tools; and the spill cleanup equipment containers. This list of equipment requiring decontamination will be revised during the review and assessment.

Equipment and operating machinery that is not sensitive to water intrusion, such as the storage sheds, the PermaCon®, and the equipment cabinets, will be decontaminated by steam cleaning or pressure washing with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. All other equipment at the permitted unit that is sensitive to water intrusion (*i.e.*, portable air monitors, electronic devices or tools, and spill cleanup equipment containers in

the dome and canopy) will be decontaminated by washing using a wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment. Portable berms, or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment), will collect excess wash water and provide containment during the decontamination process. The fire suppression water drain in Domes 215 will be plugged before decontamination activities begin.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure activities will be cleaned with a wash water solution. The solution will be characterized and managed as a hazardous waste if appropriate. Residue, disposable equipment, and equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.15-2 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis and quality assurance and quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Sampling Activities

Soil sampling and decontamination verification sampling activities will be conducted to verify that soils, structures, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from each wall of the storage sheds (68, 69, 70, and 31), Building 39, and the Perma-Con®, one from each ceiling, one from each floor, and one from the 12 sumps in these structures for a minimum of 48 wipe samples. The locations for these samples will be determined randomly within the area of each surface.

In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples from the following locations:

a. one soil sample in front of each storage shed (68, 69, 70, and 31) associated with the permitted unit for a total of four samples (*see* Permit Section 9.4.7.1.ii(1));

b. one soil sample every 900 square feet of the permitted unit for a total of 123 samples (*see* Permit Section 9.4.7.1.ii(2));

c. one sample to address stormwater runoff identified as 'sample location 1' (*see* Permit Section 9.4.7.1.ii(3) and discussion below for rationale of sample locations);

d. one sample at the discharge point of the underground piping from the double-walled fire water collection holding tank identified as 'sample location 2' (*see* Permit Section 9.4.7.1.ii(4));

e. one sample at the sump located in Dome 215 (*see* Permit Section 9.4.7.1.ii(5)); and

f. one sample at all joints and intersections of the permitted unit's underground piping (*see* Permit Section 9.4.7.1.ii(5)).

At the time of sampling, the precise locations of the grid samples will be randomly selected within each 900 square foot sampling box (*see* Figure G.15-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. This sampling strategy will result in a minimum of 123 samples collected from the permitted unit. If the review or assessment determines the need to obtain additional samples collected within the area of the sampling box (*e.g.*, at asphalt cracks), these sample collection locations will be in addition to the grid sample locations.

Rainwater flow at the permitted unit is directed across the pad by the eastward slope and through a drainage point in the north-east section of the surrounding fence. A sample will be collected where this outlet discharges to soil.

A soil sample will also be collected where liquid discharges from the double-walled fire water collection holding tank on the eastern end of the permitted unit (identified as 'sample 2' on Figure G.15-2).

If there is liquid found in any of the 12 sumps, the double-walled holding tank, or the piping system at the time of the assessment, liquid samples will be collected in accordance with Section 6.2.1 of this closure plan.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquid samples will be collected and analyzed to determine if residual hazardous constituents remain in the sumps, holding tank, or drain lines at the permitted unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid waste sampler, a bacon bomb, a bailer, or by pouring liquid into sample containers.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on structures or equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Soil Sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in soils at the permitted unit. Soil samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analyte (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.15-4.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following section provides a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request/chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The completed original chain-of-custody form will be returned by the analytical laboratory and will become a part of the permanent record documenting the sampling effort.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.15-4 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish these requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.15-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.15-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/ QC program,

b. technical analytical expertise,

c. a document control and records management plan, and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.15-3 was based on the following considerations:

e. the physical form of the waste;

f. constituents of interest;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling and analysis process and are described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.15-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials: these wastes are listed with potential disposal options in Table G.15-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment, as summarized in Table G.15-2, that cannot be decontaminated will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

LANL, 1999. "Screening Level Ecological Risk Assessment Methods," LA-UR-99-1406, Los Alamos National Laboratory, Los Alamos, New Mexico.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2006. "Technical Background Document for Development of Soil Screening Levels," Rev. 4.0, June 2006, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.15-1

Closure Schedule for the Technical Area 54, Area L Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.15-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Dome structures	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Potential Waste Materials	Waste Types	Disposal Options
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.15-3

Summary of Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration

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

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.15-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4°C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Total Mercury	Aqueous Media: 500-mL Wide-Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4°C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media: Cool to 4°C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			

Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4°C	

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

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

°C = degrees Celsius
L = Liter
HNO_3 = nitric acid
mL = milliliter
HCl = hydrochloric acid
TCLP = Toxicity Characteristic Leaching Procedure

Table G.15-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Table G.15-6

List of Equipment at the Technical Area 54, Area L Outdoor Container Storage Unit

Equipment	Decontamination	Disposal
Perma-Con structure and associated equipment on Pad 36	X	X
Dome and Canopy materials		X
Equipment and spill kit cabinets	X	
Container pallets	X	X
Communication equipment	X	X
Access barriers and chains	X	X
Double-walled holding tank	X	

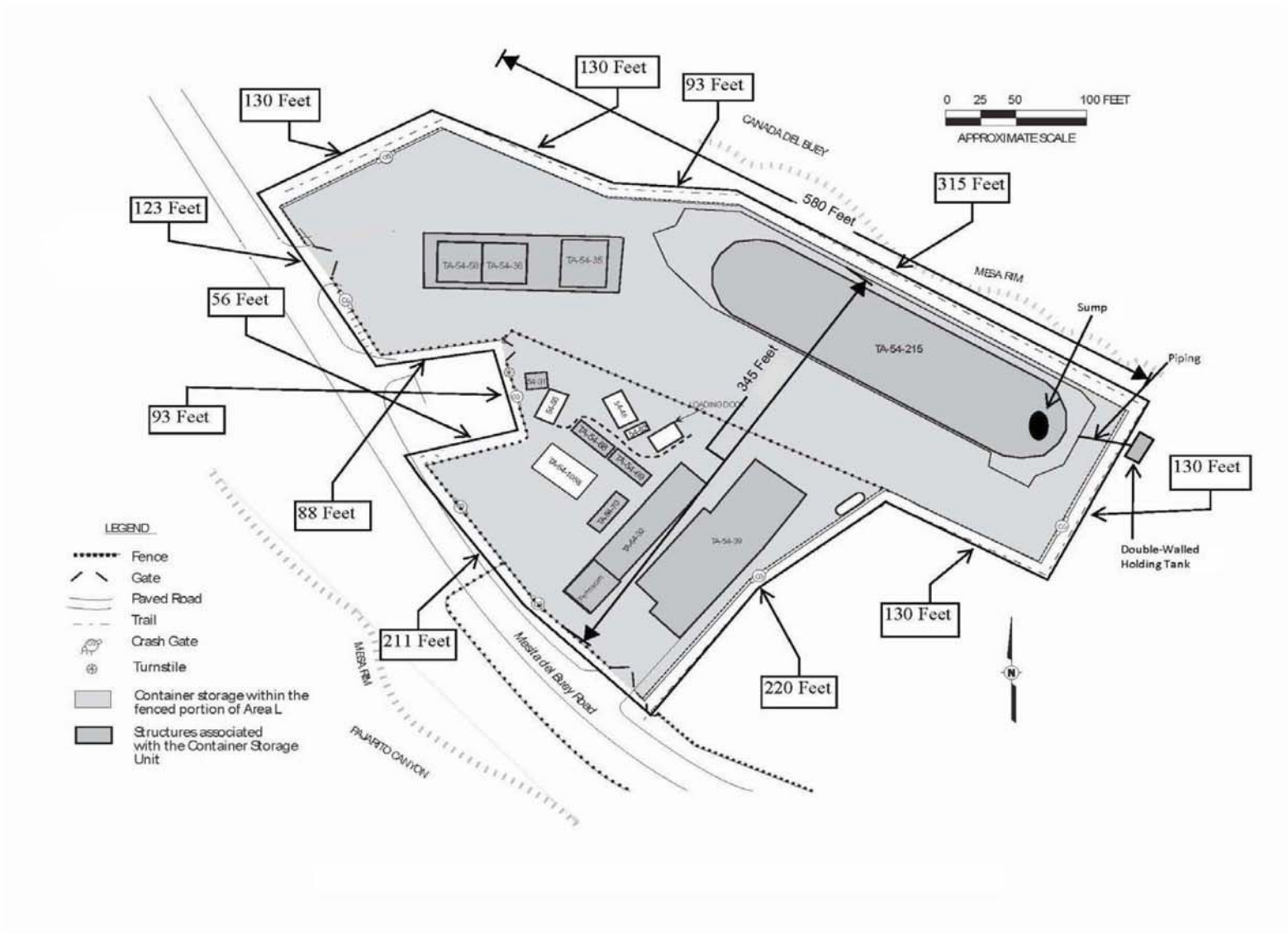

Figure G.15-1: Technical Area 54, Area L, Outdoor Container Storage Unit Sampling Grid and Dimensions

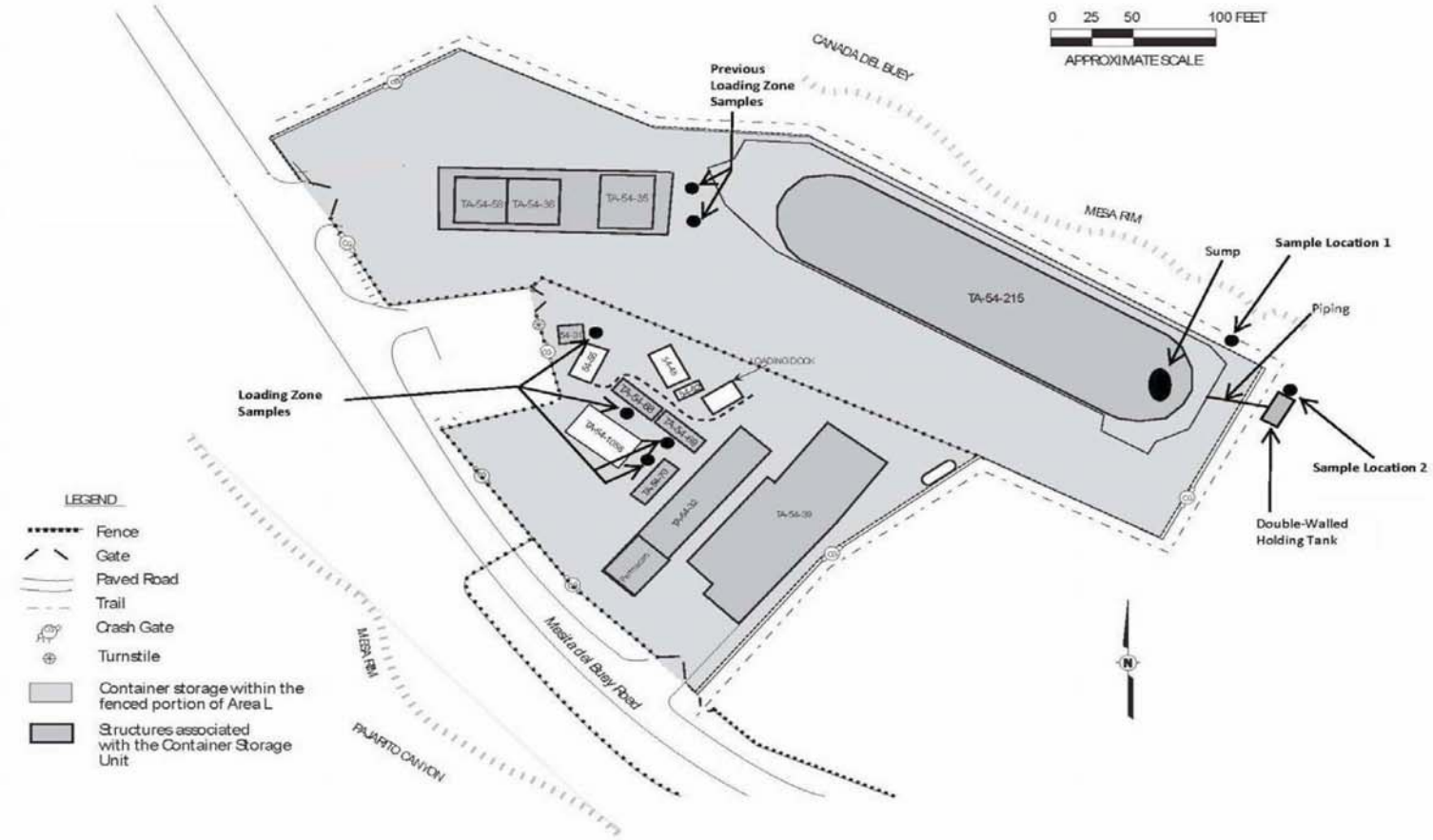

Figure G.15-2: Technical Area 54, Area L, Outdoor Container Storage Unit Additional Soil Sampling Locations

ATTACHMENT G.16
TECHNICAL AREA 54 WEST, BUILDING 38
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit that is comprised of the High Bay and Low Bay rooms located at Technical Area 54 West, Building 38 (TA-54-38) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit is comprised of the outdoor loading dock and areas within the High Bay (Room 101) and the Low Bay (Room 102). Access between the two bays is provided through a 2.4 meter (m) wide by 3.8 m high roll-up door.

The High Bay, which stores fiberglass-reinforced plywood boxes, standard waste boxes (SWB), B25 boxes, and drums of various sizes, is 40 feet (ft) wide and 80 ft long. It is equipped with a 5-ton capacity bridge crane, a truck-axle weighing scale, loading platforms, and TRUPACT–II and HalfPACT lid stands. The floor is a 6-inch, reinforced, epoxy-coated, concrete slab which gently slopes toward a central 50-ft trench and a sump. The sump is locked out and a pipe plug has been installed. The floor has a grated drain (approximately five (5) inches (in.) wide by 57 ft long) that runs down the center of the bay which collects melting snow and water from the trucks that enter the bay. The permitted container storage area within the High Bay, which is located along the south side of the room's center wall, is approximately 11 ft wide and 34 ft long and is used as a transuranic (TRU) waste payload-container assembly area and TRUPACT-II/HalfPACT shipper-container loading area. Its primary function is the preparation of waste packages for transport to the Waste Isolation Pilot Plant (WIPP). The TRU waste packaged in the High Bay is predominantly radioactive, but can include mixed waste.

The Low Bay, where waste drums of various sizes are stored, is 40 ft long by 34 ft wide; it was once used for staging hazardous solid and liquid waste while nondestructive radioassay waste characterization activities were performed. The floor is a 6-inch reinforced concrete slab coated with industrial grade enamel paint. The permitted container storage area within the Low Bay is approximately 11 ft^2.

The Loading Dock, located just east of the low bay, is approximately 16 ft wide and 39 ft long and is constructed of cast-in-place concrete. A truck ramp, which is not part of the Loading Dock CSA, runs perpendicular to the loading dock platform. At the bottom of the truck ramp is a 38-inch-square grate

covering a drainage culvert. The Loading Dock container storage area is divided into two areas on the platform; the first is an area at the north end of the loading dock which measures 16 ft by ten (10) ft. and the second area is at the south end of the loading dock which measures 16 ft by 12 ft. Waste drums of various sizes are stored in the Loading Dock.

The permitted unit began hazardous waste operations in 1995 when testing of radioassay equipment occurred. Shipments of waste packages from the facility to the WIPP began in 1999. The building was constructed in 1989 and 1990. Specific hazardous waste constituents stored at the permitted unit are included in Tables G.16-1 and G.16-2.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include information about waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 612,755 gallons of waste has been stored at the permitted unit since 1995. Throughout the life of this permit, it is estimated that an additional 440,000 gallons of waste will be stored at the permitted unit.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section explains the schedule of closure activities (*see also* Table G.16-3 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste the Permittees will conduct the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of hazardous waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated surfaces and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe the closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flatbed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes

during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. Goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floors and walls of the permitted unit for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, the unit's surfaces and related equipment will be decontaminated, or removed, or both and managed appropriately. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous waste constituents from the permitted unit to meet the closure performance standards.

All surfaces and related equipment that are removed and not intended for recycle will not require decontamination, will be considered solid and potentially hazardous waste when removed, and will be disposed of in accordance with Section 7.0.

5.3.1 Removal of Structures and Related Equipment

At this time, there is no equipment identified for removal from the unit; however, if equipment is identified during the assessment it will be decontaminated, removed, and disposed of in accordance with the appropriate sections of this closure plan.

5.3.2 Decontamination of Structures and Related Equipment

Decontamination of the permitted unit's surfaces and equipment will include all features located within the unit (*e.g.*, drain grates, ladders). The following equipment located at the permitted unit is expected to be left in place and therefore decontaminated: the man lift; the lid stands; the drum wrapper; the portion of the bridge crane that comes into contact with waste containers; and the floor scales.

The permitted unit's floors and walls (up to 11 ft) will be decontaminated. Decontamination of the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by pressure washing or steam cleaning with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

Ceilings of the permitted unit, walls above 11 ft, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic hazardous waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above 11 ft.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

The floor drain in the High Bay will be plugged before decontamination activities begin to ensure that none of the wash water solution enters the drain located on the floor.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.16-4 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of:

a. four wipe samples from the High Bay (*see* Figure G.16-1):

1. two from the floor;
2. one from the wall; and
3. one from the sump;

b. one wipe sample from the Low Bay (*see* Figure G.16-1):

c. one from the floor; and

d. two wipe samples from the Loading Dock areas identified as 'sample area 1' and 'sample area 2' (*see* Figure G.16-1)

If liquid is found in the sump in the High Bay at the time of the assessment, liquid samples will be collected in accordance with Section 6.2.1 of this closure plan.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquid samples will be collected and analyzed to determine if residual hazardous constituents remain in the drain at the permitted unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid sampler, a bacon bomb, a bailer, or by pouring liquid in sample containers.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100-square-centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be

removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.16-5.

6.2.4 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request/chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed original chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.16-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and

holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Tables G.16-1 and G.16-2). Tables G.16-1 and G.16-2 will be modified, as necessary, to incorporate changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.16-6. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.16-6. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control/records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.16-6 is based on the following considerations:

e. the capability to perform data reduction, validation, and reporting;

f. the physical form of the waste;

g. constituents of concern;

h. required detection limits (*e.g.*, regulatory thresholds); and

i. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.16-7 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound and statistically valid and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials: these wastes are listed with potential disposal options in Table G.16-4 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.16-4, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

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EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.16-1

Hazardous Waste Constituents of Concern at the Technical Area 54, Building 38 High Bay [a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D003, D004, D005, D006, D007, D008, D009, D010. D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Organic Compounds	D018, D019, D021D022, D028, D035, D038, D039, D040, D043 F001, F002, F003, F004, F005, U080	Benzene, Carbon Tetrachloride, Chlorobenzene, Chloroform, 1,2 – Dichloroethane, Methyl ethyl ketone, Pyridine, Tetrachloroethylene, Vinyl Chloride Tetrachlrorethylene, Trichloroethylene, Methylene Chloride, 1,1,1-trichloroethane, Chlorinated Fluorocarbons, Trichloroethylene, 1,1,2- Trichloro-1,1,2-Trifluoroethane, Ortho-dichlorobenzene, Trichlorofluoromethane, 1,1,2-Trichloroethane, Xylene, Acetone, Ethyl acetate, Ethyl benzene, Ethyl ether, Methyl Isobutyl Ketone, n-Butyl alcohol, Cyclohexanone, Methanol, Cresols, Cresylic acid, Nitrobenzene, Toluene, Carbon disulfide, Isobutanol, Benzene, 2-Ethoxyethanol, 2-Nitropropane, Dichloromethane

[a] Based on the permitted unit's Operating Record

Table G.16-2

Hazardous Waste Constituents of Concern at the Technical Area 54, Building 38 Low Bay[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D003, D004, D005, D006, D007, D008, D009, D010. D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Organic Compounds	D018, D019, D021D022, D028, D035, D038, D039, D040, D043 F001, F002, F003, F004, F005, U080	Benzene, Carbon Tetrachloride, Chlorobenzene, Chloroform, 1,2 – Dichloroethane, Methyl ethyl ketone, Pyridine, Tetrachloroethylene, Vinyl Chloride Tetrachlrorethylene, Trichloroethylene, Methylene Chloride, 1,1,1-trichloroethane, Chlorinated Fluorocarbons, Trichloroethylene, 1,1,2- Trichloro-1,1,2-Trifluoroethane, Ortho-dichlorobenzene, Trichlorofluoromethane, 1,1,2-Trichloroethane, Xylene, Acetone, Ethyl acetate, Ethyl benzene, Ethyl ether, Methyl Isobutyl Ketone, n-Butyl alcohol, Cyclohexanone, Methanol, Cresols, Cresylic acid, Nitrobenzene, Toluene, Carbon disulfide, Isobutanol, Benzene, 2-Ethoxyethanol, 2-Nitropropane, Dichloromethane

[a] Based on the permitted unit's Operating Record.

Table G.16-3

Closure Schedule for the TA-54 West, Building 38, Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.16-4

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste

Figure G.16-4 (cont.)

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Figure G.16-4 (cont.)

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.16-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.16-6

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D [c]	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.
CVAA = Cold-vapor atomic absorption spectroscopy; GFAA = Graphite furnace atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy; GC/MS = Gas chromatography/mass spectrometry;
mg/L = milligrams per liter; ug/L = micrograms per liter

Table G.16-7

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

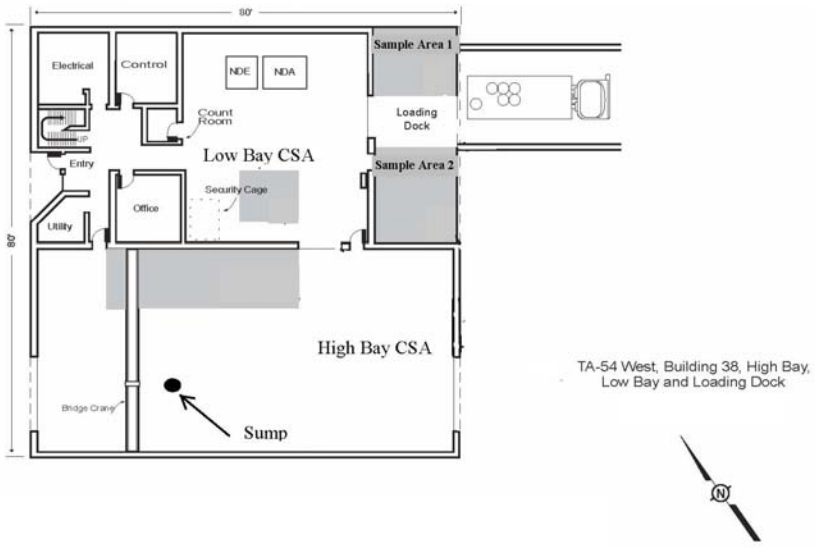

Figure G.16-1: Technical Area 54, Building 38 (High, Low Bay, and Loading Dock Sampling Locations)

ATTACHMENT G.17
TECHNICAL AREA 54, WEST
OUTDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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G.17-1	Technical Area 54 West Outdoor Container Storage Unit Grid Sampling and Additional Sampling Locations

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at Technical Area 54 West, Building 38 (TA-54-38) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit is located on the north and east sides of TA-54-38 and consists of an asphalt pad (which slopes toward the north and east and has a thickness of approximately four inches) and a loading dock which measures 16 ft wide by 38 ft, 10 inches long. The loading dock is constructed of six inch cast-in-place concrete, is approximately 4 inches above grade, and is covered by a metal roof awning. Small storage sheds (1024 and 1025) for supplies and equipment and not for the storage of hazardous waste, are also located on the permitted unit. The entire permitted unit measures approximately 37,900 square feet.

The slope of the asphalt pad allows for storm water to run off the pad into a one inch wide trench drain that runs along the north edge of the pad. The eastern edge of the pad consists of an asphalt swale that collects storm water and conveys it to a single discharge point at the northeast corner of the site. An asphalt berm running from the extreme northern corner of Building 38 to the drain flanks the northern side of the permitted unit and an asphalt curb flanks the southern side.

The waste typically stored at the permitted unit consists of hazardous and mixed waste in both solid and liquid form. The permitted unit was constructed in 1993, became operational in 1998, and has been subject to waste management regulations under RCRA since its construction. In 2007, the boundaries of the permitted unit were expanded to include the current configuration. The stored wastes include corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include information about waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

To date, approximately 612,755 gallons of waste has been stored in the permitted unit. Throughout the life of this Permit it is estimated that an additional 1,870,000 gallons of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264, Subparts G and I.

Closure of the unit will be deemed complete when: 1) all structures, surfaces, and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.17-2 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will be according to requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or

dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur at the same time as notification of closure (see Permit Section 9.4.6.2).

Within 90 days after the final receipt of waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, whichever comes first, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Soil sampling and decontamination verification sampling activities will be conducted to demonstrate that soils, structures, surfaces, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Facility will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and a structural assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the asphalt pad and the loading dock for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's structures and related equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures (*see* Table G.17-3). Decontamination activities will ensure the removal of all hazardous waste residues and hazardous waste constituents from the permitted unit to meet the closure performance standards as outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All surfaces, structures, and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

At this time, there is no equipment identified for removal from the unit; however, if equipment is identified during the assessment, it will be removed and disposed of in accordance with Permit Section 9.4.3.2. The asphalt pad, the materials associated with the asphalt pad (*e.g.*, the berm around the pad), and a minimum of six inches of the base course and soil underlying the asphalt pad shall be removed after the assessment. If after the removal of the pad (and underlying soil and base course material) the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad, additional soil and materials will be remove. The Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, 2005 Compliance Order on Consent (*see* Permit Section 9.3)) beneath the permitted unit. The option of removing small areas of asphalt at sampling locations where contamination is suspected (*i.e.*, locations of spills or stains) to allow sampling without disturbing the surrounding area prior to the general removal of the pad will be assessed at the time of the assessment.

5.3.2 Decontamination of Structures and Related Equipment

All structures and related equipment that will be reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. The following structures and equipment located at the permitted unit is expected to be left in place and will therefore be decontaminated: the loading dock and the metal awning.

Water-resistant structures and equipment (*i.e.*, the loading dock, the awning) at the permitted unit and not sensitive to water intrusion will be decontaminated by steam cleaning, or pressure washing, with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water and mixed in accordance with the manufacturer's recommendation. All other equipment at the permitted unit that is sensitive to water intrusion (*e.g.*, electronic devices or tools) will be decontaminated by washing using a wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water and mixed in accordance with the manufacturer's recommendation.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the equipment after being wetted in the wash solution or after spraying solution onto the equipment. Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.17-3 and in accordance with Facility waste management procedures, depending on the regulated constituents present.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Wipe Sampling Activities

Soil sampling and decontamination verification wipe sampling activities will be conducted at the permitted unit in order to verify that the soils beneath the permitted unit as well as the unit's surfaces and related equipment meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment related to the permitted unit (*e.g.*, the awning). In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of wipe samples from the floor and walls of the loading dock for a total of four verification samples.

In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of soil samples from the permitted unit at the following locations:

a. one sample from a known past loading zone area ('sample location 1') identified in the permitted unit's records (*see* Permit Section 9.4.7.1.ii(1));

b. one sample every 900 square feet of the permitted unit for a total of 46 samples (*see* Permit Section 9.4.7.1.ii(2));

c. two samples from the swale in the eastern portion of the permitted unit (*see* Permit Section 9.4.7.1.ii(3)); and

d. one sample every 30 feet along the drain line on the northern boundary of the permitted unit for a total of four samples (*see* Permit Section 9.4.7.1.ii(8)).

Figure G.17-1 illustrates the sampling locations discussed in this section.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporate guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual to determine if residual hazardous constituents remain on the surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Soil Sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in soils at the permitted unit. Soil samples will be collected using a spade, scoop, auger, trowel, or other equipment as specified in approved methods for the type of analytes (*i.e.*, EPA 1996 or 2002) and from the appropriate depths as directed in Permit Section 9.4.7.1.ii. Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.10-5.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.17-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been managed at the permitted unit over its operational history (*see* Table G.17-1). Table G.17-1 will be modified, as necessary, to incorporate changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.17-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.17-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.17-4 is based on the following considerations:

e. constituents of concern;

f. the physical form of the waste;

g. constituents of concern;

h. required detection limits (*e.g.*, regulatory thresholds); and

i. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling and analysis process, and are described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.17-6 presents a summary of QC sample types, applicable analyses, frequency,

and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units; transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance Permit Section 9.4.5, Permit Attachment C (*Waste Analysis* Plan), and Facility waste management procedures. Closure activities may generate different types of waste materials: these wastes are listed with potential disposal options in Table G.17-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and small reusable equipment that cannot be decontaminated, as summarized in Table G.17-3, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.17-1

Hazardous Waste Constituents of Concern at the Technical Area 54, Area G, West Outdoor Container Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D003, D004, D005, D006, D007, D008, D009, D010. D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Organic Compounds	D018, D019, D021, D022, D026, D027, D028, D029, D030, D035, D036, D037, D038, D039, D040, D043	Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, Cresol, 1,4-Dichlorobenzene, 1,2-Dichloroethylene, 2,4-Dinitrotoluene, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Tetrachloroethylene, Trichloroethylene, Vinyl Chloride
	F001, F002, F003, F004, F005	Acetone, Methyl ethyl ketone, , Methylene Chloride, Toluene, MIBK, DBCP, Tetrachlrorethylene, 1,1,1-trichloroethane, Chlorinated Fluorocarbons, 1,1,2- trichloro-1,1,2-trifluoroethane, ortho-dichlorobenzene, Trichlorofluoromethane, 1,1,2-trichloroethane, Xylene, Ethyl acetate, Ethyl benzene, Ethyl ether, n-butyl alcohol, Cyclohexanone, Methanol, Cresols, Cresylic acid, Nitroobenzene, Carbon disulfide, Isobutanol, Pyridine, 2-ethoxyethanol, 2-nitropropane

[a] Based on the unit Operating Record

Table G.17-2

Closure Schedule for Technical Area 54, Area G, West Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close and conduct structural assessment.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.17-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid	Either an authorized on-site radioactive waste

Potential Waste Materials	Waste Types	Disposal Options
	waste	disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.17-4

Summary of Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	Determine the metals concentration in the samples.
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

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

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.17-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Barium, Cadmium, Chromium, Lead	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

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

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

°C = degrees Celsius
HNO_3 = nitric acid
HCl = hydrochloric acid
mL = milliter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.17-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC, metals	One sample daily	Not Applicable

[a] For VOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

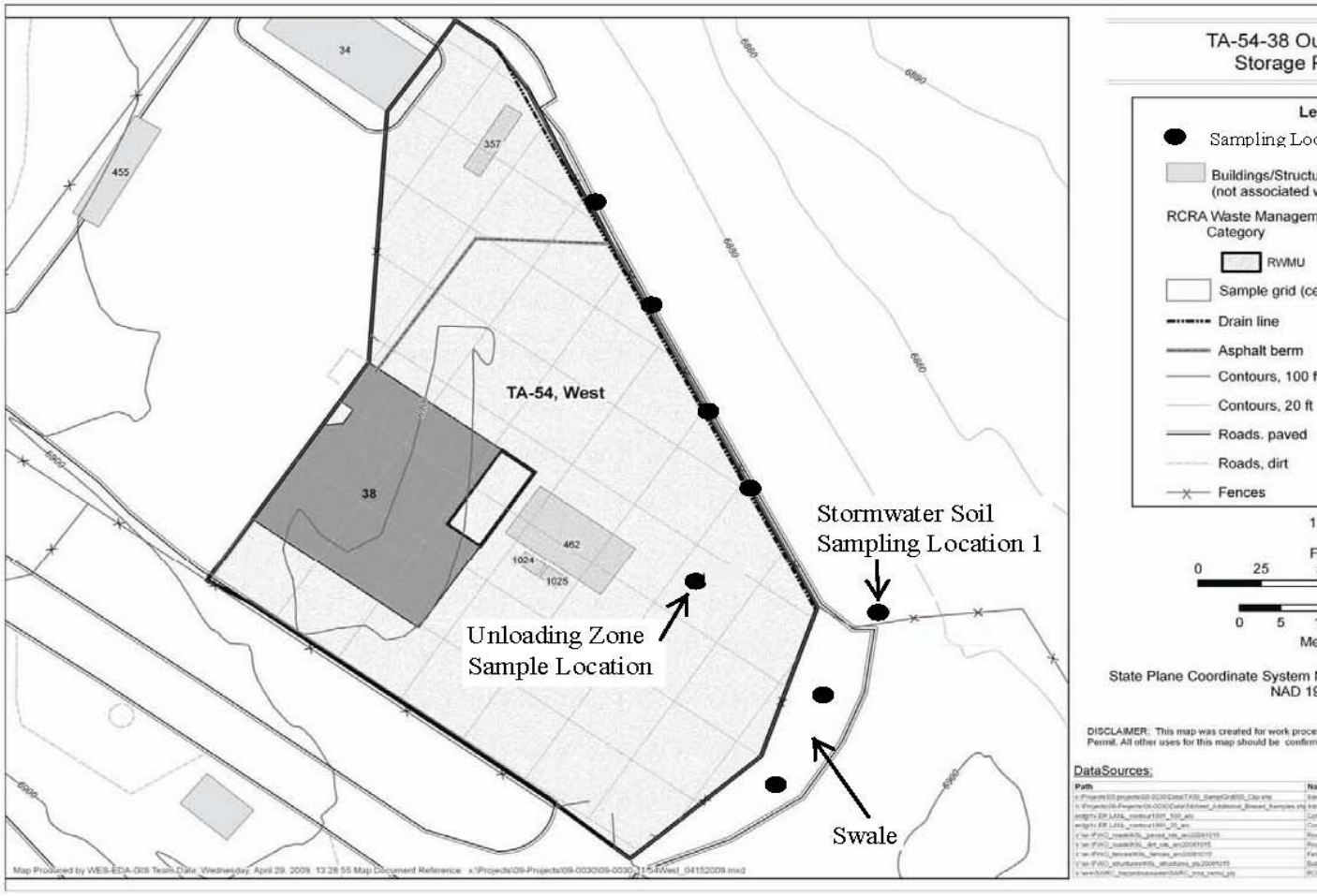

Figure G.17-1: Technical Area 54 West Outdoor Container Storage Unit Grid Sampling and Additional Sampling Locations

ATTACHMENT G.18
TECHNICAL AREA 55, BUILDING 4 ROOM B40
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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G.18-1	Technical Area 55, Building 4, Room B40, Indoor Container Storage Unit

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit which is located in Room B40 in the basement of Technical Area 55, Building 4 (TA-55-4) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The entire floor of the permitted unit has been used for storage of hazardous waste. The permitted unit is L-shaped and has long (outside) dimensions of 61 feet (ft), 5 inches (in.) and 54 ft., 10 in., and short (inside) dimensions of 40 ft, 9 in. and 30 ft, 2 in. The unit is 24 ft 8 in. wide on one end and 20 ft, 8 in. wide on the other. The floor space also includes a vestibule, which has four pillars, that is completely enclosed except for two access doorways.

The waste stored at the permitted unit consists of hazardous and mixed waste in both solid and liquid form. The permitted unit was constructed in 1979 and has been subject to hazardous waste management regulations under RCRA since July 25, 1990. Due to the scope of process operations at the permitted unit, the wastes stored include sludge, debris, oils, and chemical wastes with metals and volatile and semi-volatile organic constituents. Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 649 cubic meters of waste have been stored in the permitted unit. Throughout the life of this Permit, it is estimated that an additional 360 cubic meters of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.18-2 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR §264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be submitted to the Department within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated surfaces and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed in accordance with Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor and walls of the permitted unit for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's surfaces and related equipment will be decontaminated, or removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All surfaces and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. The four metal cabinets will be removed after the structural assessment.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces, structures, and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. Decontamination of the permitted unit's surfaces will include all features located within the unit (*e.g.*, pillars). There is currently no equipment located at the permitted unit that is expected to be left in place; however, if equipment identified during the assessment is expected to be left in place, it will be decontaminated in accordance with this section.

Decontamination of the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

Wipe-down washing will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary. Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations within the basement. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposure to personnel due to potential release of radiological materials and organic compounds and concentration within the enclosure. Enclosure of the

area increases the risk of personnel exhaustion, because of the additional PPE, and the potential for workers to reach radiological work exposure limits. . Therefore, wipe-down washing, rather than steam cleaning or pressure washing, will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary.

The entirety of the unit's floors will be decontaminated. Hazardous waste containers at the permitted unit are stacked. Including the height of any pallets that may have been used, two stacked 55-gallon drums and two stacked standard waste boxes measure just over eight feet high. Therefore, to ensure that decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of 11 feet.

Ceilings of the permitted unit, walls above 11 feet, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above the height of 11 feet.

Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination. To minimize the amount of liquid waste generated as a result of decontamination activities, the wash solution will be dispersed from buckets, spray bottles, or other types of small containers.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.18-3 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the floor and from each wall (up to 11 feet) of the permitted unit. Verification wipe samples will be collected from random locations within each of the sample areas indicated on Figure G.18-1 (provided under separate cover) of this closure plan. A total of 18 wipe samples will be collected: five from the floor; one from each of the four walls; one from each of the four pillars; and five from the vestibule (one from the floor and one from each of the four walls).

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.18-5.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.18-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation

organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Table G.18-1). Table G.18-1 will be modified, as necessary, to incorporate changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.18-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.18-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.18-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.18-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.18-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.18-7, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.18-1

Hazardous Waste Constituents of Concern at the Technical Area 55, Building 4, Room B40, Indoor Container Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
	F006	Wastewater treatment sludge
	P120	Vanadium pentoxide
Organic Compounds	D018, D019, D021, D022, D027, D028, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D042, D043	Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 2,4-Dinitrotoluene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Tetrachloroethylene, Trichloroethylene, 2,4,6-Trichlorophenol, Vinyl chloride
	F001, F002, F003, F004, F005	1,1,1-Trichloroethane, Carbon tetrachloride, Chlorinated fluorocarbons, Methylene chloride, Tetrachloroethylene, Trichloroethylene, Trichlorofluoroethane, 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroetha, 1,1,2-Trichloroethane, Chlorobenzene, Freon tf, Methyl chloride, Methylene chloride, Ortho-dichlorobenzene, Tetrachloroethylene, Trichloroethylene, Trichloroflouromethane, Acetone, Ethyl ether, Methanol, Methyl isobutyl ketone, n-Butyl alcohol, Xylene, Cresols, Cresylic acid, Nitrobenzene, 2-Ethoxyethanol, 2-Nitropropane, Benzene, Carbon disulfide, Isobutanol, Methyl ethyl ketone, Pyridine, Toluene
	U002, U003, U019, U044, U080, U103, U108, U196, U213, U220	Acetone, Acetonitrile, Benzene, Chloroform, Methylene chloride, Dimethyl sulfate, 1, 4 - Dioxane, Pyridine, Tetrahydrofuran, Toluene
Cyanides	F007, F009	Cyanide plating bath solutions, Cyanide stripping cleaning solutions
	P030, P098, P099, P106	Cyanides (Soluble salts and complexes), Potassium cyanide, Potassium silver cyanide, Sodium cyanide

[a] Based on the permitted unit's Operating Record

Table G.18-2

Closure Schedule for the Technical Area 55, Building 4, Room B40, Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.18-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste

Table G.18-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.18-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.18-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D [c]	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.

CVAA = Cold-vapor atomic absorption spectroscopy; GFAA= Graphite furnace atomic absorption spectroscopy; FLAA = Flame atomic absorption spectroscopy; mg/L = milligrams per liter; GC/MS = Gas chromatography/mass spectrometry; ug/L = micrograms per liter.

Table G.18-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.18-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Figure G.18-1 has been provided under separate cover

ATTACHMENT G.19
TECHNICAL AREA 55, BUILDING 4 ROOM K13
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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FIGURE NO.	TITLE
G.19-1	Technical Area 55, Building 4, Room K13 Indoor Container Storage Unit

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit which is located in Room K13 in the basement of Technical Area 55, Building 4 (TA-55-4) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit is rectangular shaped, is open on three sides, and measures 16 feet (ft) long by 13 ft wide. There is a pillar on one of the open sides. Equipment within the permitted unit used for hazardous waste management is identified on Figure G.19-1 (provided under separate cover). The waste stored at the permitted unit consists of hazardous and mixed waste in both solid and liquid form.

The permitted unit was constructed in 1979 and has been subject to waste management regulations under RCRA since July 25, 1990. Due to the scope of process operations at TA-55-4, the wastes stored include corrosive, reactive, and ignitable liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately five cubic meters of waste have been stored in the permitted unit. Throughout the life of this Permit it is estimated that an additional ten cubic meters of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.19-2 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification if necessary. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and soils, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor and walls of the permitted unit for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the

applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste and hazardous waste residues will be removed from the permitted unit. The permitted unit's structures and equipment will be decontaminated, or removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous waste constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. The unit's three metal cabinets will be removed after the structural assessment.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces, structures, and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. Decontamination of the permitted unit's surfaces will include all features located within the unit (*e.g.*, pillar). There is no equipment located at the permitted unit that is expected to be left in place; however, if there is equipment identified during the assessment that is expected to be left in place, it will be decontaminated in accordance with this section.

Decontamination of the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

Wipe-down washing will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary. Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations within the basement. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposure to personnel due to potential release of radiological materials and organic compounds and concentration within the enclosure. Enclosure of the area increases the risk of personnel exhaustion, because of the additional PPE, and the potential for workers to reach radiological work exposure limits. Therefore, wipe-down washing, rather than steam cleaning or pressure washing, will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary.

The entirety of the unit's floors will be decontaminated. Hazardous waste containers at the permitted unit are stacked. Including the height of any pallets that may have been used, two stacked 55-gallon drums and two stacked standard waste boxes measure just over eight feet high. Therefore, to ensure that

decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of 11 feet.

Ceilings of the permitted unit, walls above 11 feet, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the unit that could have affected the ceiling or the walls above 11 feet.

Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination. To minimize the amount of liquid waste generated as a result of decontamination activities, the wash solution will be dispersed from buckets, spray bottles, or other types of small containers.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.19-3 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the floor and from the walls (up to 11 feet) of the permitted unit. Verification wipe samples will be collected from random locations within each of the sample areas indicated on Figure G.19-1 (provided under separate cover) of this closure plan. A total of five wipe samples will be collected: two from the floor; two from the wall; and one from the pillar.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this sampling and analysis plan which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.19-5.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, sample handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.19-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Table G.19-1). Table G.19-1 will be modified, as necessary, to incorporate changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.19-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.19-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.19-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.19-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound and statistically valid and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.19-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.19-1

Hazardous Waste Constituents of Concern at the Technical Area 55, Building 4, Room K13, Indoor Container Storage Unit

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Inorganics	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
	F006	Wastewater treatment sludge
	P015, P056, P073 P113, P120	Beryllium powder, Fluorine , Nickel carbonyl, Thallic oxide, Vanadium oxide
	U151	Mercury
Organic Compounds	D018, D019, D021, D022, D027, D028, D029, D030, D032, D033, D034, D035, D036, , D037, D038, D039, D040, D041, D042, D043	Benzene; Carbon tetrachloride; Chlorobenzene; Chloroform; 1,4-Dichlorobenzene; 1,2-Dichloroethane; 1,1-Dichloroethylene; 2,4-Dinitrotoluene; Hexachlorobenzene; Hexachlorobutadiene; Hexachloroethane; Methyl ethyl ketone; Nitrobenzene; Pentachlorophenol; Pyridine; Tetrachloroethylene; Trichloroethylene; 2,4,5-Trichlorophenol; 2,4,6-Trichlorophenol; Vinyl chloride
	F001, F002, F003, F005	1,1,1-Trichloroethane; Carbon tetrachloride; Chlorinated fluorocarbons; Methylene Chloride; Tetrachloroethylene; Trichloroethylene; Trichlorofluoroethane; 1,1,1-Trichloroethane; 1,1,2-Trichloro-1,2,2-trifluoroethane; 1,1,2-Trichloroethane; Chlorobenzene; Freon tf; Methyl chloride; Methylene chloride; Ortho-dichlorobenzene; Tetrachloroethylene; Trichloroethylene; Trichloroflouromethane; Acetone; Ethyl ether; Methanol; Methyl isobutyl ketone; n-Butyl alcohol; Xylene; 2-Ethoxyethanol; 2-Nitropropane; Benzene; Carbon disulfide; Isobutanol; Methyl ethyl ketone; Pyridine; Toluene
	U002, U003, U019, U044, U056, U075, U080, U108, U117, U121, U123, U134, U154, U159, U165, U196, U210, U211, U213, U216, U220, U225, U226, U227, U228, U239	Acetone; Acetonitrile; Benzene; Chloroform; Cyclohexane; Dichlorodifluoromethane; Methane,dichloro-; 1,4-Dioxane; Ethane, 1,1'-oxybis-; Methane, trichlorofluoro-; Formic acid; Hydrofluoric acid; Methhanol; Methyl ethyl ketone; Naphthalene; Pyridine; Tetrachloroethylene; Methane, tetrachloro-; Furan, tetrahydro-; Thallium chloride; Toluene; Bromoform; Ethane, 1,1,1-trichloro-; 1,1,2-Trichloroethane; Trichloroethylene; Xylene
Cyanides	F007, F009	Cyanide plating bath solutions, Cyanide stripping cleaning solutions
	P030	Soluble cyanide salts, unspecified

[a] Based on the unit Operating Record

Table G.19-2

Closure Schedule for the Technical Area 55, Building 4, Room K13, Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.19-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards,

Potential Waste Materials	Waste Types	Disposal Options
		if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.19-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D [c]	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.
CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.19-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3=nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.19-6
Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Figure G.19-1 has been provided under separate cover

ATTACHMENT G.20
TECHNICAL AREA 55, BUILDING 4, ROOM B05
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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FIGURE NO.	TITLE
G.20-1	Technical Area 55, Building 4, Room B05 Indoor Container Storage Unit

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit which is located in Room B05 in the basement of Technical Area 55, Building 4 (TA-55-4) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The entire floor of the permitted unit has been used for storage of hazardous waste. The permitted unit is rectangular shaped, measures 26 feet (ft) long by 10 ft wide, and is open on three sides as well as a portion of the fourth side. The room also contains two pillars and a chain link fence along the open sides.

The waste stored at the permitted unit consists of hazardous and mixed waste in solid form. The permitted unit was constructed in 1979 and has been subject to hazardous waste management regulations under RCRA since July 25, 1990. Due to the scope of process operations at the permitted unit, the wastes stored include sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 980 cubic meters of waste has been stored in the permitted unit. Throughout the life of this Permit it is estimated that an additional 544 cubic meters of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to and approved by the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.20-2 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR §264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor and walls of the permitted unit for any existing cracks or conditions that indicate a potential for release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable

sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's surfaces and related equipment will be decontaminated, or removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All related equipment removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. The chain-linked fence will be removed before the structural assessment.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. Decontamination of the permitted unit's surfaces will include all features located within the unit (*e.g.*, pillars). There is no equipment located at the permitted unit that is expected to be left in place; however, if there is equipment identified during the assessment that is expected to be left in place, it will be decontaminated in accordance with this section.

Decontamination of the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with manufacturer recommendations.

Wipe-down washing will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary. Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations within the basement. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposure to personnel due to potential releases of radiological materials and organic compounds within the enclosure. Enclosure of the area increases the risk of personnel exhaustion, because of the additional PPE, and the potential for workers to reach radiological work exposure limits. Therefore, wipe-down washing, rather than steam cleaning or pressure washing, will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary.

The entirety of the unit's floors will be decontaminated. Hazardous waste containers at the permitted unit are stacked. Including the height of pallets that may have been used, two stacked 55-gallon drums and

two stacked standard waste boxes measure just over eight feet high. Therefore, to ensure that decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of 11 feet.

Ceilings of the permitted unit, walls above 11 feet, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above the height of 11 feet.

Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination. The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of small containers.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.20-3 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the floor and from the wall (up to 11 ft) of the permitted unit. These verification wipe samples will be collected from random locations within each of the sample areas indicated on Figure G.20-1 (provided under separate cover) of this closure plan and analyzed for the hazardous waste constituents listed in Table G.20-1. A total of four wipe samples will be collected: one from the floor; one from each of the pillars; and one from the wall.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be used to determine if residual hazardous constituents remain on the surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.20-5.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.20-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Table G.20-1). Table G.20-1 will be modified, as necessary, to incorporate changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.20-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.20-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.20-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.20-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted

to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.20-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.4-3, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.20-1

Hazardous Waste Constituents of Concern at the Technical Area 55, Building 4, Room B05, Indoor Container Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
	F006	Wastewater treatment sludge
	P120	Vanadium pentoxide
Organic Compounds	D018, D019, D021, D022, D027, D028, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D042, D043	Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 2,4-Dinitrotoluene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Tetrachloroethylene, Trichloroethylene, 2,4,6-Trichlorophenol, Vinyl chloride
	F001, F002, F003, F004, F005	1,1,1-Trichloroethane, Carbon tetrachloride, Chlorinated fluorocarbons, Methylene chloride, Tetrachloroethylene, Trichloroethylene, Trichlorofluoroethane, 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroetha, 1,1,2-Trichloroethane, Chlorobenzene, Freon tf, Methyl chloride, Methylene chloride, Ortho-dichlorobenzene, Tetrachloroethylene, Trichloroethylene, Trichloroflouromethane, Acetone, Ethyl ether, Methanol, Methyl isobutyl ketone, n-Butyl alcohol, Xylene, Cresols, Cresylic acid, Nitrobenzene, 2-Ethoxyethanol, 2-Nitropropane, Benzene, Carbon disulfide, Isobutanol, Methyl ethyl ketone, Pyridine, Toluene
		Acetone, Acetonitrile, Benzene, Chloroform, Methylene chloride, Dimethyl sulfate, 1, 4 - Dioxane, Pyridine, Tetrahydrofuran, Toluene

	U002, U003, U019, U044, U080, U103, U108, U196, U213, U220	
Cyanides	F007, F009 P030, P098, P099, P106	Cyanide plating bath solutions, Cyanide stripping cleaning solutions Cyanides (Soluble salts and complexes), Potassium cyanide, Potassium silver cyanide, Sodium cyanide

[a] Based on the permitted unit's Operating Record

Table G.20-2

Closure Schedule for the Technical Area 55, Building 4, Room B05, Indoor Container Storage Unit

Activity	Maximum Time Required [a]
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.20-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste

Table G.20-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.20-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.20-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D [c]	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.

CVAA = Cold-vapor atomic absorption spectroscopy; GC/MS = Gas chromatography/mass spectrometry
FLAA = Flame atomic absorption spectroscopy; GFAA = Graphite furnace atomic absorption spectroscopy
mg/L = milligrams per liter; ug/L = micrograms per liter.

Table G.20-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.20-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Figure G.20-1 has been provided under separate cover

ATTACHMENT G.21
TECHNICAL AREA 55, BUILDING 4, ROOM B45
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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G.21-1	Technical Area 55, Building 4, Room B45, Indoor Container Storage Unit Sampling Locations

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit which is located in Room B45 in the basement of Technical Area 55, Building 4 (TA-55-4) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The entire floor of the permitted unit has been used for storage of hazardous waste. The permitted unit is rectangular shaped, measures 45 feet (ft), 1 inch (in) long by 17 ft, 7 in wide, and is open on three sides. The waste stored at the permitted unit consists of hazardous waste in solid form. The permitted unit was constructed in 1979 and has been subject to hazardous waste management regulations under RCRA since July 25, 1990. Due to the scope of process operations at TA-55-4, the wastes stored include sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents. Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 331 cubic meters of waste has been stored in the permitted unit. Throughout the life of this Permit it is estimated that an additional 184 cubic meters of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table 21-2 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 § CFR 264.112(d)(1)) and closure activities will begin according to the requirements of 40 § CFR 264.112(d)(2)). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor and wall at the permitted unit for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the

applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's surfaces and related equipment will be decontaminated, or removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. At this time, there is no equipment identified for removal from the unit; however, if equipment is identified during the assessment, it will be removed and disposed of in accordance with Permit Section 9.4.3.2.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. At this time there is no equipment located at the permitted unit that is expected to be left in place; however, if there is equipment identified during the assessment, it will be decontaminated in accordance with this section.

Decontamination of the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

Wipe-down washing will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary. Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations within the basement. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposures to personnel due to potential release of radiological materials and organic compounds within the enclosure. Enclosure of the area increases the risk of personnel exhaustion, because of the additional PPE, and the potential for workers to reach radiological work exposure limits. Therefore, wipe-down washing, rather than steam cleaning or pressure washing, will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary.

The entirety of the unit's floor will be decontaminated. Hazardous waste containers at the permitted unit are stacked. Including the height of any pallets that may have been used, two stacked 55-gallon drums and two stacked standard waste boxes measure just over eight feet high, respectively. Therefore, to ensure that decontamination of the wall is conducted to a sufficient height, it will be decontaminated to a height of 11 feet.

Ceilings of the permitted unit, walls above 11 feet, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some indication of contamination, the records review reveals that large amounts of liquid volatile or semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above the height of 11 feet.

Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination. To minimize the amount of liquid waste generated as a result of decontamination activities, the wash solution will be dispersed from buckets, spray bottles, or other types of small containers.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.21-3 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the floor and from the wall of the permitted unit. The verification wipe samples will be collected from random locations within each of the sample areas indicated on Figure G.21-1 (provided under separate cover) of this closure plan A total of four wipe samples will be collected: two from the

floor; and two from the wall. The samples will be analyzed for the hazardous waste constituents listed in Table G.18-1.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces, structures, and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.21-5.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.21-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation

organization, unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all the hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Table G.21-1). Table G.21-1 will be modified, as necessary, to incorporate changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.21-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.21-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.21-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.21-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials: these wastes are listed with potential disposal options in Table G.21-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.21-3, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.21-1

Hazardous Waste Constituents of Concern at the Technical Area 55, Building 4, Room B45, Indoor Container Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011 F006 P120	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver Wastewater treatment sludge Vanadium pentoxide
Organic Compounds	D018, D019, D021, D022, D027, D028, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D042, D043 F001, F002, F003, F004, F005	Benzene, Carbon tetrachloride, Chlorobenzene, Chloroform, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 2,4-Dinitrotoluene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Methyl ethyl ketone, Nitrobenzene, Pentachlorophenol, Pyridine, Tetrachloroethylene, Trichloroethylene, 2,4,6-Trichlorophenol, Vinyl chloride 1,1,1-Trichloroethane, Carbon tetrachloride, Chlorinated fluorocarbons, Methylene chloride, Tetrachloroethylene, Trichloroethylene, Trichlorofluoroethane, 1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroetha, 1,1,2-Trichloroethane, Chlorobenzene, Freon tf, Methyl chloride, Methylene chloride, Ortho-dichlorobenzene, Tetrachloroethylene, Trichloroethylene, Trichloroflouromethane, Acetone, Ethyl ether, Methanol, Methyl isobutyl ketone, n-Butyl alcohol, Xylene, Cresols, Cresylic acid, Nitrobenzene, 2-Ethoxyethanol, 2-Nitropropane, Benzene, Carbon disulfide, Isobutanol, Methyl ethyl ketone, Pyridine, Toluene Acetone, Acetonitrile, Benzene, Chloroform, Methylene chloride, Dimethyl sulfate, 1, 4 -Dioxane, Pyridine, Tetrahydrofuran, Toluene

	U002, U003, U019, U044, U080, U103, U108, U196, U213, U220	
Cyanides	F007, F009 P030, P098, P099, P106	Cyanide plating bath solutions, Cyanide stripping cleaning solutions Cyanides (Soluble salts and complexes), Potassium cyanide, Potassium silver cyanide, Sodium cyanide

[a] Based on the permitted unit's Operating Record

Table G.21-2

Closure Schedule for the Technical Area 55, Building 4, Room B45, Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.21-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste

Potential Waste Materials	Waste Types	Disposal Options
		disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill

Potential Waste Materials	Waste Types	Disposal Options
		or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.21-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D [c]	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.
CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy; mg/L = milligrams per liter; ug/L = micrograms per liter
GC/MS = Gas chromatography/mass spectrometry; GFAA = Graphite furnace atomic absorption spectroscopy

Table G.21-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to extraction. 40 days from extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.21-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Figure G.21-1 has been provided under separate cover

ATTACHMENT G.22
TECHNICAL AREA 55, BUILDING 4, VAULT
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit which is located in the Vault in the basement of Technical Area 55, Building 4 (TA-55-4) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below. The permitted unit is irregularly shaped and has only one access door. It contains multiple rooms and each room has multiple lockers; hazardous waste has been stored only in Rooms A and H.

The waste stored at the permitted unit consists of hazardous waste in both solid and liquid form. The permitted unit was constructed in 1979 and has been subject to hazardous waste management regulations under RCRA since July 25, 1990. Due to the scope of process operations at TA-55-4, the wastes stored include corrosive liquids, debris, and chemical wastes with metals and volatile organic constituents. Specific hazardous waste constituents managed are included in Table G.22-1.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include additional information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately six gallons of waste has been stored in the permitted unit. Throughout the life of this Permit it is estimated that an additional 60 gallons of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.22-2 in this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 § CFR 264.112(d)(1)) and closure activities will begin according to the requirements of 40 § CFR 264.112(d)(2)). However, pursuant to 40 CFR §264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will conduct the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor and walls for any existing cracks or conditions that indicate a potential for release of constituents. Floors, walls, and equipment within the permitted unit will be assessed for evidence of release. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see*

Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's surfaces and related equipment will be decontaminated, or removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All surfaces and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. The metal lockers located within the permitted unit will be removed before the structural assessment.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. There is no equipment located at the permitted unit that is expected to be left in place; however, if there is equipment identified during the assessment that is expected to be left in place, it will be decontaminated in accordance with this section.

Decontamination of the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

Wipe-down washing will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary. Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations within the basement. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposure to personnel due to potential releases of radiological materials and organic compounds within the enclosure. Enclosure of the area increases the risk of personnel exhaustion, because of the additional PPE, and the potential for workers to reach radiological work exposure limits. Therefore, wipe-down washing, rather than steam cleaning or pressure washing, will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary.

The entirety of the unit's floors will be decontaminated. To ensure that decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of 11 feet. Ceilings of the permitted unit, walls above 11 feet, and the areas outside of the permitted unit will

be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile and semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above the height of 11 feet.

Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination. To minimize the amount of liquid waste generated as a result of decontamination activities, the wash solution will be dispersed from buckets, spray bottles, or other types of small containers.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.22-3 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least 18 wipe samples; eight wipe samples from the floor, one from each of the shorter walls (up to 11 feet), and four from each of the longer walls (up to 11 feet). Verification samples will be collected from random locations within each of the sample areas indicated on Figure G.22-1 (provided under separate cover).

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this sampling and analysis plan which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be used to determine if residual hazardous constituents remain on equipment and surfaces at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.25-5.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper. Residue, disposable decontamination equipment, and reusable decontamination equipment that cannot be decontaminated will be containerized and managed appropriately at an approved on-site facility.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession,

b. in view of the person in possession, or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location(s) from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line and the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location,

b. suspected composition,

c. sample identification number,

d. volume/mass of sample taken,

e. purpose of sampling,

f. description of sample point and sampling methodology,

g. date and time of collection,

h. name of the sample collector,

i. sample destination and how it will be transported,

j. observations, and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.22-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier; air carrier; or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for the appropriate hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Table G.22-1). Table G.22-1 will be modified, as necessary, at the time of closure to incorporate changes based on the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.22-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.22-4

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 7.4.2. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.22-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling/analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results. QA/QC samples will be collected in accordance with the most recent and appropriate Facility sampling plan incorporating guidance from the EPA (EPA, 2002) and DOE (DOE, 1995), or other approved procedures.

6.4.2.1 Field Quality Control

The field QC samples that may be collected include trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.22-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials, which are listed with potential disposal options in Table G.22-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and small reusable equipment that cannot be decontaminated, as summarized in Table G.22-3, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.22-1

Hazardous Waste Constituents of Concern at the Technical Area 55, Building 4, Vault Indoor Container Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Organic Compounds	D018, D019, D021, D022, D035, D038, D039, D040 F001, F002, F005, F006	Benzene, Carbon Tetrachloride, Chlorobenzene, Chloroform, Methyl ethyl ketone, Pyridine, Tetrachloroethylene Trichloroethylene Tetrachloroethylene, Trichloroethylene, Methylene chloride, 1,1,1-Trichloroethane, Carbon tetrachloride, Chlorinated fluorocarbons, Chlorobenzene, Pyridine, 1,1,2-Trichloro- 1,2,2-trifluoroethane, Ortho-dichlorobenzene, Trichlorofluoromethane, and 1,1,2-Trichloroethane, Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Benzene, 2-Ethoxyethanol, 2-Nitropropane

[a] Based on the unit Operating Record

Table G.22-2

Closure Schedule for the Technical Area 55, Building 4, Vault Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Submit final report to the Department.	Day 180

Table G.22-3

Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.22-3

Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.22-3

Waste Materials, Waste Types, and Disposal Options

Waste Materials	Waste Types	Disposal Options
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.22-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.
CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
mg/L = milligrams per liter ; ug/L = micrograms per liter.

Table G.22-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

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

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

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.22-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC, metals	One sample daily	Not Applicable

[a] For VOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Figure G.22-1 has been provided under separate cover.

ATTACHMENT G.23
TECHNICAL AREA 55, BUILDING 4, ROOM 401
INDOOR STORAGE TANK UNIT
CLOSURE PLAN

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G.23-1	Technical Area 55, Building 4, Room 401, Indoor Tank Storage Unit Sampling Locations

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste storage unit known as the 'Mixed Waste Storage Tank Unit' which is located in Room 401 of Technical Area 55, Building 4 (TA-55-4) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and J for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). The permitted unit is a storage tank system that has been used for storage of hazardous waste in liquid form. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (*i.e.*, the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system, which is discussed in Permit Attachment A (*Technical Area Unit Descriptions*), shares a common piping and pumping system. The permitted unit has been in operation since 1989 and has been subject to waste management regulations under RCRA since July 25, 1990.

The permitted unit is used to store mixed transuranic evaporator bottoms solutions generated primarily from research and development activities and processing and recovery operations at TA-55 and the Chemistry and Metallurgy Research Building at TA-3. The liquid waste consists generally of concentrated nitric acid saturated with salts and metals and is stored in permitted unit prior to stabilization in the Mixed Waste Stabilization Treatment Unit (also located in TA-55-4, Room 401). The evaporator bottoms solutions exhibit the hazardous characteristics of corrosivity and toxicity (for metals) as defined in 20.4.1 NMAC §261.22 and 261.24 [6-14-00], respectively.

Permit Part 4 (*TA-55 Storage in Tanks and Treatment by Stabilization*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include additional information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

Approximately 27,824 liters of waste have been stored in the permitted unit. Throughout the life of this Permit it is estimated that an additional 11,000 liters of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and J for tank units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.23-2 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste the Permittees will conduct the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the glovebox, the Evaporator Glovebox Tank, the five Cementation Unit Pencil Tanks, as well as the floor and walls of Room 401 for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, all remaining hazardous waste and hazardous waste residues will be removed from the permitted unit. The permitted unit's structures and equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all waste residues and hazardous constituents from the permitted unit to meet the closure performance standards outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. The storage tanks, piping and the glovebox and all materials associated with the permitted unit in Room 401 (tanks, ancillary equipment, glovebox, etc.) will be removed before the assessment.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces, structures, and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. There is no equipment located at the permitted unit that is expected to be left in place; however, if equipment is identified during the assessment that is expected to be left in place, it will be decontaminated in accordance with this section.

Decontamination of the permitted unit and equipment related to the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations.

Wipe-down washing of the equipment will be utilized because of the need to minimize potential for exposure to workers and the migration of cleaning solution to other areas outside of the permitted unit's boundary. Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations within the basement. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposure to personnel due to potential release of radiological materials and organic compounds within the enclosure. Enclosure of the area increases the risk personnel

exhaustion, because of the PPE, and the potential for workers to reach radiological work exposure limits. Therefore, wipe-down washing, rather than steam cleaning or pressure washing, will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas of the basement outside the permitted unit's boundary.

The entirety of the unit's floors will be decontaminated. To ensure that decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of 11 ft. Ceilings of the permitted unit, walls above 11 ft, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above 11 ft.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of small containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.23-3 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one verification wipe sample from the floor and from each wall of the permitted unit. Verification wipe samples will be collected from random locations within each of the sample areas indicated on Figure G.23-1 (provided under separate cover) of this closure plan. A total of five wipe samples will be collected: one from the floor and one from each wall.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this sampling and analysis plan which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.23-5.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.23-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history (*see* Table G.23-1). Table G.23-1 will be modified, as necessary, to incorporate changes as a result of the permitted unit's records review. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.23-4. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.23-4. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.23-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.23-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted

to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.23-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.4-7, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.23-1

Hazardous Waste Constituents of Concern at the Technical Area 55, Building 4, Room 401 Indoor Tank Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Metals	D006, D007, D008, D009	Cadmium, Chromium, Lead, Mercury

[a] Based on the unit Facility Operating Record

Table G.23-2

Closure Schedule for the Technical Area 55, Building 4, Room 401 Indoor Tank Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.23-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste

Table G.23-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.23-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.23-4

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.
CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GFAA = Graphite furnace atomic absorption spectroscopy
ug/L = micrograms per liter.

Table G.23-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
mL = milliter
HNO_3 = nitric acid
TCLP = Toxicity Characteristic Leaching Procedure

Table G.23-6

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis	Frequency	Acceptance Criteria
Field Blank	Metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[a]	Metals	One sample daily	Not Applicable

[a] Collected only if reusable sampling equipment used

Figure G.23-1: Technical Area 55, Building 4, Room 401, Indoor Tank Storage Unit Sampling Locations

ATTACHMENT G.24
TECHNICAL AREA 55, BUILDING 4, ROOM 401
INDOOR MIXED WASTE STABILIZATION TREATMENT UNIT
CLOSURE PLAN

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G.24-1	Technical Area 55, Building 4, Room 401, Indoor Mixed Waste Tank Treatment

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste treatment unit called the 'Mixed Waste Stabilization Unit' which is located in Room 401 at Technical Area 55, Building 4 (TA-55-4) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Section 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subpart G and X for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit (as well as its components) can be found in Permit Attachment A (*Technical Area Unit Descriptions*). The permitted unit has been used for treatment of mixed waste and is located in Room 401 at TA-55-4. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is located in glovebox GB-454 along the west wall of Room 401. It consists of a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox.

The waste typically treated at the permitted unit consists generally of mixed waste in liquid and solid form. The permitted unit has been in operation since 1987 and has been subject to waste management regulations under RCRA since July 25, 1990. The unit is used to treat liquid and solid mixed waste generated primarily from research and development activities and processing and recovery operations at TA-55 and at the Chemistry and Metallurgy Research Building at TA-3. The liquid wastes consist of evaporator bottoms solutions and laboratory solutions that exhibit the hazardous characteristics of corrosivity and toxicity (for metals) as defined in 20.4.1 NMAC §261.22 and 261.24 [6-14-00], respectively. The solid process wastes consist of process residue from the evaporator and filter cake. These waste streams exhibit the hazardous characteristics of toxicity (for metals) and corrosivity and are classified as mixed waste.

Permit Part 4 (*TA-55 Storage in Tanks and Treatment by Stabilization*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include additional information regarding waste management procedures and hazardous waste constituents treated at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE TREATED

Approximately 27,824 liters of waste have been treated in the permitted unit. Throughout the life of this Permit it is estimated that an additional 11,000 liters of waste will be treated in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and X for tank units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.24-1 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste the Permittees will conduct the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification if necessary. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit surfaces and related equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated structures and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted units will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the glovebox and the floor and walls of Room 401 for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with the procedures in Permit Section 9.4.3, all remaining hazardous waste residues and hazardous constituents will be removed from the permitted unit. The permitted unit's surfaces, structures, and equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous constituents from the permitted unit to meet the closure performance standards as outlined in Permit Section 9.2.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. The pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox and all other materials in Room 401 associated with the permitted unit will be removed before the structural assessment.

5.3.2 Decontamination of Structures and Related Equipment

All structures and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. At this time there is no equipment located at the unit that is expected to be decontaminated; however, if equipment is identified during the assessment, it will be decontaminated in accordance with this section.

Decontamination of the surfaces of the permitted unit will include all features located directly below the unit. If a hazardous waste spill or release has occurred at the permitted unit, decontamination will be expanded to include all impacted surfaces within the room. The entirety of the unit's floors will be decontaminated. Walls up to 11feet will be decontaminated; ceilings and walls above 11 feet will be presumed to be free of contamination unless there is some indication of contamination or a spill or release occurred that could have affected high on the walls or on the ceiling. Equipment and surfaces within the permitted unit will also be decontaminated.

Decontamination of the permitted unit will be conducted by first removing loose material (*e.g.*, dust, dirt) through sweeping followed by washing using a manual wipe-down method with a solution consisting of a

surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations rather than steam cleaning or pressure washing.

Migration of the wash solution (in the form of splashing, condensation, or drainage) from steam cleaning or pressure washing may potentially contaminate or otherwise negatively affect ongoing operations in areas outside of TA-55-4 Room 401. Migration can potentially be mitigated using plastic barriers taped to surfaces to enclose the area. However, areas enclosed in this manner will require workers to use additional personal protective equipment (PPE). This PPE will include fully enclosed protective wear and supplied air because of the increased risk of exposure to personnel due to potential releases of radiological materials and organic compounds within the enclosure. Enclosure of the area increases the risk of personnel exhaustion, because of the additional PPE, and the potential for workers to reach radiological work exposure limits. Therefore, wipe-down washing, rather than steam cleaning or pressure washing will be utilized because of the need to minimize the potential for exposure to workers and the migration of cleaning solution to other areas outside of the permitted unit's boundary.

The quantity of the wash solution will be minimized by dispensing from buckets, spray bottles, or other types of small containers. Cloths, or other absorbent cleaning devices, will not be reused to wipe down the surfaces after being wetted in the wash solution or after spraying solution onto the surfaces. Only one cloth or absorbent cleaning device will be used at a time in a single area to prevent cross-contamination.

Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.24-2 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least one wipe sample from the floor and from the walls (up to 11 feet) of the permitted unit. Verification wipe samples will be collected from random locations within each of the sample areas indicated on Figure G.24-1

(provided under separate cover) of this closure plan. A total of eight wipe samples will be collected; four from the walls and four from the floor.

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this sampling and analysis plan which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surface and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.24-4.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, sample handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.24-4 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been treated at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.24-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.24-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control and records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.24-3 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.24-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.24-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.1-5, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.24-1

Closure Schedule for the Technical Area 55, Building 4, Room 401 Indoor Mixed Waste Storage Treatment Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal	Day 90
Complete records review and structural assessment.	Day 100
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.24-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.

Table G.24-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill

Table G.24-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.24-3

Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 *SW-846* Draft Update IVA.
CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GFAA = Graphite furnace atomic absorption spectroscopy
ug/L = micrograms per liter.

Table G.24-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
mL = milliter
HNO_3 = nitric acid
TCLP = Toxicity Characteristic Leaching Procedure

Table G.24-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis	Frequency	Acceptance Criteria
Field Blank	Metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[a]	Metals	One sample daily	Not Applicable

[a] Collected only if reusable sampling equipment used

Figure G.24-1: Technical Area 55, Building 4, Room 401, Indoor Mixed Waste Tank Treatment Sampling Locations

ATTACHMENT G.25
TECHNICAL AREA 55, BUILDING 185
INDOOR CONTAINER STORAGE UNIT
CLOSURE PLAN

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the indoor hazardous waste container storage unit which is located in Building 185 at Technical Area 55 (TA-55-185) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9, the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste management units operated at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The rectangular-shaped permitted unit, which is located west of TA-55 Building 4, is a steel-framed building with a concrete floor that measures 60 feet (ft) by 40 ft. The permitted unit is completely enclosed except for an access doorway on one wall and a metal roll up door and access doorway on the opposite wall. The waste typically stored at the permitted unit consists generally of hazardous and mixed waste in solid form.

The permitted unit was constructed in 1991 and stores hazardous wastes that include sludge, debris, and chemical wastes with regulated metal organic constituents. Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan*) include additional information regarding waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE STORED

To date, no hazardous waste has been stored at the permitted unit. Throughout the life of this Permit it is estimated that 1,000 cubic meters of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE REQUIREMENTS

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (*Closure*) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the permitted unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.25-2 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR 264.112(d)(2). However, pursuant to 40 CFR § 264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will conduct the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit structures, surfaces, and equipment.

Decontamination verification sampling activities, and soil sampling if applicable, will be conducted to demonstrate that structures, surfaces, related equipment, and media, if applicable, at the permitted unit meet the closure performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will include: removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated surfaces, structures, and equipment associated with the permitted unit; verification that the closure performance standards in Permit Section 9.2 have been achieved; and submittal of a final closure certification report. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous wastes will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous wastes will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the floor, and walls for any existing cracks or conditions that indicate a potential for release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see*

Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures and Related Equipment

In accordance with Permit Section 9.4.3, all remaining hazardous waste and hazardous waste residues will be removed from the permitted unit. The permitted unit's surfaces, structures, and equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*), Permit Section 9.4.5, and Facility waste management procedures.

5.3.1 Removal of Structures and Related Equipment

All surfaces and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. To date, no equipment has been used at the permitted unit.

5.3.2 Decontamination of Structures and Related Equipment

All surfaces and related equipment that will be left in place or reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. At this time there is no equipment located at the unit that is expected to be decontaminated; however, if equipment is identified during the assessment it will be decontaminated in accordance with this section.

Decontamination of the surfaces of the permitted unit will include all features located within the unit (*e.g.*, walls, ceilings, railings). The entirety of the unit's floor and walls (up to 11 ft.) will be decontaminated by pressure washing or steam cleaning with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. Portable berms or other devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, or existing secondary containment) will collect excess water and provide containment during the decontamination process.

5.4 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during closure decontamination activities will be cleaned with a wash water solution. Residues, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.25-2 and in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Decontamination Verification Sampling Activities

Decontamination verification sampling activities will be conducted at the permitted unit in order to verify that surfaces and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment at the permitted unit. In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least six wipe samples from the floor, two each from the long walls (up to 11 feet), and one each from the short walls (up to 11 feet) for a total of 12 wipe samples (*see* Figure G.25-1).

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit.

6.2 Sample Collection Procedures

Samples will be collected in accordance with Permit Section 9.4.7.1 and the procedures identified in this SAP which incorporates guidance from the United States Environmental Protection Agency (USEPA) (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the surfaces and related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.2 Solid Chip Sampling

Solid chip samples may be collected and analyzed to determine if residual hazardous constituents remain in the concrete floor at the permitted unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 cm, or to an alternate depth specified in the assessment and transferred to an appropriate sampling container. The holding time and the preservation techniques to be used for each analysis will be determined from Table G.25-4.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination

equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;
b. in view of the person in possession; or
c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;
b. name of the sample collector;
c. date and time of collection;
d. type of preservatives used, if any; and
e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross-outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;
b. suspected composition;
c. sample identification number;
d. volume/mass of sample taken;
e. purpose of sampling;
f. description of sample point and sampling methodology;
g. date and time of collection;
h. name of the sample collector;
i. sample destination and how it will be transported;
j. observations; and
k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.25-4 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, wastes, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by the packaging and transportation organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational

history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.25-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.25-3. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive QA/QC program;
b. technical analytical expertise;
c. a document control and records management plan; and
d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.25-3 is based on the following considerations:

e. the physical form of the waste;
f. constituents of concern;
g. required detection limits (*e.g.*, regulatory thresholds); and
h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contamination associated with the sampling and analysis process, and is described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.25-5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;
b. results from QC samples such as blanks, spikes, and calibrations;
c. reference to standard methods or a detailed description of analytical procedures; and
d. raw data printouts for comparison with summaries.

The laboratory will describe sample preparations that occur during the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance with Permit Section 9.4.5, Permit Attachment C (*Waste Analysis Plan*), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.25-2 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.25-2, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with permit Part 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table G.25-1

Closure Schedule for the Technical Area 55, Building 185 Indoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete a records review and structural assessment.	Day 100
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.25-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded concrete	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill

Table G.25-2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill, recycled, or reused
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Sampling equipment	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table G.25-3

Summary of Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	7060A [c], 7061A	FLAA, GFAA	10 ug/L	Determine the metal concentration in the samples.
Barium	7080A [d], 7081 [c]	FLAA,GFAA	200 ug/L	
Cadmium	7130 [d], 7131A [c]	FLAA, GFAA	2 ug/L	
Chromium	7190 [d], 7191 [c]	FLAA, GFAA	10 ug/L	
Lead	7420 [d], 7421 [c]	FLAA, GFAA	5 ug/L	
Mercury	7470A, 7471A [e]	CVAA	0.2 ug/L	
Selenium	7740[c], 7741A	FLAA, GFAA	5 ug/L	
Silver	7760A[d], 7761 [c]	FLAA, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D c	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[b] Detection limits listed for metals are for clean water. Actual detection limits may be higher depending on sample composition and matrix type.
[c] Method being integrated into Method 7010, per the May 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7000B, per the May 1998 *SW-846* Draft Update IVA.
[e] Method being revised to 7471B per the May 1998 SW-846 Draft Update IVA.
CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GFAA = Graphite furnace atomic absorption spectroscopy
ug/L = micrograms per liter.

Table G.25-4

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	
Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
mL = milliter
HNO_3 = nitric acid
TCLP = Toxicity Characteristic Leaching Procedure

Table G.25-5

Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis	Frequency	Acceptance Criteria
Field Blank	Metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[a]	Metals	One sample daily	Not Applicable

[a] Collected only if reusable sampling equipment used.

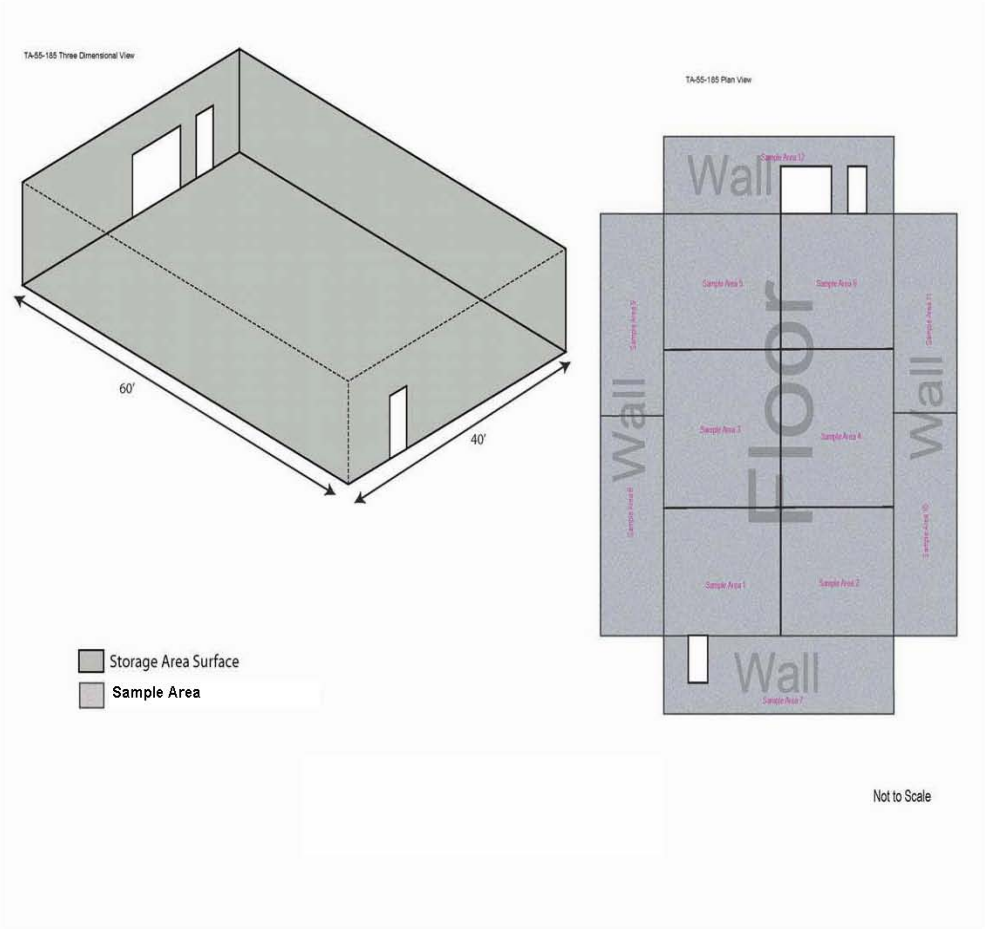

Figure G.25-1: Technical Area 55, Building 185, Indoor Container Storage Unit Grid Sampling Locations

ATTACHMENT G.26
TECHNICAL AREA 55
OUTDOOR STORAGE PAD
CLOSURE PLAN

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G.26-1	Technical Area 55 Outdoor Container Storage Unit Grid Sampling and Additional Sampling Locations

1.0 INTRODUCTION

This closure plan describes the activities necessary to close the outdoor hazardous waste container storage unit at the Technical Area 55 Outdoor Storage Pad at the Los Alamos National Laboratory (Facility), hereinafter referred to as the permitted unit. The information provided in this closure plan addresses the closure requirements specified in Permit Part 9 and the Code of Federal Regulations (CFR), Title 40, Part 264, Subparts G and I for hazardous waste container storage at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Permit Section 9.5, a copy of the approved closure plan or the hazardous waste facility permit containing the plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the permitted unit, this closure plan may be amended in accordance with Permit Section 9.4.8, as necessary and appropriate, to provide updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

A specific description of the permitted unit can be found in Permit Attachment A (*Technical Area Unit Descriptions*). Additional features and equipment located at the permitted unit and not discussed elsewhere within the Permit are described below.

The permitted unit is located northwest of TA-55-4 and is constructed of asphalt with a variable thickness of four to six inches (in.). The permitted unit is trapezoid-shaped pad with dimensions of 102 feet (ft.), 86 ft., 156 ft., and 105 ft., respectively, on its four sides. The permitted unit is sloped, elevated approximately two to four in. above ground level, and has a culvert beneath the pad running from the northwest side to the southeast side to minimize run-on of precipitation.

The waste typically stored at the permitted unit consists generally of hazardous and mixed waste in both solid and liquid form. The unit was constructed and placed into use in 1979 and has been subject to waste management regulations under RCRA since July 25, 1990. Due to the scope of process operations at TA-55-4, the stored wastes include characteristic and listed waste, corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents. Specific Environmental Protection Agency (EPA) Hazardous Waste Numbers managed at the unit are included in Table G.26-1.

Permit Part 3 (*Storage in Containers*), Permit Attachment A (*Technical Area Unit Descriptions*), Permit Attachment B (*Part A Application*), and Permit Attachment C (*Waste Analysis Plan)* include further information about waste management procedures and hazardous waste constituents stored at the permitted unit.

3.0 ESTIMATE OF MAXIMUM WASTE TREATED

Approximately 930 cubic meters of waste has been stored in the permitted unit. Throughout the life of this Permit it is estimated that an additional 700 cubic meters of waste will be stored in the permitted unit.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standard

As required by Permit Section 9.2, the permitted unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents; and

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater.

If the Permittees are unable to achieve either of the clean closure standards above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established under Permit Section 11.5;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of Permit Part 9 (Closure) and 40 CFR Part 264 Subparts G and I for container storage units.

Closure of the unit will be deemed complete when: 1) all structures and related equipment have been decontaminated or otherwise properly disposed of; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

This closure plan schedule is intended to address the closure requirements for the permitted unit within the authorized timeframe of the current Hazardous Waste Facility Permit (*see* Permit Section 9.4). The following section provides the schedule of closure activities (*see also* Table G.26-1 of this closure plan).

Notification of closure will occur at least 45 days before the Permittees expect to begin closure (*see* 40 CFR § 264.112(d)(1)) and closure activities will begin according to the requirements of 40 CFR § 264.112(d)(2). However, pursuant to 40 CFR §264.112(e), removing hazardous wastes and decontaminating or dismantling equipment in accordance with an approved closure plan may be conducted at any time before or after notification of closure. Notification of the structural assessment (assessment), as described in Section 5.2 of this closure plan, shall occur in accordance with Permit Section 9.4.6.2.

Within 90 days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste. Within ten days of completing hazardous waste removal or within 100 days of the final receipt of hazardous waste, the Permittees will complete the records review (review) and assessment and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8. Upon approval of the modified closure plan, if applicable, the Permittees will decontaminate unit structures and related equipment.

After decontamination, soil sampling and decontamination verification sampling will be conducted to demonstrate that media and related equipment at the permitted unit meet the performance standards in Permit Section 9.2.

All closure activities, including submittal of a final closure certification report to the Department for review and approval, will be completed within 180 days after the final receipt of waste. In the event that closure of the permitted unit cannot proceed according to schedule, the Permittees will notify the Department in accordance with the extension request requirements in Permit Section 9.4.1.1.

5.0 CLOSURE PROCEDURES

Closure activities at the permitted unit will involve removal of hazardous wastes; proper management and disposal of hazardous waste residues and contaminated equipment associated with the permitted unit; and verification that the closure performance standards have been achieved. The following sections describe closure activities applicable to the permitted unit.

5.1 Removal of Waste

In accordance with Permit Section 9.4.2, all stored hazardous waste will be removed from the permitted unit scheduled for closure. Depending upon their size, containers will be removed with forklifts, container dollies, air pallets, or manually. Containers will be placed on flat bed trucks, trailers, or other appropriate vehicles for transport. Appropriate shipping documentation will accompany the wastes during transport. Containers holding hazardous waste will be moved to a permitted on-site storage unit or a permitted off-site treatment, storage, or disposal facility.

5.2 Records Review and Structural Assessment

After waste removal and before starting closure decontamination and sampling activities, the Facility Operating and Inspection Records for the permitted unit will be reviewed and an assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.2.1 Records Review

The Facility Operating and Inspection Records shall be reviewed as outlined in Permit Section 9.4.6.1. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern; and

b. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Operating and Inspection Records).

5.2.2 Structural Assessment

An assessment of the permitted unit's physical condition will be conducted in accordance with Permit Section 9.4.6.2. The assessment will include inspecting the asphalt pad for any existing cracks or conditions that indicate a potential for, or an actual, release of constituents. If a crack, gap, or stained area is present, the Permittees will amend this closure plan in order to update the sampling and analysis plan (SAP) (*see* Section 6.0 of this closure plan) to add these sampling locations and the applicable sampling methods and procedures. This inspection will be documented with photographs and drawings, as necessary.

5.3 Decontamination and Removal of Structures Equipment

In accordance with Permit Section 9.4.3, all remaining hazardous waste and hazardous waste residues will be removed from the permitted unit. The permitted unit's structures and equipment will be decontaminated, removed, or both and managed appropriately. All waste material will be controlled, handled, characterized, and disposed of in accordance with Permit Attachment C (*Waste Analysis Plan*) and Facility waste management procedures.

5.3.1 Removal of Structures and Related Equipment

All structures and related equipment that are removed will not require decontamination, will be considered solid and potentially hazardous waste (as defined by this Permit) when removed, and will be disposed of in accordance with Permit Section 9.4.5 and Section 7.0 of this closure plan. The entire asphalt pad (including all materials associated with it such as any underlying base course or fill) will be removed after the structural assessment.

5.3.2 Decontamination of Structures and Related Equipment

All structures and equipment that will be reused by the Facility will be decontaminated in accordance with Permit Section 9.4.3.1. At this time there is no equipment that is expected to be reused; however, if equipment or structures are identified during the assessment they will be decontaminated in accordance with this section. Decontamination of structures and equipment will be steam cleaned using water or pressure washed with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water. Portable berms, other devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess water and provide containment during the decontamination process.

5.3.3 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste as summarized in Table G.26-3 and in accordance with Facility waste management procedures, depending on the regulated constituents present.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP addresses the specific closure sampling and analysis requirements in Permit Section 9.4.7 and describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the Permittees have met the closure performance standards outlined in Permit Section 9.2.

6.1 Soil Sampling and Decontamination Verification Wipe Sampling Activities

Soil sampling and decontamination verification wipe sampling activities will be conducted to verify that soils, structures, and related equipment at the permitted unit meet the closure performance standards in Permit Section 9.2. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment. In compliance with Permit Section 9.4.7.1.ii, this closure plan will ensure the collection of 17 soil samples from the following locations:

a. one sample at the known loading area (*see* Permit Section 9.4.7.1.ii(1));

b. one soil sample every 900 square feet of the permitted unit for a total of 13 samples (*see* Permit Section 9.4.7.1.ii(2)); and

c. three samples to address stormwater runoff (*see* Permit Section 9.4.7.1.ii(3)).

Figure G.26-1 illustrates these sampling locations.

At the time of sampling, the precise locations of the grid samples will be randomly selected within each 900 square foot sampling box (*see* Figure G.26-1). These locations will be determined by applying a sub-grid of potential sampling points and randomly choosing one. If the review or assessment determines the need to obtain additional samples collected within the area of the sampling box (*e.g.*, at asphalt cracks), these sample collection locations will be in addition to the grid sample locations.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the Permit Section 9.4.7.1 and the procedures identified in this incorporating guidance from the United States Environmental Protection Agency (USEPA) (EPA, 1986 and EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Soil and Sediment Sampling

Soil samples will be collected and analyzed to determine if hazardous constituents are present in the soil beneath the permitted unit. Soil samples will be collected using a spade, scoop, auger, or trowel or other equipment as specified in approved methods for the type of analytes and from appropriate depths as directed in Permit Section 9.4.7.ii (*i.e.*, EPA 1996 or 2002). Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table G.26-5.

6.2.2 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on the structures, surfaces, or related equipment at the permitted unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled for, the solution used, and the desired constituent concentration detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory must be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.3 Cleaning of Sampling Equipment

Reusable sampling equipment will be cleaned and rinsed prior to use. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used. Reusable decontamination equipment, including protective clothing and tools, used during closure activities will be scraped as necessary to remove residue and cleaned with a wash water solution. Sampling equipment will be cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. A disposable sampler is considered clean if still in a factory-sealed wrapper.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, and sample packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, chain-of-custody forms, analysis requested, sample logbooks detailing sample collection activities, and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross outs must be made with a single line with the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;

b. suspected composition;

c. sample identification number;

d. volume/mass of sample taken;

e. purpose of sampling;

f. description of sample point and sampling methodology;

g. date and time of collection;

h. name of the sample collector;

i. sample destination and how it will be transported;

j. observations; and

k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table G.26-5 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and

holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization, unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 that have been stored at the permitted unit over its operational history. Samples will be analyzed by an independent laboratory using the methods outlined in Table G.26-3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table G.26-. If any of the information from these tables has changed at the time of closure, the Permittees will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2 of this closure plan. The analytical laboratory will have:

a. a documented comprehensive QA/QC program;

b. technical analytical expertise;

c. a document control/records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table G.26-4 is based on the following considerations:

e. the physical form of the waste;

f. constituents of concern;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and potential sample contaminations associated with the sampling and analysis process and are described in the following sections, along with information on calculations necessary to evaluate the QC results.

6.4.2.1 Field Quality Control

The field QC samples that will be collected are trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table G.26-6 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory QC Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

All waste generated during closure will be controlled, handled, characterized, and disposed of in accordance Permit Section 9.4.5, Permit Attachment C (*Waste Analysis* Plan), and Facility waste management procedures. Closure activities may generate different types of waste materials; these wastes are listed with potential disposal options in Table G.26-3 of this closure plan. Subsequent disposition options for the decontaminated structures and equipment include reuse, recycling, or disposal. Reusable protective clothing, tools, and equipment used during decontamination will be cleaned with a wash water solution. Disposable equipment and other small equipment that cannot be decontaminated, as summarized in Table G.10-6, will be containerized and managed as waste.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the permitted unit, a closure certification report will be prepared and submitted to the Department for review and approval in accordance with Permit Section 9.5.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

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NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

NMED, 2006. “Technical Background Document for Development of Soil Screening Levels,” Rev. 4.0, June 2006, New Mexico Environment Department, Santa Fe, New Mexico.

Table G.26-1

Hazardous Waste Constituents of Concern at the Technical Area 55 Outdoor Container Storage Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
Toxic Inorganics	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
	F006	Wastewater treatment sludge
	P015, P056, P073 P113, P120	Beryllium powder, Fluorine , Nickel carbonyl, Thallic oxide, Vanadium oxide
	U151	Mercury
Organic Compounds	D018, D019, D021, D022, D027, D028, D029, D030, D032, D033, D034, D035, D036, , D037, D038, D039, D040, D041, D042, D043	Benzene; Carbon tetrachloride; Chlorobenzene; Chloroform; 1,4-Dichlorobenzene; 1,2-Dichloroethane; 1,1-Dichloroethylene; 2,4-Dinitrotoluene; Hexachlorobenzene; Hexachlorobutadiene; Hexachloroethane; Methyl ethyl ketone; Nitrobenzene; Pentachlorophenol; Pyridine; Tetrachloroethylene; Trichloroethylene; 2,4,5-Trichlorophenol; 2,4,6-Trichlorophenol; Vinyl chloride
	F001, F002, F003, F004, F005	1,1,1-Trichloroethane; Carbon tetrachloride; Chlorinated fluorocarbons; Methylene Chloride; Tetrachloroethylene; Trichloroethylene; Trichlorofluoroethane; 1,1,1-Trichloroethane; 1,1,2-Trichloro-1,2,2-trifluoroethane; 1,1,2-Trichloroethane; Chlorobenzene; Freon tf; Methyl chloride; Methylene chloride; Ortho-dichlorobenzene; Tetrachloroethylene; Trichloroethylene; Trichloroflouromethane; Acetone; Ethyl ether; Methanol; Methyl isobutyl ketone; n-Butyl alcohol; Xylene; Cresols; Cresylic acid; Nitrobenzene; 2-Ethoxyethanol; 2-Nitropropane; Benzene; Carbon disulfide; Isobutanol; Methyl ethyl ketone; Pyridine; Toluene
	U002, U003, U019, U044, U056, U075,	Acetone; Acetonitrile; Benzene; Chloroform; Cyclohexane; Dichlorodifluoromethane; Methane,dichloro-; Dimethyl sulfate; 1,4-Dioxane; Ethane, 1,1'-oxybis-; Methane, trichlorofluoro-; Formic acid; Hydrofluoric acid; Methhanol; Methyl ethyl ketone; Naphthalene; Pyridine; Tetrachloroethylene; Methane, tetrachloro-; Furan, tetrahydro-; Thallium chloride; Toluene; Bromoform; Ethane, 1,1,1-trichloro-; 1,1,2-Trichloroethane;

	U080, U103, U108, U117, U121, U123, U134, U154, U159, U165, U196, U210, U211, U213, U216, U220, U225, U226, U227, U228, U239	Trichloroethylene; Xylene
Cyanides	F007, F009 P030, P098, P099, P106	Cyanide plating bath solutions, Cyanide stripping cleaning solutions Soluble cyanide salts (unspecified), Potassium cyanide, Potassium silver cyanide, Sodium cyanide

[a] Based on the permitted unit Operating Record

Table G.26-2

Closure Schedule for the Technical Area 55, Outdoor Container Storage Unit

Activity	Maximum Time Required
Notify the Department of intent to close.	-45 Days
Final receipt of waste.	Day 0
Complete waste removal.	Day 90
Complete records review and structural assessment.	10 days after completed waste removal or 100 days after final receipt of waste
Complete all closure activities and submit final closure certification report to the Department.	Day 180

Table G.26-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or the Waste Isolation Pilot Plant (WIPP), as appropriate.
Decontamination wash water	Non-regulated liquid waste	Sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Radioactive liquid waste	Radioactive Liquid Waste Treatment Facility (RLWTF)
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Metal	Non-regulated solid waste	Subtitle D landfill or recycled
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal

Table G.26-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
		facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, or WIPP, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Sampling equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.
Asphalt	Non-regulated solid waste	Subtitle D landfill or potentially, as included in corrective action activities at Area G.

Table G.26-3

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
	Low-level radioactive solid waste	Either an authorized on-site radioactive waste disposal area that is not undergoing closure under RCRA or its state analog, or an authorized off-site radioactive waste disposal facility.
	Mixed waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill or WIPP, as appropriate.

Table G.26-4
Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	Determine the metals concentration in the samples.
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified compounds (TIC)	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.

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

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter
ug/L = micrograms per liter.

Table G.26-5

Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

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

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

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table G.26-6

Recommended Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

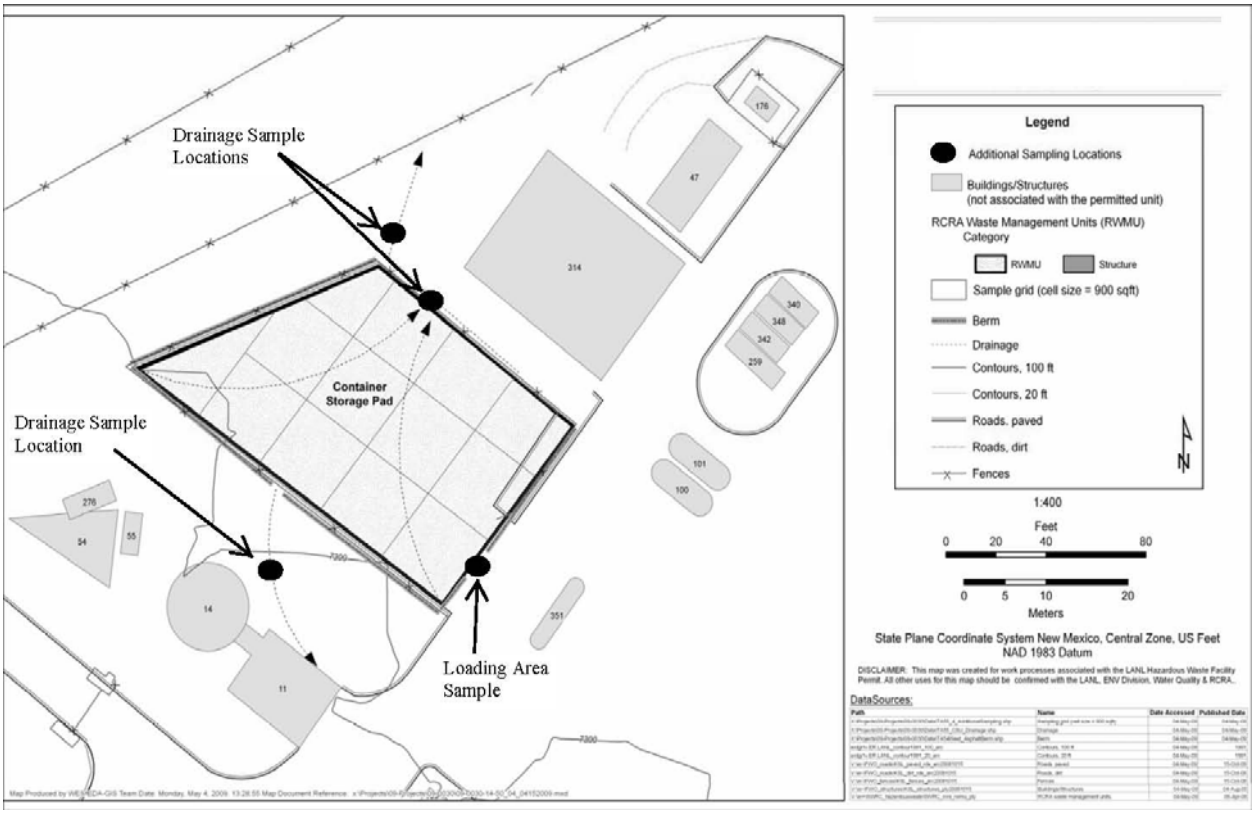

Figure G.26-1: Technical Area 55 Outdoor Container Storage Unit Grid Sampling and Additional Sampling Locations

ATTACHMENT H

POST-CLOSURE CARE PLANS

(Reserved)

ATTACHMENT I

COMPLIANCE SCHEDULE

Compliance Schedule

This Compliance Schedule briefly lists particular requirements, in chronological order of submittal, specified in the Permit and their associated due dates. The complete requirements are found in the referenced Permit Sections.

Permit Section	Requirement	Due date
Submittals Due After Permit Issuance		
2.11.3	Contingency Plan distribution	Within 5 days of the effective date of this Permit
1.4.1	Documentation to either close or permit the interim status units.	Within 180 days of the effective date of this Permit
1.10	Establish the Information Repository	Within 180 days of the effective date of this Permit
1.12	Post the Community Relations Plan on the Permittees' web site and implement that Plan	Within 180 days of the effective date of this Permit
1.12	Community Relations Plan	Post on LANL's web site within 180 days of the effective date of this Permit
Annual Submittals		
2.9	Annual report regarding the waste minimization program	Every December 1st
1.12	Interested parties quire and compilation of comments and responses	Post on LANL's web site every September 1st
1.17	Notice of demolition activities	On or before September 30 of each year
Other Submittals		
2.12.5	Biennial Report	March 1st of each even numbered year

ATTACHMENT J

HAZARDOUS WASTE MANAGEMENT UNITS

TABLE J-1

Active Portion of the Facility

Includes units permitted to store and treat hazardous waste, interim status units, and the Material Disposal Areas.

Process codes and associated process descriptions:

- S01-storage in containers
- S02-storage in tanks
- S99-other storage
- D80-landfill
- T04 – treatment in tanks
- X01*-open burning
- X01**-open detonation

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-3-29	S01	18,500 gal	Includes Room 9010 and portions of Room 9020 and 9030 Located in Wing 9 of the basement of Building 29 Total square footage – 3,040	Indoor
TA-14-23	X01*	50 lbs HE/burn	Near Structure TA-14-23 Interim Status Unit	NA
TA-14-23	X01**	20 lbs HE/ detonation	Near Structure TA-14-23 Interim Status Unit	NA
TA-16-388	X01*		Flash Pad Total square footage - 484 Interim Status Unit not authorized to treat hazardous waste and undergoing closure	Outdoor (associated with a open burn unit)

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-16-399	X01*		Burn Tray Total square footage - 64 Interim Status Unit not authorized to treat hazardous waste and undergoing closure	Outdoor (associated with an open burn unit)
TA-36-8	X01**	2000 lbs/ detonation	Near Structure TA-36-8 Interim Status Unit	NA
TA-39-6	X01**	1000 lbs/ detonation	Near Structure TA-39-6 Interim Status Unit	NA
TA-39-57	X01**	1000 lbs/ detonation	Near Structure TA-39-57 Interim Status Unit	NA
TA-50-69 Indoor	S01	1,500 gal	Includes Rooms 102 and 103. Total square footage – 2,680	Indoor
TA-50-69 Outdoor Pad	S01	30,000 gal	Total square footage – 3,240	Outdoor (not associated with a regulated unit)
TA-54 "G"	D80	NA	Material Disposal Area Unit not permitted to receive hazardous waste	Regulated unit
TA-54 Area G Container Storage Unit (below ground)	S99	4,950 gal	Includes shafts 145 and 146 Wastes removed and unit undergoing closure, closure certification incomplete	NA
TA-54 Area G Pad 1	S01	502,920 gal	Includes building TA-54-412 (DVRS) and MOVER and support trailer Total square footage – 89,500	Outdoor (associated with a regulated unit)
TA-54 Area G Pad 3	S01	213,840 gal	Includes Storage Dome 48 Total square footage – 19,300	Outdoor (associated with a regulated unit)

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
TA-54 Area G Pad 5	S01	623,480 gal	Includes Storage Domes 49 and 224; Storage Sheds 144, 145, 146, 177, 1027, 1028, 1030, and 1041 Pad 5 is a consolidation of former Pads 5, 7, and 8. Total square footage – 59,900	Outdoor (associated with a regulated unit)
TA-54 Area G Pad 6	S01	597,300 gal	Includes Storage Domes 153 and 283; Transportainer 491; and Storage Sheds 486, 522, 523, and 492. Total square footage – 68,300	Outdoor (associated with an regulated unit)
TA-54 Area G Pad 9	S01	1,446,720 gal	Includes Storage Domes 229, 230, 231, and 232; Transportainer 362; and Storage Sheds 57 and 484. Total square footage – 158,000	Outdoor (associated with a regulated unit)
TA-54 Area G Pad 10	S01	159,770 gal	Includes Transuranic (TRU) Waste Characterization Facilities: TA-54-0547 (SuperHENC), TA-54-0497 (RTR2), TA-54-0498 (LANL HENC), TA-54-0506 (MCS HENC), TA-54-0545 and 546 (Storage trailers), TA-54-0365 (Office Building Formerly MTGS), TA-54-0483 (Source Storage Trailer), and TA-54-1059 (Storage Trailer) Pad 10 is a consolidation of former Pads 2 and 4. Total square footage – 120,000	Outdoor (associated with a regulated unit)
TA-54 Area G Pad 11	S01	682,440 gal	Includes Storage Dome 375 and HERTR	Outdoor (associated with a regulated unit)

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
			Total square footage – 30,000	
TA-54 Area G Storage Shed 8	S01	11,880 gal	Also referred to as TA-54-8 Total square footage - 698	Indoor
TA-54 Area G TA-54-33	S01	108,240 gal	Also referred to as Drum Prep Facility Total square footage – 5,000	Indoor
TA-54 "H"	D80	NA	Material Disposal Area H Unit not permitted to receive hazardous waste	Regulated unit
TA-54 "L"	D80	NA	Material Disposal Area L Unit not permitted to receive hazardous waste	Regulated unit
TA-54 Area L Container Storage Unit (below ground)	S99	600 gal	Includes shafts 36 and 37 Wastes removed and unit undergoing closure, closure certification incomplete	NA
TA-54 Area L Outdoor Pad	S01	407,880 gal	Includes all area within fence-line except limited administrative areas. Includes Storage Sheds 31, 68, 69, and 70; Storage Pads 32, 35, 36, and 58; and Building 39; Storage Dome 215(former Area 1); and Storage Canopy 216. Total square footage – 28,900	Outdoor (associated with a regulated unit)
TA-54-38 West Indoor	S01	3,740 gal	Includes High Bay and Low Bay Total square footage – 4,060	Indoor
TA-54-38 West Outdoor Pad	S01	7,920 gal	Includes loading dock and Pad surrounding Total square	Outdoor (not associated with

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
			footage – 37,900	a regulated unit)
TA-55-4, B40	S01	21,500 gal	Located in basement Referred to as Area 1 Total square footage – 3,380	Indoor
TA-55-4, K13	S01	3,400 gal	Located in basement Referred to as Area 4 Total square footage - 208	Indoor
TA-55-4, B05	S01	3,600 gal	Located in basement Referred to as Area 5 Non-liquid wastes only Total square footage - 260	Indoor
TA-55-4, B45	S01	11,000 gal	Located in basement Non-liquid wastes only Total square footage - 788	Indoor
TA-55-4, Vault	S01	4,000 gal	Located in basement Referred to as Area 6 Total square footage – 4,020	Indoor
TA-55-4-401 Mixed Waste Storage Tank Unit	S02	Storage - 137 gal	TA-55-4 Room 401 Unit divided into two components (Evaporator Glovebox Storage Tank System and Cementation Storage Tank System) Total square footage – 4,500	Indoor
TA-55-4-401 Mixed Waste Stabilization Unit	T04	Treatment - 150 gal / day	TA-55-4 Room 401 Total square footage – 4,500	Indoor
TA-55-185	S01	30,000 gal	Located west of TA-54-4 Non-liquid wastes only	Indoor

Unit Identifier	Process Codes	Operating Capacity	General Information	Type of Unit
			Total square footage - 2,400	
TA-55-4 Outdoor Pad	S01	135,000 gal	Located outside and west of TA-54-4 Total square footage – 11,100	Outdoor (not associated with a regulated unit)

TABLE J-2

Permitted Units Undergoing Post-Closure Care

There are no units in post-closure care.

Unit Identifier	Process Codes	Regulatory Status	Operating Capacity	General Information
(none)				

TABLE J-3

Closed Portion of the Facility not in Post-Closure Care

Closed units in this table are not considered units addressed under the Permit. Therefore, this table is for informational purposes only.

Process codes and associated process descriptions:

- D80-disposal trench
- D83-surface impoundment disposal
- S01-storage in containers
- S02-storage in tanks
- S04-surface impoundment
- S99-storage in shafts
- T01-treatment in tanks
- T03-incinerator
- T04-other treatment
- X01*-open burning
- X01**-open detonation

Unit Identifier	Process Codes	General Information
TA-3-102	S01	(High Explosives Storage Unit)
TA 9-39	S01	
TA 09-43	T04	Hydrothermal Processing Unit (HPU) unit never managed hazardous waste
TA-15-184,	T04, X01**	OD site (Phermix)) Site was never used to treat hazardous waste
TA-16-88	S01	unit never stored hazardous waste
TA-16-387	X01** T04	Flash Pad 387 Underwent RCRA closure in conjunction with Material Disposal Area (MDA) P in 2002.
TA-16-394	X01* and X01** T04	
TA-16-401	X01* and X01**	(Pressure Vessel - sand filter tank)

Unit Identifier	Process Codes	General Information
TA-16-406	X01* and X01**	(Pressure Vessel - sand filter tank)
TA-16 Surface Impoundment	S04 - D83	
TA-16 Incinerator	T03	(TA-16-1409)
TA-16, Material Disposal Area P	D80	
TA-21-61	S01	
TA-22-24	S01	(High Explosive Storage Unit)
TA-33-90	S01	Application was withdrawn and that the unit never stored hazardous waste.
TA-33-92	S01	Application was withdrawn and that the unit never stored hazardous waste.
TA-35-85, Surface Impoundment	S04 - D83	
TA-35-125, Surface Impoundment	S04 - D83	Closure by removal.
TA 35-128	T03	Packed Bed Reactor/Silent Discharge Plasma Research
TA-39, MDA-Y	D80	
TA-40, Scrap Detonation Unit	X01** T04	
TA-40-DF2 (magazine)	S01	Converted to a <90 day storage unit
TA-50-1, Batch Waste Treatment Unit (BWTU)	T01	
TA-50-1, Container Storage Unit(s) associated with BWTU	S01	
TA-50-1, Room 34B	S01	unit never managed hazardous waste
TA-50-1, Room 34C	S01	unit never managed hazardous waste
TA-50-1, Room 35	S01	unit never managed hazardous waste
TA-50-1, Room 36	S01	unit never managed hazardous waste

Unit Identifier	Process Codes	General Information
TA-50-1, Room 38	S01	unit never managed hazardous waste
TA-50-1, Room 38A	S01	unit never managed hazardous waste
TA-50-1, Room 59	S01	Radioactive Liquid Waste Treatment Facility (RLWTF)
TA-50-1, Room 60A	T04	Cementation Treatment Unit Proposed treatment process was revised to generator treatment in a < 90 day storage area.
TA-50-37	T03	Controlled Air Incinerator (CAI)
TA-50-37 RAMROD	T04	Radioactive Materials Research, Operations and Demonstration Facility (RAMROD). LANL withdraws permit request. Convert unit(s) to <90 day storage.
TA-50-37, Storage Tanks	S02	Located in Room 115
TA 50-37-112	S01, T03	Location of Controlled Air Incinerator (CAI), part of RAMROD Facility
TA-50-37-114	S01	Part of RAMROD
TA-50-37, Room 115	S01 - S02	Location of storage tanks and waste feed tanks Part of RAMROD
TA-50-37, Room 117	S01	Room used for container storage. Part of RAMROD
TA-50-37, Room 118	S01	Room used for container storage. Part of RAMROD
TA-50-114	S01	Storage shed
TA-50-137	S01	Storage Bldg Unit was never built
TA-50-138	S01	Storage Bldg Unit was never built
TA-50-139	S01	Storage pad Unit was never built

Unit Identifier	Process Codes	General Information
TA-50-140	S01	Storage pad Unit was never built
TA 53-166	S04	South Surface Impoundment Change from closure as a TSD to cleanup under HSWA
TA 53-166	S04	NE Surface Impoundment Change from closure as a TSD to cleanup under HSWA
TA 53-166	S04	NW Surface Impoundment Change from closure as a TSD to cleanup under HSWA
TA-54-L, Waste Oil Storage Tank (WOST)	S02	
TA-54-L, Truck Mounted Container Treatment System	T01	Unit was proposed in a 1993 permit modification and was withdrawn in a 1998 Part A.
TA-54-L, Bldg. 35, Storage/ Treatment Tanks (4)	S02 and (T01)	Pad below the tanks remains operational for waste storage.
TA-55-4, Oxygen Sparging Treatment Furnace	T04	
TA-55-4, B38	S01	Unit also referred to as TA-55-4, basement, Area 2
TA-55-4, basement. Area 7 North end of basement CSA	S01	Unit was never used for hazardous waste storage and was withdrawn in the 1998 Part A.
TA-55-4-401 Mixed waste Monitoring CSA (Area 8 also called FLO-1)	S01	Unit was never used for hazardous waste storage and was withdrawn in the 1998 Part A.
TA-55-4-401 Sphere Material Removal CSA (Area 9)	S01	Unit was never used for hazardous waste storage and was withdrawn in the 1998 Part A.

Unit Identifier	Process Codes	General Information
TA-55-4-401 CSA for Evaporator Salt Precipitate (Area 10)	S01	This unit was included as part of the evaporator glovebox storage tank system in the June 1996 TA-55 Part B
TA-55-4-433 Mixed Waste Monitoring CSA	S01	(Area 11 – referenced as Area 10 in June 1996) Unit was never used for hazardous waste storage and was withdrawn in the 1998 Part A.
TA-55-4-432 CSA Glovebox Process Waste	S01	(Area 12 - referenced as Area 11 in June 1996) Unit was never used for hazardous waste storage and was withdrawn in the 1998 Part A.
TA-55-41 CSA Vault	S01	Unit was never used for hazardous waste storage and was withdrawn in the 1998 Part A.
TA-63 Chemical Waste Treatment Skid	T01	This unit was never constructed and was withdrawn in the 1998 Part A application.
TA-63 Liquid Waste Storage Tanks (6)	S02	These tanks were never constructed and were withdrawn in the 1998 Part A application.

ATTACHMENT K

LISTING OF SWMUS AND AOCS

Table K-1

SWMUs and AOCs Requiring Corrective Action

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU/AOC	Unit #	Unit Type
TA-0		
SWMU	00-001	Sediment traps in Mortandad Canyon
SWMU	00-011(a)	Former Mortar impact area
SWMU	00-011(c)	Mortar impact area
SWMU	00-011(d)	Mortar impact area
SWMU	00-011(e)	Mortar impact area
AOC	00-015	Firing Range-Rendija Canyon
SWMU	00-017	Waste lines
SWMU	00-018(a)	Former Sludge bed wastewater treatment plant, Pueblo Canyon
AOC	00-018(b)	Sludge-Bed Wastewater Treatment Plant
SWMU	00-019	Former Wastewater treatment plant, central
AOC	00-027	Storage Area-DP Road
SWMU	00-030(a)	Former Septic Tank
SWMU	00-030(b)	Septic Tanks
AOC	00-030(d)	Septic Tank
AOC	00-030(eN)	Septic Tanks
AOC	00-030(eS)	Septic Tank
AOC	00-030(f)	Septic Tank
SWMU	00-030(g)	Former Septic tank (near old Catholic Church parking lot)
AOC	00-030(h)	Former Septic tank (near new Catholic Church)
AOC	00-030(j)	Septic Tank
SWMU	00-030(l)	Septic Tank
SWMU	00-030(m)	Former Septic Tank
AOC	00-030(n)	Former Septic Tank
AOC	00-030(o)	Septic Tank
AOC	00-030(p)	Septic Tank
AOC	00-031(a)	Soil Contamination from former Service Station
AOC	00-031(b)	Soil Contamination from former motorpool facility
SWMU	00-033(a)	Soil contamination from former UST, 6th Street Warehouses
AOC	00-034(b)	Landfill, western area
SWMU	00-039	Soil contamination from former USTs
AOC	C-00-001	Guaje Canyon
AOC	C-00-002	Rendija Canyon
AOC	C-00-003	Barrancas Canyon
AOC	C-00-004	Bayo Canyon
AOC	C-00-005	Pueblo Canyon
AOC	C-00-006	Los Alamos Canyon
AOC	C-00-007	Sandia Canyon
AOC	C-00-008	Mortandad Canyon
AOC	C-00-009	Canada del Buey Canyon
AOC	C-00-010	TwoMile Canyon

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	C-00-011	Pajarito Canyon
AOC	C-00-012	Three Mile Canyon
AOC	C-00-013	Potrillo Canyon
AOC	C-00-014	Canon de Valle Canyon
AOC	C-00-015	Fence Canyon
AOC	C-00-016	Water Canyon
AOC	C-00-017	Indio Canyon
AOC	C-00-018	Ancho Canyon
AOC	C-00-019	Chaquehui Canyon
AOC	C-00-020	Mortar impact area
AOC	C-00-021	DP Canyon
AOC	C-00-037	Landfill, Bandelier, NM
AOC	C-00-038	Surface Disposal, Bandelier, NM
AOC	C-00-041	Asphalt and tar remnant site
AOC	C-00-042	Former Underground Storage Tank
AOC	C-00-043	Former Manhole
AOC	C-00-044	Soil contamination
TA-1		
SWMU	01-001(a)	Septic Tank 134
SWMU	01-001(b)	Septic Tank 135
SWMU	01-001(c)	Septic Tank 137
SWMU	01-001(d)	Soil contamination from Septic Tank 138
SWMU	01-001(e)	Septic Tank 139
SWMU	01-001(f)	Septic Tank 140(hillside)
SWMU	01-001(g)	Septic Tank 141
SWMU	01-001(o)	Waste Line
SWMU	01-001(s)	Waste Line
SWMU	01-001(t)	Waste Line
SWMU	01-001(u)	Waste Lines
SWMU	01-002(a)-00	Waste Lines
SWMU	01-002(b)-00	Outfall associated with TA-01 (Located in former TA-45)
SWMU	01-003(a)	Landfill
AOC	01-003(b)	Surface Disposal Site
AOC	01-003(c)	Surface Disposal Site
SWMU	01-003(d)	Surface Disposal Site
SWMU	01-003(e)	Surface Disposal Site
SWMU	01-006(a)	Drainline and Outfall
SWMU	01-006(b)	Drainline and Outfall
SWMU	01-006(c)	Drainlines and Outfall
SWMU	01-006(d)	Drainline and Outfall
AOC	01-006(e)	Drainlines and Outfall
AOC	01-006(g)	Storm drains and outfalls
SWMU	01-006(h)	Storm drain and outfall

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	01-006(n)	Storm drain and outfall
SWMU	01-006(o)	Storm drains and outfalls
SWMU	01-007(a)	Soil contamination associated with TA-1 Buildings and Structures
SWMU	01-007(b)	Soil contamination associated with TA-1 Buildings and Structures
SWMU	01-007(c)	Soil contamination associated with TA-1 Buildings and Structures
SWMU	01-007(d)	Soil contamination associated with TA-1 Buildings and Structures
SWMU	01-007(e)	Soil contamination associated with TA-1 Buildings and Structures
SWMU	01-007(j)	Soil contamination associated with TA-1 Buildings and Structures
AOC	01-007(k)	Soil Contamination Area
SWMU	01-007(l)	Soil contamination associated with TA-1 Buildings and Structures
TA-2		
AOC	02-003(a)	Soil contamination associated with former valve house and gaseous effluent line
AOC	02-003(b)	Soil contamination associated with former condensate trap
AOC	02-003(c)	Soil contamination associated with former delay system
AOC	02-003(d)	Soil contamination associated with former gaseous effluent line
AOC	02-003(e)	Soil contamination associated with former holding tank (near water boiler reactor)
AOC	02-004(a)	Former Omega West reactor facility
AOC	02-004(b)	Former Reactor facility effluent storage tank TA-2-54
AOC	02-004(c)	Former Reactor facility effluent storage tank TA-2-55
AOC	02-004(d)	Former Reactor facility effluent storage tank TA-2-56
AOC	02-004(e)	Former Reactor facility acid pit TA-2-53
AOC	02-004(f)	Former Reactor facility equipment building
AOC	02-004(g)	Soil contamination associated with former aboveground tank
SWMU	02-005	Soil contamination from Drift loss, cooling tower blowdown
SWMU	02-006(a)	Former French drain
SWMU	02-006(b)	Former Acid waste line
AOC	02-006(c)	Former Drainline
AOC	02-006(d)	Drainline
AOC	02-006(e)	Former sump
SWMU	02-007	Soil contamination from former septic system
SWMU	02-008(a)	Outfall from Structure 02-49
AOC	02-008(c)	Outfall from Building 2-1
SWMU	02-009(a)	Soil contamination associated with former water boiler reactor
SWMU	02-009(b)	Soil contamination associated with former water boiler reactor
SWMU	02-009(c)	Soil contamination associated with condensate trap and leach field
AOC	02-009(d)	Soil contamination
AOC	02-009(e)	Soil contamination (duplicate of SWMU 02-009(c))
AOC	02-010	Soil contamination associated with former chemical stack 2-3
AOC	02-011(a)	Storm drains associated with former Building 2-1
AOC	02-011(b)	Former drains
AOC	02-011(c)	Storm drain

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	02-011(d)	Outfall from Building 2-44
AOC	02-011(e)	Outfall from Structure 2-49 (duplicate of 02-008(a))
AOC	02-012	Soil contamination from former underground tanks
TA-3		
AOC	03-001(e)	Storage Area
AOC	03-001(i)	Storage Area
SWMU	03-001(k)	-Storage Area
SWMU	03-002(c)	Storage area
SWMU	03-003(a)	Storage area
SWMU	03-003(b)	Storage area
SWMU	03-003(c)	Storage Area
AOC	03-003(d)	Storage area
AOC	03-003(e)	Storage area
AOC	03-003(f)	Storage area
AOC	03-003(g)	–Storage area
AOC	03-003(h)	Storage area
AOC	03-003(i)	Storage area
AOC	03-003(j)	Storage area
AOC	03-003(k)	Storage area
AOC	03-003(l)	Storage area
AOC	03-003(n)	Storage area
AOC	03-003(o)	Storage area
AOC	03-003(p)	Storage area
AOC	03-004(c)	Storage area
AOC	03-004(d)	Storage area
AOC	03-007	Firing site
AOC	03-008(a)	Firing site
SWMU	03-009(a)	Surface disposal site
SWMU	03-009(i)	Surface disposal site
SWMU	03-009(j)	Surface disposal site
SWMU	03-010(a)	Former Vacuum repair shop outfall
SWMU	03-011	Operational release
SWMU	03-012(b)	Operational release
SWMU	03-013(a)	Storm drain
AOC	03-013(b)	Floor Drains
SWMU	03-013(i)	Operational release from former Buildings 3-246 and 3-247
SWMU	03-014(a)	Imhoff tank associated with former WWTP
AOC	03-014(a2)	Drain associated with former WWTP
SWMU	03-014(b)	Dosing siphon associated with former WWTP
AOC	03-014(b2)	Outfall associated with former WWTP
SWMU	03-014(c)	Trickling filter associated with former WWTP
AOC	03-014(c2)	Outfall associated with former WWTP
SWMU	03-014(d)	Clarifying tank associated with former WWTP

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SWMUs and AOCs Requiring Corrective Action

SWMU	03-014(e)	Imhoff tank associated with former WWTP
SWMU	03-014(f)	Dosing si[hon associated with former WWTP
SWMU	03-014(g)	Trickling filter associated with former WWTP
SWMU	03-014(h)	Clarifying tank associated with former WWTP
SWMU	03-014(i)	Splitter box and bar rack associated with former WWTP
SWMU	03-014(j)	Chlorination system associated with former WWTP
SWMU	03-014(k)	Sludge drying bed associated with former WWTP
SWMU	03-014(l)	Sludge drying bed associated with former WWTP
SWMU	03-014(m)	Sludge drying bed associated with former WWTP
SWMU	03-014(n)	Sludge drying bed associated with former WWTP
SWMU	03-014(o)	Sludge drying bed associated with former WWTP
SWMU	03-014(p)	Lift station associated with former WWTP
SWMU	03-014(q)	Holding tank
SWMU	03-014(r)	Lift station associated with former WWTP
SWMU	03-014(s)	Lift station associated with former WWTP
SWMU	03-014(t)	Lift station associated with former WWTP
SWMU	03-014(u)	Holding tank associated with former WWTP
AOC	03-014(v)	Drain associated with former WWTP
AOC	03-014(w)	Drain associated with former WWTP
AOC	03-014(x)	Drain associated with former WWTP
AOC	03-014(y)	Drain associated with former WWTP
AOC	03-014(z)	Drain associated with former WWTP
SWMU	03-015	Outfall
SWMU	03-021	Outfall from Building 3-170
AOC	03-022	Former Sump
SWMU	03-025(b)	Sumps
AOC	03-025(c)	Oil/water separator
AOC	03-026(a)	Sump
SWMU	03-026(c)	Tanks
SWMU	03-026(d)	Sump
AOC	03-027	Lift Wells
SWMU	03-028	Surface Impoundment
SWMU	03-029	Asphalt Batch Plant (Disposal Area)
SWMU	03-031	Tanks and associated equipment
SWMU	03-033	Former Tanks and Sumps
SWMU	03-034(a)	Tank and/or associated equipment, radioactive liquid waste tanks
SWMU	03-034(b)	Tank and associated equipment
SWMU	03-036(a)	Soil contamination from former aboveground tanks
AOC	03-036(b)	Former aboveground tanks
SWMU	03-036(c)	Soil contamination from former aboveground tank (duplicated of 03-043(f))
SWMU	03-036(d)	Soil contamination from former aboveground tank (duplicated of 03-043(g))

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SWMUs and AOCs Requiring Corrective Action

SWMU	03-037	Underground tanks
SWMU	03-038(a)	Soil contamination from former Building 3-700
SWMU	03-038(b)	Soil contamination from former acid tank
AOC	03-038(c)	Waste lines
AOC	03-038(d)	Waste lines
AOC	03-038(f)	Drainline
AOC	03-041	Underground tank
AOC	03-042	Soil contamination from former sump
AOC	03-043(a)	Soil contamination from former aboveground tank
AOC	03-043(b)	Soil contamination from former aboveground tank
SWMU	03-043(c)	Soil contamination from former manhole
AOC	03-043(d)	Soil contamination from former aboveground tank
AOC	03-043(f)	Soil contamination from former aboveground tank
AOC	03-043(g)	Soil contamination from former aboveground tank
AOC	03-043(h)	Soil contamination from former aboveground tank
SWMU	03-045(a)	Outfall from Building 3-22
SWMU	03-045(b)	Operational release
SWMU	03-045(c)	Outfall from structure 3-285
SWMU	03-045(e)	Outfall from Building 3-57
SWMU	03-045(f)	Outfall from Building 3-223
SWMU	03-045(g)	Storm drain
SWMU	03-045(h)	Outfall from cooling tower 3-187
SWMU	03-046	Above ground wastewater treatment tank
AOC	03-047(d)	Soil contamination from former storage area
AOC	03-047(g)	Soil contamination from former storage area
SWMU	03-049(a)	Outfall from cooling tower 3-127 and Building 3-66
SWMU	03-049(b)	Soil contamination from discharge area
SWMU	03-049(e)	Outfall
SWMU	03-050(a)	Soil contamination from TA-3 exhaust emissions
SWMU	03-050(d)	Soil contamination from TA-3 exhaust emissions
SWMU	03-050(f)	Soil contamination from TA-3 exhaust emissions
SWMU	03-050(g)	Soil contamination from TA-3 exhaust emissions
AOC	03-051(a)	Soil contamination from leaking compressor
AOC	03-051(b)	Soil contamination from leaking compressor
AOC	03-051(c)	Soil contamination from vacuum pump leaking
SWMU	03-052(a)	Storm drain
AOC	03-052(b)	Storm drainage
SWMU	03-052(e)	Storm drain
SWMU	03-052(f)	Outfall from Building 3-38
AOC	03-053	Building 3-141 basement area and floor drains
SWMU	03-054(a)	Outfall associated with cooling tower 3-19
SWMU	03-054(b)	Outfall from Building 3-38
SWMU	03-054(c)	Outfall from former cooling tower 3-156

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SWMUs and AOCs Requiring Corrective Action

SWMU	03-054(d)	Outfall from Building 3-16
SWMU	03-054(e)	Outfall from Building 3-29
SWMU	03-055(a)	Outfall from Building 3-16
SWMU	03-055(c)	Outfall associated with drains of Fire Station 3-41
SWMU	03-056(a)	Oil Storage Facility
SWMU	03-056(c)	Transformer storage area
SWMU	03-056(d)	Drum storage
AOC	03-056(h)	Storage Area
AOC	03-056(k)	Container storage area
SWMU	03-056(l)	Cotnainer Storage Area
SWMU	03-059	Storage area
AOC	C-03-006	Spill/Non-Intentional Release Area
AOC	C-03-014	Equipment Storage area
AOC	C-03-016	Former Oil metal bin
AOC	C-03-022	Former Kerosene tanker trailer
TA-4		
SWMU	04-001	Firing site
SWMU	04-002	Surface Disposal site
SWMU	04-003(a)	Outfall associated with former Photo-processing Building 4-07
SWMU	04-003(b)	Drainline and outfall from former Building 4-03
AOC	04-004	Soil contamination from former photo-processing Building 4-07
TA-5		
SWMU	05-001(a)	Firing site
SWMU	05-001(b)	Firing site
AOC	05-001(c)	Firing site
SWMU	05-002	Canyon side disposal site
SWMU	05-003	Calibration Chamber
SWMU	05-004	Septic Tank
SWMU	05-005(a)	Soil contamination from former French Drain
SWMU	05-005(b)	Outfall associated with former Building 5-05
SWMU	05-006(b)	Soil Contamination from former Building 5-04
SWMU	05-006(c)	Soil Contamination from former Building 5-05
SWMU	05-006(e)	Soil Contamination from former Building 5-19
SWMU	05-006(h)	Soil contamination from former Building 5-09
TA-6		
SWMU	06-001(a)	Septic system
SWMU	06-001(b)	Septic system
SWMU	06-002	Septic System
SWMU	06-003(a)	Firing site
SWMU	06-003(c)	Firing site
SWMU	06-003(d)	Firing site
SWMU	06-003(e)	Firing site
SWMU	06-003(f)	Firing site

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SWMUs and AOCs Requiring Corrective Action

SWMU	06-003(h)	Firing site
SWMU	06-005	Firing Site
SWMU	06-006	Storage Area
SWMU	06-007(a)	MDA F
SWMU	06-007(b)	Landfill
SWMU	06-007(c)	Landfill
SWMU	06-007(d)	Landfill
SWMU	06-007(e)	Landfill
SWMU	06-007(f)	Surface disposal
SWMU	06-007(g)	Soil contamination from former Building 6-12
AOC	06-008	Soil contamination from former underground storage tank
AOC	C-06-001	Soil contamination from former storage magazine 6-4
AOC	C-06-003	Building TA-6-11 – Control Building for explosive shots
AOC	C-06-005	Soil Contamination from former Building 06-13
TA-7		
SWMU	07-001(a)	Firing Site
SWMU	07-001(b)	Firing Site
SWMU	07-001(c)	Firing Site
SWMU	07-001(d)	Firing Site
TA-8		
AOC	08-001(a)	Off-gas system
AOC	08-001(b)	Off-gas system
SWMU	08-002	Firing site
SWMU	08-003(a)	Former septic tank
SWMU	08-004(a)	Floor drain
SWMU	08-004(b)	Drainline
SWMU	08-004(c)	Floor drain and sumps
SWMU	08-004(d)	Drain
SWMU	08-005	Former storage vessel
SWMU	08-006(a)	Material disposal area (MDA) Q
SWMU	08-009(a)	Drainline and outfall
AOC	08-009(c)	Storm drain and outfall from Building 8-23
SWMU	08-009(d)	Drains
SWMU	08-009(e)	Outfall from Building 8-21
AOC	08-009(f)	Outfall associated with Building 8-22
AOC	C-08-014	Laboratory and Administrative Building 8-21
TA-9		
SWMU	09-001(a)	Soil contamination from firing site and former firing site structure 9-04
SWMU	09-001(b)	Firing Site
SWMU	09-001(c)	Firing site
SWMU	09-001(d)	Firing site
SWMU	09-002	Burn pit

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	09-003(a)	Soil contamination associate with former settling tank
SWMU	09-003(b)	Soil contamination associate with former settling tank
SWMU	09-003(d)	Soil contamination associate with former settling tank
SWMU	09-003(e)	Soil contamination associated with former Basket Pit
SWMU	09-003(g)	Soil contamination associated with former Sump and pipes
SWMU	09-003(h)	Soil contamination associated with former Sump and pipes
SWMU	09-003(i)	Soil Contamination associated with former Sump and Pipes
SWMU	09-004(a)	Settling tank
SWMU	09-004(b)	Settling tank
SWMU	09-004(c)	Settling tank
SWMU	09-004(d)	Settling tank
SWMU	09-004(e)	Settling tank
SWMU	09-004(f)	Settling tank
SWMU	09-004(g)	Settling tank
SWMU	09-004(h)	Settling tank
SWMU	09-004(i)	Settling tank
SWMU	09-004(j)	Settling tank
SWMU	09-004(k)	Settling tank
SWMU	09-004(l)	Settling tank
SWMU	09-004(m)	Settling tank
SWMU	09-004(n)	Settling tank
SWMU	09-004(o)	Settling tank
SWMU	09-005(a)	Soil contamination from former septic tank
SWMU	09-005(d)	Septic Tank
SWMU	09-005(g)	Settling Tank
SWMU	09-006	Soil contamination associated with former septic tank
SWMU	09-008(b)	Ooxidation Pond
SWMU	09-009	Surface impoundment
AOC	09-010(a)	Storage Area
AOC	09-010(b)	Storage Area
AOC	09-011(b)	Storage area
AOC	09-011(c)	Storage area
AOC	09-012	Disposal Pit
SWMU	09-013	Material Disposal Area (MDA) M
AOC	09-014	Soil contamination associated with former Camera Mount
SWMU	C-09-001	Soil contamination associated with outfall
TA-10		
SWMU	10-001(a)	Firing site
SWMU	10-001(b)	Firing site
SWMU	10-001(c)	Firing site
SWMU	10-001(d)	Firing site
SWMU	10-002(a)	Disposal Pit
SWMU	10-002(b)	Disposal Pit

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SWMUs and AOCs Requiring Corrective Action

SWMU	10-003(a)	Soil contamination from former disposal pit
SWMU	10-003(b)	Soil contamination from former disposal pit
SWMU	10-003(c)	Soil contamination from former disposal pit
SWMU	10-003(d)	Soil contamination from former disposal pit
SWMU	10-003(e)	Soil contamination from disposal pit
SWMU	10-003(f)	Soil contamination from former disposal pit
SWMU	10-003(g)	Soil contamination from former manhole
SWMU	10-003(h)	Soil contamination from former manhole
SWMU	10-003(i)	Soil contamination from former septic tank
SWMU	10-003(j)	Soil contamination from former tank
SWMU	10-003(k)	Soil contamination from former tank
SWMU	10-003(l)	Soil contamination from former tank
SWMU	10-003(m)	Soil contamination from former waste line
SWMU	10-003(n)	Soil contamination from former leach field
SWMU	10-003(o)	Soil contamination from Decontamination Holes associated with former leach field
SWMU	10-004(a)	Soil contamination from former septic tank
SWMU	10-004(b)	Septic System
SWMU	10-005	Surface disposal
SWMU	10-006	Burn site
SWMU	10-007	Landfill
SWMU	10-008	Tree-rimmed firing point, Bayo Canyon
SWMU	10-009	Former Bayo Canyon Landfill-
AOC	C-10-001	Contaminated soil, Bayo Canyon
TA-11		
SWMU	11-001(a)	Firing site
SWMU	11-001(b)	Firing site
SWMU	11-001(c)	Firing site
SWMU	11-002	Burn Site
AOC	11-003(b)	Air Gun
SWMU	11-004(a)	Drop tower
SWMU	11-004(b)	Concrete Pad
SWMU	11-004(c)	Hoist
SWMU	11-004(d)	Hoist
SWMU	11-004(e)	Drop Pad
AOC	11-004(f)	Drop Pad
SWMU	11-005(a)	Septic system
SWMU	11-005(b)	Septic system
SWMU	11-005(c)	Outfall from former Building 11-2
SWMU	11-006(a)	Sump
SWMU	11-006(b)	Catch Basin System
SWMU	11-006(c)	Catch Basin System
SWMU	11-006(d)	Catch Basin System

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SWMUs and AOCs Requiring Corrective Action

SWMU	11-009	Material disposal area (MDA) S
SWMU	11-011(a)	Outfall from Building 11-30
SWMU	11-011(b)	Outfall from Building 11-30A
SWMU	11-011(d)	Outfall from Building 11-24
AOC	11-012(a)	Soil contamination associated with former Structure 11-7
AOC	11-012(b)	Soil contamination associated with former Structure 11-8
AOC	11-012(c)	Soil contamination associated with former Structure 11-9
AOC	11-012(d)	Soil contamination associated with former Structure 11-10
AOC	C-11-001	Soil contamination associated with former Structure 11-5
AOC	C-11-002	Soil contamination associated with former Structure 11-12
TA-12		
SWMU	12-001(a)	Firing site Steel-lined container
SWMU	12-001(b)	Firing site
SWMU	12-002	Burn Site
AOC	12-004(a)	Radiation test facility
AOC	12-004(b)	Pipe
AOC	C-12-001	Soil contamination associated with former Trim Building 12-1
AOC	C-12-002	Soil contamination associated with former Control Building 12-2
AOC	C-12-003	Soil contamination associated with former Storage Building 12-3
AOC	C-12-004	Soil contamination associated with former Generator Building 12-5
AOC	C-12-005	Soil contamination associated with former Junction box 12-6
TA-13		
SWMU	13-001	Firing site
SWMU	13-002	Landfill
SWMU	13-003(a)	Soil contamination from a former septic tank
AOC	13-003(b)	Drain field
SWMU	13-004	Disposal pit - existence not determined
TA-14		
AOC	14-001(a)	Firing site
AOC	14_001(b)	Firing site
AOC	14-001(c)	Firing site
AOC	14-001(d)	Firing site
AOC	14-001(e)	Firing site
AOC	14-001(f)	Firing site
AOC	14-001(g)	Firing site
SWMU	14-002(a)	Firing site
SWMU	14-002(b)	Firing site
SWMU	14-002(c)	Control Building 14--5
SWMU	14-002(d)	Firing site
SWMU	14-002(e)	Firing site
SWMU	14-002(f)	Soil contamination associated with former Junction Box 14-12
SWMU	14-003	Open burning ground

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	14-004(a)	Storage area
SWMU	14-005	Burn Cage for OB/OD unit TA-14-23
SWMU	14-006	Sump and/or associated equipment
SWMU	14-007	Septic system
SWMU	14-009	Surface Disposal Site
SWMU	14-010	Soil contamination from former Sump and Drain lines
AOC	C-14-001	Soil contamination associated with former Magazine 14-1
AOC	C-14-002	Soil contamination associate with former Building 14-3
AOC	C-14-003	Soil contamination associated with former Sturcture 14-4
AOC	C-14-004	Soil contamination associated with former Electronics Shop 14-7
AOC	C-14-005	Soil contamination associated with former Storage Building 14-8
AOC	C-14-006	Soil contamination associated with former Magazine 14-9
AOC	C-14-007	Soil contamination associated with former Storage Building 14-10
AOC	C-14-008	Soil contamination associated with former Magazine 14-11
AOC	C-14-009	Soil contamination associated with former Magazine 14-13
TA-15		
AOC	15-001	Surface disposal Site
SWMU	15-002	Burn Site
SWMU	15-003	Phermex Firing Site (TA-15-184)
SWMU	15-004(a)	Firing Site C
SWMU	15-004(b)	Firing Site A
SWMU	15-004(c)	Firing Site B
AOC	15-004(d)	Firing site C
SWMU	15-004(f)	Firing site E-F
SWMU	15-004(g)	Firing site G
AOC	15-004(h)	Firing site H
SWMU	15-004(i)	The Gulch firing site
AOC	15-005(b)	Container storage area
AOC	15-005(c)	Container storage area (R-41)
SWMU	15-006(a)	Phermex Firing Site (TA-15-184)
SWMU	15-006(b)	Firing Site Ector
SWMU	15-006(c)	Firing site (R-44)
SWMU	15-006(d)	Firing site (R-45)
AOC	15-006(e)	I-J Firing Site at TA-36 , duplicate of C-36-006(e)
SWMU	15-007(a)	Material Disposal Area (MDA) N
SWMU	15-007(b)	Material disposal area (MDA) Z
SWMU	15-007(c)	Shaft
SWMU	15-007(d)	Shaft
SWMU	15-008(a)	Surface Disposal Site (E-F Site)
SWMU	15-008(b)	Surface Disposal Site
SWMU	15-008(c)	Surface Disposal Site
SWMU	15-008(d)	Surface Disposal Site

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	15-008(f)	I-J Firing site mounds at TA-36
AOC	15-008(g)	Surface Disposal Site
SWMU	15-009(a)	Former structures - the Hollow
SWMU	15-009(b)	Septic system
SWMU	15-009(c)	Septic system
SWMU	15-009(e)	Septic system
SWMU	15-009(f)	Firing site septic system
SWMU	15-009(g)	Septic system
SWMU	15-009(h)	Septic system
SWMU	15-009(i)	Septic system
SWMU	15-009(k)	Firing site septic system (renumbered from 15-009(l))
SWMU	15-010(a)	Septic system
SWMU	15-010(b)	Septic system
SWMU	15-011(a)	Concrete Trench Drains
SWMU	15-011(b)	Drainage channel
SWMU	15-011(c)	Outfall
SWMU	15-014(a)	Outfalls from Building 15-183
SWMU	15-014(b)	Outfalls from Building 15-183
AOC	15-014(d)	Drainage
AOC	15-014(g)	Outfall from Building 15-203
AOC	15-014(h)	Outfalls from Building 15-40
SWMU	15-014(i)	Outfall from former Building 15-194 (renumbered from 15-012(f))
SWMU	15-014(j)	Outfalls from former Building 15-50 (renumbered from 15-012(g))
SWMU	15-014(k)	Outfalls from former Building 15-20 (renumbered from 15-012(d))
SWMU	15-014(l)	Outfalls from former Building 15-202 (renumbered from 15-012(e))
AOC	C-15-001	Contaminated soil near Firing Site
AOC	C-15-004	Former Transformer Station
AOC	C-15-005	Soil contamination associate with former laboratory and building
AOC	C-15-006	Soil contamination associate with former Building15-7
AOC	C-15-007	Non-intentional release area
AOC	C-15-010	Former underground tank
AOC	C-15-011	Former underground tank
TA-16		
SWMU	16-001(a)	Tank
SWMU	16-001(b)	Dry Wells
SWMU	16-001(c)	Tank
SWMU	16-001(d)	Dry well
SWMU	16-001(e)	Dry Well
SWMU	16-003(a)	Sump
SWMU	16-003(b)	Sump

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SWMUs and AOCs Requiring Corrective Action

SWMU	16-003(c)	Sump
SWMU	16-003(d)	Sumps
SWMU	16-003(e)	Sumps
SWMU	16-003(f)	Sumps
SWMU	16-003(g)	Sumps
SWMU	16-003(h)	Sump
SWMU	16-003(i)	Sump
SWMU	16-003(j)	Sump
SWMU	16-003(k)	Sumps
SWMU	16-003(l)	Sumps
SWMU	16-003(m)	Sump
SWMU	16-003(n)	Sump
SWMU	16-003(o)	Sumps
AOC	16-003(p)	Sump
AOC	16-003(q)	Sump
SWMU	16-004(a)	Imhoff Tank
SWMU	16-004(b)	Trickling Filter
SWMU	16-004(c)	Tank
SWMU	16-004(d)	Sludge Drying Bed
SWMU	16-004(e)	Screen
SWMU	16-004(f)	Sludge Drying Bed
SWMU	16-005(a)	Septic tank
SWMU	16-005(c)	Soil contamination from former septic tank
SWMU	16-005(d)	Soil contamination from former septic tank
SWMU	16-005(e)	Soil contamination from former septic tank
SWMU	16-005(g)	Soil contamination from former Filter Bed
SWMU	16-005(h)	Soil contamination from former septic tank
SWMU	16-005(j)	Soil contamination from former septic tank
SWMU	16-005(k)	Soil contamination from former septic tank
SWMU	16-005(l)	Grease trap
SWMU	16-005(m)	Soil contamination from former Sump
SWMU	16-005(n)	Soil contamination from former septic tank
SWMU	16-006(a)	Septic Tank
SWMU	16-006(c)	Septic Tank
SWMU	16-006(d)	Septic Tank
SWMU	16-006(e)	Former Septic Tank
SWMU	16-006(g)	Septic Tank
SWMU	16-006(h)	Pump Pit
SWMU	16-007(a)	Settling Ponds
SWMU	16-008(a)	Settling Pond
SWMU	16-009(a)	Former Burn site
SWMU	16-010(a)	Burn Site
SWMU	16-010(h)	Former Basket-Wash facility

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	16-010(i)	Burn Pad
SWMU	16-010(k)	Former trough
SWMU	16-010(l)	Former trough
SWMU	16-010(m)	Former trough
SWMU	16-010(n)	Former trough
AOC	16-011	Former Incinerator
SWMU	16-013	Container Storage Area
SWMU	16-015(a)	Soil contamination from former Men's locker room and laundry facility
SWMU	16-015(b)	Soil contamination associated with former Steam-washing facility
AOC	16-015(c)	Soil contamination from former Building 16-36
AOC	16-015(d)	Soil contamination from former steam-cleaning Building 16-51
SWMU	16-016(a)	Landfill - buried metal site
SWMU	16-016(b)	Surface Disposal Site
SWMU	16-016(c)	Soil contamination from former Barium Nitrate Storage Area/Pile
SWMU	16-016(d)	Surface disposal site
SWMU	16-016(e)	Surface disposal site
AOC	16-016(f)	Surface Disposal Site
SWMU	16-016(g)	Surface disposal site
SWMU	16-017(a)-99	Soil contamination from former HE Machining Building 16-92
SWMU	16-017(b)-99	Soil contamination from former HE Machining Building 16-93
SWMU	16-017(c)-99	Soil contamination from former HE Machining Building 16-91
SWMU	16-017(d)-99	Soil contamination from former HE Machining Building 16-90
SWMU	16-017(e)-99	Soil contamination from former HE Machining Building 16-89
SWMU	16-017(f)-99	Soil contamination from former HE Machining Building 16-99
SWMU	16-017(g)-99	Former storage magazine
SWMU	16-017(h)-99	Soil contamination from former HE Casting Building 16-27
SWMU	16-017(i)-99	Former storage building
SWMU	16-017(j)-99	Former storage magazine 16-63
SWMU	16-017(k)-99	Former storage magazine 16-78
SWMU	16-017(l)-99	Former storage magazine 16-77
SWMU	16-017(m)-99	Former storage magazine 16-76
SWMU	16-017(n)-99	Former storage magazine 16-75
SWMU	16-017(o)-99	Former storage magazine 16-59
SWMU	16-017(p)-99	Former storage magazine 16-61
SWMU	16-017(q)-99	Storage Magazine
SWMU	16-017(r)-99	Former Assembly Site/Storage Building 16-520
SWMU	16-017(s)-99	Former Assembly Site/Storage Building 16-519
SWMU	16-017(t)-99	Former Assembly Site/Storage Building 16-516
SWMU	16-017(u)-99	Soil contamination from former Storage and Support Structure 16-164
SWMU	16-017(v)-99	Soil contamination from former HE Processing Building
SWMU	16-017(w)-99	Former Storage Magazine 16-73

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	16-017(x)-99	Soil Contamination from former Storage Magazine 16-79
SWMU	16-019	Material disposal area (MDA) R (includes SWMU 16-009(b))
SWMU	16-020	Outfall from former 16-222
SWMU	16-021(a)	Operational release associated with Building 16-450
AOC	16-021(b)	Operational Release
SWMU	16-021(c)	Outfall associated with Building 16-260
AOC	16-022(a)	Former Underground Storage Tank
AOC	16-022(b)	Former Underground Storage Tank
AOC	16-023(b)	Soil contamination from former Incinerator
AOC	16-024(a)	Soil contamination from former Magazine 16-488
AOC	16-024(b)	Soil contamination from former Magazine 16-74
AOC	16-024(c)	Soil contamination from former Magazine 16-30
AOC	16-024(d)	Soil contamination from former Magazine 16-34
SWMU	16-024(e)	Soil contamination from former Magazine 16-33
AOC	16-024(f)	Soil contamination from former Magazine 16-493
AOC	16-024(g)	Soil contamination from former Magazine 16-494
AOC	16-024(h)	Soil contamination from former Magazine 16-497
AOC	16-024(i)	Soil contamination from former Magazine 16-64
AOC	16-024(j)	Soil contamination from former Magazine 16-65
AOC	16-024(k)	Soil contamination from former Magazine 16-57
AOC	16-024(l)	Soil contamination from former Magazine 16-72
AOC	16-024(m)	Soil contamination from former Magazine 16-66
AOC	16-024(n)	Soil contamination from former Magazine 16-84
AOC	16-024(o)	Soil contamination from former Magazine 16-67
AOC	16-024(p)	Soil contamination from former Magazine 16-70
AOC	16-024(q)	Soil contamination from former Magazine 16-71
AOC	16-024(r)	Soil contamination from former Magazine 16-68
AOC	16-024(s)	Soil contamination from former Magazine 16-60
AOC	16-024(t)	Soil contamination from former Magazine 16-464
AOC	16-024(u)	Soil contamination from former Magazine 16-481
AOC	16-024(v)	Soil contamination from former Magazine 16-62
SWMU	16-025(a)	Soil contamination from former Radiography Building 16-39
SWMU	16-025(a2)	Soil contamination from former HE casting Building 16-50
SWMU	16-025(b)	Soil contamination from former Radiography Building 16-40
SWMU	16-025(b2)	Soil contamination from former HE casting Building 16-52
SWMU	16-025(c2)	Soil contamination from former Building 16-56
SWMU	16-025(d)	Soil contamination from former Equipment and Control Building 16-94
SWMU	16-025(d2)	Soil contamination from former Sturcture 16-480
SWMU	16-025(e)	Soil contamination from former HE Machining building 16-31
SWMU	16-025(f)	Soil contamination from former HE Machining building 16-32
SWMU	16-025(g)	Soil contamination from former HE machining Building 16-95
SWMU	16-025(h)	Soil contamination from former HE Machining Building 16-96

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	16-025(i)	Soil contamination from former HE Machining Building 16-97
SWMU	16-025(j)	Soil contamination from former HE Machining Building 16-98
SWMU	16-025(k)	Soil contamination from former HE Powder Inspection Building 16-25
SWMU	16-025(l)	Soil contamination from former HE Casting Building 16-26
SWMU	16-025(m)	Soil contamination from former X-ray hutment 16-495
SWMU	16-025(n)	Soil contamination from former X-ray hutment 16-499
SWMU	16-025(o)	Soil contamination from former X-ray hutment 16-500
SWMU	16-025(p)	Soil contamination from former HE processing Building 16-44
SWMU	16-025(q)	Soil contamination from former HE processing Building 16-45
SWMU	16-025(r)	Soil contamination from former Rest House16-46
SWMU	16-025(s)	Soil contamination from former Radium Source Building 16-48
SWMU	16-025(t)	Soil contamination from former HE equipment casting Building 16-38
SWMU	16-025(u)	Soil contamination from former HE processing Building 16-42
SWMU	16-025(v)	Soil contamination from former HE processing Building 16-81
SWMU	16-025(w)	Soil contamination from former Building 16-81
SWMU	16-025(x)	Soil contamination from former Electroplating Laboratory 16-100
SWMU	16-025(y)	Soil contamination from former HE grinding facility 16-55
SWMU	16-025(z)	Soil contamination from former HE explosives Testing Building 16-37
SWMU	16-026(a)	Outfall from Building 16-370
SWMU	16-026(b)	Outfall from Structure 16-307
SWMU	16-026(b2)	Outfall from Building 16-202
SWMU	16-026(c)	Outfall from Building 16-305 Drain
SWMU	16-026(c2)	Outfall from Building 16-462
SWMU	16-026(d)	Outfall from Building 16-303
SWMU	16-026(e)	Outfall from Structure 16-301
SWMU	16-026(f)	Outfall from Building 16-308
SWMU	16-026(g)	Outfall from Structure 16-280
SWMU	16-026(h2)	Outfall associated with Building 16-360
SWMU	16-026(i)	Outfall from former Building 16-224
SWMU	16-026(j)	Outfall from former Building 16-226
SWMU	16-026(j2)	Outfall from former Building 16-345
SWMU	16-026(k2)	Outfall from fomer Building 16-260
SWMU	16-026(l)	Outfalls associated with former Building 16-220
SWMU	16-026(m)	Outfall associated with former Building 16-92
SWMU	16-026(n)	Outfall associated with former Building 16-91
SWMU	16-026(o)	Outfall associated with former Building 16-90
SWMU	16-026(p)	Outfall associated with former Building 16-89
SWMU	16-026(q)	Outfall from former Building 16-27
SWMU	16-026(r)	Outfall from Building 16-180 Drain
SWMU	16-026(s)	Outfall from Building 16-5
SWMU	16-026(u)	Outfallfrom former Building 16-195 Drain

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SWMUs and AOCs Requiring Corrective Action

SWMU	16-026(v)	Outfall from Building 16-460
SWMU	16-026(w)	Outfall from former Building 16-45
SWMU	16-026(y)	Outfall from Building 16-411
SWMU	16-026(z)	Outfall from Building 16-306
AOC	16-027(a)	Transformer
AOC	16-027(b)	Transformer
AOC	16-027(c)	Transformer
AOC	16-027(d)	Transformer
SWMU	16-028(a)	Drainage Channel
SWMU	16-028(b)	Outfall from Building 16-370
SWMU	16-028(c)	Outfall from former Building 16-220
SWMU	16-028(d)	Outfall from former Building 16-202
SWMU	16-028(e)	Outfall associated with Building 16-450
SWMU	16-029(a)	Sumps
SWMU	16-029(a2)	Sump
SWMU	16-029(b)	Sumps
SWMU	16-029(b2)	Sump
SWMU	16-029(c)	Sumps
SWMU	16-029(c2)	Sumps
SWMU	16-029(d)	Sumps
SWMU	16-029(d2)	Sumps
SWMU	16-029(e)	Sump
SWMU	16-029(e2)	Sumps
SWMU	16-029(f)	Sump
SWMU	16-029(f2)	Soil contamination from former Sump and Outfall from former Building 16-24
SWMU	16-029(g)	Former Sump
SWMU	16-029(g2)	Pit
SWMU	16-029(h)	Outfall from former Building 16-478
SWMU	16-029(h2)	Soil contamination from former manhole associated with former Buildings 16-95, -96, -97, -98
SWMU	16-029(i)	Sump
SWMU	16-029(j)	Sump
SWMU	16-029(k)	Sumps
SWMU	16-029(l)	Sumps
SWMU	16-029(m)	Soil contamination from former Sump
SWMU	16-029(n)	Soil contamination from former Sump
SWMU	16-029(o)	Soil contamination from former Sump
SWMU	16-029(p)	Soil contamination from former Sump
SWMU	16-029(q)	Former Sump
SWMU	16-029(r)	Outfall from former Building 16-25
SWMU	16-029(s)	Sumps
SWMU	16-029(t)	Sumps

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	16-029(u)	Sumps
SWMU	16-029(v)	Sump
SWMU	16-029(w)	Soil contamination from former Sump
SWMU	16-029(x)	Sump
SWMU	16-029(y)	Sump
SWMU	16-029(z)	Sumps
SWMU	16-030(a)	Outfall from former Building 16-344
SWMU	16-030(c)	Outfall from former Building 16-222
AOC	16-030(d)	Outfall from former Building 16-280
AOC	16-030(g)	Outfall from Building 16-380
SWMU	16-030(h)	Outfalls from Building 16-430
SWMU	16-031(a)	Outfall from cooling tower 16-372
SWMU	16-031(b)	Outfall from former cooling tower 16-262
SWMU	16-031(c)	Outfall associated with former Building 16-515
SWMU	16-031(d)	Outfall from former cooling tower 16-28
SWMU	16-031(e)	Outfall from Building 16-560
SWMU	16-031(f)	Outfall from Building 16-21
SWMU	16-031(h)	Outfall from former Building 16-478
SWMU	16-032(a)	Sumps
SWMU	16-032(c)	Sumps, drainlines, and outfall from former Building 16-26
AOC	16-033(a)	Soil contamination from former Underground tank
AOC	16-033(b)	Soil contamination from former Underground tank
AOC	16-033(c)	Soil contamination from former Underground tank
AOC	16-033(d)	Soil contamination from former Underground tank
AOC	16-033(e)	Underground tanks
AOC	16-033(f)	Soil contamination from former Underground tank
AOC	16-033(g)	Soil contamination from former Underground tank
AOC	16-033(h)	Soil contamination from former Underground tank
AOC	16-033(i)	Soil contamination from former Underground tank
AOC	16-033(j)	Soil contamination from former Underground tank
AOC	16-033(k)	Underground storage tank
SWMU	16-034(a)	Soil contamination from former Laboratory 16-24
SWMU	16-034(b)	Soil contamination from former Building 16-490
SWMU	16-034(c)	Soil contamination from former Storage Hut 16-491
SWMU	16-034(d)	Soil contamination from former Machine Shop 16-492
SWMU	16-034(e)	Soil contamination from former Storage Building 16-496
SWMU	16-034(f)	Soil contamination from former Laboratory 16-498
SWMU	16-034(h)	Soil contamination from former Plumbing and Electrical Shop, 16-137
SWMU	16-034(i)	Soil contamination from former Laboratory 16-141
SWMU	16-034(j)	Soil contamination from former Structure
SWMU	16-034(k)	Soil contamination from former Laboratory 16-140
SWMU	16-034(l)	Soil contamination from former Equipment and Control Building

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SWMUs and AOCs Requiring Corrective Action

		16-47
SWMU	16-034(m)	Soil contamination from former Laboratory 16-86
SWMU	16-034(n)	Soil contamination from former Laboratory 16-83
SWMU	16-034(o)	Soil contamination from former Laboratory 16-49
SWMU	16-034(p)	Soil contamination from former Laboratory 16-41
SWMU	16-035	Soil contamination from former Control Bunker 16-2 (Renumbered to 16-476)
SWMU	16-036	Soil contamination from Battleship Bunkers 16-477 and -478
AOC	16-037	Aboveground Tank – Existence not verified
AOC	C-16-001	Building (former Platform)
AOC	C-16-002	Soil contamination from former Cooling Tower 16-262
AOC	C-16-005	Soil contamination from former HE Processing Building 16-53
AOC	C-16-006	Soil contamination from former Solvent Storage Building16-148
AOC	C-16-008	Soil contamination associated with former Structure 16-136
AOC	C-16-009	Soil contamination associated with former Building 16-134
AOC	C-16-010	Soil contamination associated with former Building 16-135
AOC	C-16-011	Soil contamination from former Paint Shop TA-16-132
AOC	C-16-012	Soil contamination associated with former Building 16-138
AOC	C-16-013	Soil contamination associated with former Storage Area
AOC	C-16-014	Soil contamination associated with former Structure 16-144
AOC	C-16-015	Soil contamination associated with former Structure 16-143
AOC	C-16-016	Soil contamination associated with former Structure 16-142
AOC	C-16-017	Soil contamination associated with former Structure 16-502
AOC	C-16-018	Soil contamination associated with former Aboveground Tank
AOC	C-16-019	Soil contamination associated with former Structure 16-19
AOC	C-16-020	Soil contamination associated with former Structure 16-22
SWMU	C-16-025	Soil contamination associated with former Structure 16-8
SWMU	C-16-026	Soil contamination associated with former Structure 16-6
AOC	C-16-028	Soil contamination from Instrument Shop 16-5
AOC	C-16-030	Soil contamination associated with former Tank Housing 16-181
AOC	C-16-031	Soil contamination associated with former Diesel Unit Building 16-182
AOC	C-16-034	Soil contamination associated with Aboveground Tank
AOC	C-16-035	Soil contamination associated with Aboveground Tank
AOC	C-16-036	Soil contamination associated with former Septic System
AOC	C-16-041	Soil contamination associated with former Building 16-198
AOC	C-16-044	Soil contamination associated with former Manhole
AOC	C-16-046	Soil contamination associated with former Manhole
AOC	C-16-047	Soil contamination associated with former Transport area
AOC	C-16-049	Soil contamination associated with former Building 16-475
AOC	C-16-050	Soil contamination associated with former Building 16-482
AOC	C-16-051	Soil contamination associated with former Transport area
AOC	C-16-058	Soil contamination associated with former Transport area

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	C-16-060	Soil contamination associated with former Storage Structure 16-479
AOC	C-16-061	Soil contamination associated with Building (Former platform)
AOC	C-16-062	Soil contamination associated with former Electrical Manhole
AOC	C-16-063	Soil contamination associated with former Electrical Manhole
AOC	C-16-064	Drum storage area
AOC	C-16-065	Container storage area
AOC	C-16-067	Storage area
AOC	C-16-068	Soil contamination associated with former Building 16-522
AOC	C-16-069	Soil contamination associated with former Trailer 16-87
AOC	C-16-070	Underground tank
AOC	C-16-071	Spill/Non-intentional release area
AOC	C-16-072	Tank – Existence not verified
AOC	C-16-073	Underground Storage Tank
AOC	C-16-074	Storage Area
AOC	C-16-075	Spill location near Building 16-340
AOC	C-16-076	Magazine Area A (former TA-28)
AOC	C-16-077	Magazine Area B (former TA-29)
TA-18		
SWMU	18-001(a)	Lagoons
SWMU	18-001(b)	Drainlines
SWMU	18-001(c)	Sump
SWMU	18-002(a)	Firing site
SWMU	18-002(b)	Firing site
AOC	18-002(c)	Former Drop Tower
SWMU	18-003(a)	Settling Pit
SWMU	18-003(b)	Septic System
SWMU	18-003(c)	Septic system
SWMU	18-003(d)	Septic system
SWMU	18-003(e)	Septic system
SWMU	18-003(f)	Septic system
SWMU	18-003(g)	Septic system
SWMU	18-003(h)	Septic system
SWMU	18-004(a)	Waste line
SWMU	18-004(b)	Soil contamination from former Tanks and Pit
SWMU	18-005(a)	Contaminated soil from former magazine 18-15
AOC	18-006	Storage Pipe
AOC	18-008	Former Underground tank
AOC	18-010(b)	Outfall
AOC	18-010(c)	Outfall
AOC	18-010(d)	Outfall
AOC	18-010(e)	Outfall
AOC	18-010(f)	Outfall from Building 18-32

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	18-011	Soil contamination from former Building 18-22
SWMU	18-012(a)	Outfall from Building 18-116
SWMU	18-012(b)	Outfall from Buildings 18-30 and -31
AOC	18-012(c)	Sump and drainlines
AOC	18-013	Waste Tank
TA-19		
SWMU	19-001	Septic System
SWMU	19-002	Surface Disposal Site
SWMU	19-003	Drainline and Outfall Associated with former Building 19-05
TA-20		
SWMU	20-001(a)	Landfill
SWMU	20-001(b)	Landfill
SWMU	20-001(c)	Firing Site
SWMU	20-002(a)	Firing Site
SWMU	20-002(b)	Landfill
SWMU	20-002(c)	Firing site
SWMU	20-002(d)	Firing site
AOC	20-003(b)	Firing site
AOC	20-003(c)	Firing site
AOC	20-004	Former Septic system
SWMU	20-005	Septic tank
TA-21		
AOC	21-001	Container Storage Area
SWMU	21-002(a)	Container Storage Area
AOC	21-002(b)	Container Storage
SWMU	21-003	Container Storage Area
AOC	21-004(a)	Aboveground tank
SWMU	21-004(b)	Aboveground tank
SWMU	21-004(c)	Aboveground tank
SWMU	21-006(a)	Underground Seepage Pit
SWMU	21-006(b)	Underground Seepage pit
SWMU	21-006(c)	Underground Seepage pit
SWMU	21-006(d)	Underground Seepage pit
SWMU	21-006(e)	Underground Seepage pit
AOC	21-006(f)	Underground Seepage pit
SWMU	21-007	Soil contamination from former incinerators
AOC	21-009	Soil contamination associated with former Waste treatment laboratory
SWMU	21-010(a)	Soil contamination associated with former Waste treatment facility 21-35
SWMU	21-010(b)	Soil contamination from former manhole
SWMU	21-010(c)	Soil contamination from former Underground Tank
SWMU	21-010(d)	Soil contamination from former Underground Tank

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SWMUs and AOCs Requiring Corrective Action

SWMU	21-010(e)	Soil contamination from former Septic Tank
SWMU	21-010(f)	Soil contamination from former Grit Chamber
SWMU	21-010(g)	Soil contamination from former Aboveground Tank
SWMU	21-010(h)	Soil contamination from former Manhole
SWMU	21-011(a)	Waste Treatment Facility 21-257
SWMU	21-011(b)	Sump
SWMU	21-011(c)	Tank and Sump
SWMU	21-011(d)	Holding Tank
SWMU	21-011(e)	Holding Tank
SWMU	21-011(f)	Holding Tank
SWMU	21-011(g)	Holding Tank
AOC	21-011(h)	Soil contamination from former storage tank
SWMU	21-011(i)	Storage Tank
SWMU	21-011(j)	Storage Tank
SWMU	21-011(k)	Outfall from Building 21-257
SWMU	21-012(b)	Dry well
SWMU	21-013(a)	Surface Disposal Site
SWMU	21-013(b)	Surface Disposal Site
SWMU	21-013(c)	Surface disposal site
SWMU	21-013(d)	Surface disposal site
SWMU	21-013(e)	Surface disposal site
AOC	21-013(f)	Surface disposal site
AOC	21-013(g)	Surface disposal site
SWMU	21-014	Material disposal area (MDA) A
SWMU	21-015	Material disposal area (MDA) B
SWMU	21-016(a)	Absorption Beds (MDA T)
SWMU	21-016(b)	Soil contamination from a former Storage Pit (MDA T)
SWMU	21-016(c)	Shafts (MDA T)
SWMU	21-017(a)	Absorption Bed (MDA U)
SWMU	21-017(b)	Absorption Bed (MDA U)
SWMU	21-017(c)	Soil contamination from former distribution box (MDA U)
SWMU	21-018(a)	Absorption Beds (MDA V)
SWMU	21-018(b)	Soil contamination from former Laundry Facility (MDA V)
SWMU	21-021	Soil contamination from Stack Emissions
SWMU	21-022(a)	Sump and waste lines
SWMU	21-022(b)	Soil contamination from former Sump and Waste line
SWMU	21-022(c)	Soil contamination from former Sump and Waste line
SWMU	21-022(d)	Soil contamination from former Sump and Waste line
SWMU	21-022(e)	Soil contamination from former Sump and Waste line
SWMU	21-022(f)	Sump and Waste line
SWMU	21-022(g)	Soil contamination from former Sump and Waste line
SWMU	21-022(h)	Sump and Waste line
SWMU	21-022(i)	Sump and Waste line

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SWMUs and AOCs Requiring Corrective Action

SWMU	21-022(j)	Former Sump and Waste line
SWMU	21-023(a)	Soil contamination from former Septic System
SWMU	21-023(b)	Soil contamination from former Septic System
SWMU	21-023(c)	Septic System
SWMU	21-023(d)	Soil contamination from former Septic System
SWMU	21-024(a)	Septic system
SWMU	21-024(b)	Septic system
SWMU	21-024(c)	Septic system
SWMU	21-024(d)	Septic system
SWMU	21-024(e)	Septic system
SWMU	21-024(f)	Former Septic system
SWMU	21-024(g)	Septic system
SWMU	21-024(h)	Septic system
SWMU	21-024(i)	Former Septic system
SWMU	21-024(j)	Septic system
SWMU	21-024(k)	Septic system
SWMU	21-024(l)	Outfall from Building 21-21
SWMU	21-024(n)	Drainline
SWMU	21-024(o)	Drainline
SWMU	21-026(a)	Sewage treatment plant
SWMU	21-026(b)	Sand Filter/Sludge drying beds
AOC	21-026(c)	Dosing Siphon Chamber
AOC	21-026(d)	Outfall from Building 21-227
SWMU	21-027(a)	Drainage System
SWMU	21-027(c)	Outfall from former Building 21-6
SWMU	21-027(d)	Soil contamination from former drainline
AOC	21-028(a)	Container storage Area
AOC	21-028(c)	Container Storage Area
AOC	21-028(d)	Container Storage Area
SWMU	21-029	Former DP Tank Farm
AOC	C-21-001	Spill/Non-intentional release area
AOC	C-21-005	Spill/Non-intentional release area
AOC	C-21-006	Spill/Non-intentional release area
AOC	C-21-007	Spill/Non-intentional release area
AOC	C-21-009	Spill/Non-intentional release area
AOC	C-21-012	Spill/Non-intentional release area
AOC	C-21-027	Former structure 21-143
AOC	C-21-033	Spill/Non-intentional release area
AOC	C-21-034	Soil contamination associated with former Tank
AOC	C-21-035	Soil contamination associated with former Aboveground tank
AOC	C-21-036	Soil contamination associated with former Aboveground tank
AOC	C-21-037	Soil contamination associated with former Aboveground tank

Table K-1

SWMUs and AOCs Requiring Corrective Action

TA-22		
SWMU	22-010(a)	Septic system
SWMU	22-010(b)	Septic system
SWMU	22-011	Disposal pit
SWMU	22-012	Decontamination pad
SWMU	22-014(a)	Sump System
SWMU	22-014(b)	Sump System
SWMU	22-015(a)	Drainlines and Dry Wells
SWMU	22-015(b)	Sump and outfall
SWMU	22-015(c)	Outfall from Building 22-52
SWMU	22-015(d)	Drainline and outfall associated with Building 22-1
SWMU	22-015(e)	Sump
SWMU	22-016	Septic system
TA-26		
SWMU	26-001	Surface disposal site
SWMU	26-002(a)	Soil contamination from former acid sump system
SWMU	26-002(b)	Drainline associated with Vault 26-1
SWMU	26-003	Septic tank
TA-27		
SWMU	27-002	Firing sites
SWMU	27-003	Bazooka impact area (Same as AOC 36-009)
TA-31		
SWMU	31-001	Soil Contamination from former Septic Tank
TA-32		
SWMU	32-001	Soil contamination from former Incinerator
SWMU	32-002(a)	Soil contamination from former septic tank
SWMU	32-002(b)	Soil contamination from former septic tank
SWMU	32-003	Former Transformer Station
SWMU	32-004	Drainline and outfall from former Building 32-3
TA-33		
SWMU	33-001(a)	Disposal Pit (MDA E)
SWMU	33-001(b)	Disposal Pit (MDA E)
SWMU	33-001(c)	Disposal Pit (MDA E)
SWMU	33-001(d)	Disposal Pit (MDA E)
SWMU	33-001(e)	Soil contamination from underground chamber and shaft (MDA E)
SWMU	33-002(a)	Septic System (MDA K)
SWMU	33-002(b)	Sump (MDA K)
SWMU	33-002(c)	Sump (MDA K)
SWMU	33-002(d)	Drainline and outfall from former Building 33-86 (MDA K)
SWMU	33-002(e)	Drainline and outfall from former Building 33-86 (MDA K)
SWMU	33-003(a)	Soil contamination from former underground chamber and shaft (MDA D)

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	33-003(b)	Soil contamination from former underground chamber and shaft (MDA D)
SWMU	33-004(a)	Septic System
SWMU	33-004(b)	Septic system
SWMU	33-004(c)	Septic system
SWMU	33-004(d)	Septic system
SWMU	33-004(g)	Drainline and outfall associated with Building 33-16
SWMU	33-004(h)	Drainline and outfall associated with Building 33-20
SWMU	33-004(i)	Drainline and outfall associated with Building 33-39
SWMU	33-004(j)	Outfall from Building 33-26
SWMU	33-004(k)	Drainline and Outfall Assocaited with Structure 33-87
SWMU	33-004(m)	Septic Tank and Leach Field
SWMU	33-005(a)	Soil contamination from former Septic System
SWMU	33-005(b)	Soil Contamination from former Drainline
SWMU	33-005(c)	Soil Contamination from former Waste Line and Leach Field
SWMU	33-006(a)	Firing site
SWMU	33-006(b)	Firing site
SWMU	33-007(a)	Firing site
SWMU	33-007(b)	Firing Sites
SWMU	33-007(c)	Firing Sites
SWMU	33-008(a)	Landfill
SWMU	33-008(b)	Landfill
SWMU	33-008(c)	Landfill
SWMU	33-009	Surface disposal site
SWMU	33-010(a)	Surface disposal site
SWMU	33-010(b)	Surface disposal site
SWMU	33-010(c)	Surface disposal site
SWMU	33-010(d)	Surface disposal site
SWMU	33-010(f)	Surface Disposal Site (MDA K)
SWMU	33-010(g)	Surface disposal site
SWMU	33-010(h)	Surface disposal site
SWMU	33-011(a)	Soil contamination from former Storage Area
AOC	33-011(b)	Storage Area
SWMU	33-011(c)	Storage Area
SWMU	33-011(d)	Storage Area
SWMU	33-011(e)	Storage Area
SWMU	33-012(a)	Drum storage area
SWMU	33-013	Drum storage area
SWMU	33-014	Burn Site
SWMU	33-015	Incinerator
SWMU	33-016	Sump
SWMU	33-017	Operationsl release
AOC	C-33-001	Former Transformer

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	C-33-002	Former Transformer
AOC	C-33-003	Soil contamination
TA-35		
SWMU	35-002	Material disposal area (MDA X)
SWMU	35-003(a)	Former underground storage tank
SWMU	35-003(b)	Former underground storage tank
SWMU	35-003(c)	Former underground storage tank
SWMU	35-003(d)	Soil contamination from former Building 35-10
SWMU	35-003(e)	Soil contamination from former storage tank
SWMU	35-003(f)	Soil contamination from former flocculator tank
SWMU	35-003(g)	Soil contamination from former Regenerate tank
SWMU	35-003(h)	Soil contamination from former Retention tank
SWMU	35-003(j)	Soil contamination from former storage tank
SWMU	35-003(k)	Soil contamination from former storage tank
SWMU	35-003(l)	Soil Contamination from former Pump Pit
SWMU	35-003(m)	Soil contamination from former Sludge tank
SWMU	35-003(n)	Former phase separator pit
SWMU	35-003(o)	Soil contamination from former manhole
SWMU	35-003(p)	Former air-filter building
SWMU	35-003(q)	Soil contamination from former pipe trench
AOC	35-003(r)	Outfall associated with former Building 35-10
AOC	35-003(misc)	Soil contamination from former Industrial Waste lines
SWMU	35-004(a)	Container Storage Area
SWMU	35-004(b)	Container Storage Area
SWMU	35-004(g)	Container Storage Area
SWMU	35-004(h)	Container storage area
AOC	35-004(m)	Container storage area
SWMU	35-008	Surface disposal site
SWMU	35-009(a)	Septic system
SWMU	35-009(b)	Septic system
SWMU	35-009(c)	Septic system
SWMU	35-009(d)	Septic system
SWMU	35-009(e)	Drainline
SWMU	35-010(a)	Wastewater Treatment Lagoons
SWMU	35-010(b)	Wastewater Treatment Lagoons
SWMU	35-010(c)	Wastewater Treatment Lagoons
SWMU	35-010(d)	Filter Beds
AOC	35-010(e)	Discharge headwall and sand filter associated with Structure 35-215 (includes 35-010(misc))
SWMU	35-013(a)	Sumps
SWMU	35-013(b)	Sumps
SWMU	35-013(c)	Sumps
SWMU	35-014(a)	Operational release from former Building 35-7

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	35-014(b)	Soil contamination from leaking drum
AOC	35-014(d)	Soil contamination from Valve system for former storage tanks
SWMU	35-014(e)	Spill/Non-intentional release area
AOC	35-014(e2)	Soil contamination associated with overflows from waste oil impoundment
AOC	35-014(f)	Soil contamination from oil-handling system
SWMU	35-014(g)	Spill/Non-intentional release area
AOC	35-014(g2)	Soil contamination from former leaking containers
AOC	35-014(g3)	Spill/Non-intentional release area
SWMU	35-015(a)	Soil contamination from former tank farm and waste-oil treatment facility
SWMU	35-015(b)	Soil contamination from former waste oil treatment facility
SWMU	35-016(a)	Drain and outfall from Building 35-34
AOC	35-016(b)	Drain and Outfall from Building 35-87
SWMU	35-016(c)	Drain and Outfall from Building 35-67
SWMU	35-016(d)	Drain and Outfall from Building 35-46
AOC	35-016(e)	Drain and Outfall from Building 35-85
AOC	35-016(f)	Storm drain and Outfall
AOC	35-016(g)	Drain and Outfall from Building 35-213
AOC	35-016(h)	Storm drains and Outfall associated with Building 35-213
SWMU	35-016(i)	Storm drains and Outfall
AOC	35-016(j)	Storm drain and Outfall associated with Building 35-125
SWMU	35-016(k)	Drainline and outfall from Building 35-29
AOC	35-016(l)	Storm drains
SWMU	35-016(m)	Drain lines and Outfall associated with Cooling Tower 35-33
AOC	35-016(n)	Storm drain and Outfall associated with Building 35-86
SWMU	35-016(o)	Storm Drains and outfalls
SWMU	35-016(p)	Outfall from Building 35-27
SWMU	35-016(q)	Storm waster collection basins
AOC	35-018(a)	Former Transformer
AOC	C-35-007	Soil contamination associated with WWTP/Sand Filters
TA-36		
SWMU	36-001	Material disposal area (MDA) AA
SWMU	36-002	Former Sump
SWMU	36-003(a)	Septic system
SWMU	36-003(b)	Septic system, I-J Site
AOC	36-004(a)	Firing site
AOC	36-004(b)	Firing site
AOC	36-004(c)	Firing site
SWMU	36-004(d)	Firing site
AOC	36-004(e)	Firing site
SWMU	36-005	Surface Storage Area
SWMU	36-006	Surface Disposal Site

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	36-008	New SWMU-Surface disposal Area located bear Building 36-1
AOC	C-36-001	Containment vessel
SWMU	C-36-003	Outfall from Building 36-1
AOC	C-36-006(e)	I-J Firing Site, projectile test area
TA-39		
SWMU	39-001(a)	Landfill
SWMU	39-001(b)	Disposal pits (MDA Y)
SWMU	39-002(a)	Storage area
AOC	39-002(b)	Storage area
AOC	39-002(c)	Storage area
AOC	39-002(d)	Storage area
AOC	39-002(e)	Storage area
AOC	39-002(f)	Storage area
SWMU	39-004(a)	Firing site
SWMU	39-004(b)	Firing site
SWMU	39-004(c)	Firing site TA-39-6
SWMU	39-004(d)	Firing site TA-39-57
SWMU	39-004(e)	Firing site
SWMU	39-005	Potential soil contamination associated with former Seepage pit
SWMU	39-006(a)	Septic system
SWMU	39-007(a)	Storage area
AOC	39-007(d)	Storage area
SWMU	39-008	Disposal Trenches
SWMU	39-010	Excavated soil pile
TA-40		
SWMU	40-001(b)	Septic system
SWMU	40-001(c)	Septic system
AOC	40-003(b)	Burning area
SWMU	40-004	Operational release
SWMU	40-005	Sump
SWMU	40-006(a)	Firing site
SWMU	40-006(b)	Firing site
SWMU	40-006(c)	Firing site
AOC	40-007(a)	Storage area
AOC	40-007(b)	Storage area
AOC	40-007(c)	Storage area
AOC	40-007(d)	Storage area
AOC	40-007(e)	Storage area
SWMU	40-009	Landfill
SWMU	40-010	Surface disposal site
TA-41		
SWMU	41-001	Septic Tank
SWMU	41-002(a)	Imhoff Tank

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	41-002(b)	Chlorine Contact Tank
SWMU	41-002(c)	Sludge Drying Bed
AOC	41-003	Sump
AOC	C-41-004	Storm drains
TA-42		
SWMU	42-001(a)	Soil contamination from former Incinerator Building 42-1
SWMU	42-001(b)	Soil contamination from former Ash storage tank
SWMU	42-001(c)	Soil contamination from former Ash storage tank
AOC	42-002(a)	Soil contamination from former Vacublaster and storage area
SWMU	42-002(b)	Soil contamination from former Decontamination area
SWMU	42-003	Soil contamination from former Septic System
TA-43		
SWMU	43-001(a)	Waste lines
AOC	43-001(a2)	Waste lines
SWMU	43-001(b)	Outfall
AOC	43-001(b2)	Outfall from Building 43-1
SWMU	43-002	Former Incinerator
AOC	C-43-001	Storm Drain associated with Building 43-1 Loading Dock
TA-45		
SWMU	45-001	Soil contamination from former RLW Treatment Plant
SWMU	45-002	Soil contamination from former Decontamination Facility
SWMU	45-003	Soil contamination from former Waste lines
SWMU	45-004	Sanitary sewer outfall
AOC	C-45-001	Soil contamination from spill in parking lot south of former RLW Treatment Plant
TA-46		
SWMU	46-002	Surface Impoundment
SWMU	46-003(a)	Septic system
SWMU	46-003(b)	Septic system
SWMU	46-003(c)	Septic system
SWMU	46-003(d)	Septic system
SWMU	46-003(e)	Septic system
SWMU	46-003(f)	Septic system
SWMU	46-003(g)	Septic system
SWMU	46-003(h)	Outfall from Building 46-77
SWMU	46-004(a)	Waste line
SWMU	46-004(a2)	Outfall associated with Building 46-31
SWMU	46-004(b)	Soil contamination associated with former tank
SWMU	46-004(b2)	Outfall associated with Building 46-1
SWMU	46-004(c)	Dry Well
SWMU	46-004(c2)	Outfall from Building 46-1
SWMU	46-004(d)	Dry well
SWMU	46-004(d2)	Soil Contamination from Stack Emissions

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	46-004(e)	Dry well
AOC	46-004(e2)	Outfall from Building 46-42
SWMU	46-004(f)	Drain associated with Building 46-24
AOC	46-004(f2)	Outfall from Building 46-31
SWMU	46-004(g)	Drains and Exhaust System
SWMU	46-004(h)	Drains and Exhaust System
SWMU	46-004(m)	Outfall from Building 46-30
SWMU	46-004(p)	Dry Well
SWMU	46-004(q)	Outfall
SWMU	46-004(r)	Outfall from Building 46-24
SWMU	46-004(s)	Outfall associated with Building 46-1
SWMU	46-004(t)	Outfall from Building 46-88
SWMU	46-004(u)	Outfall from Building 46-87
SWMU	46-004(v)	Outfall from Building 46-87
SWMU	46-004(w)	Outfall from Building 46-59
SWMU	46-004(x)	Outfall from Building 46-31
SWMU	46-004(y)	Outfall from Building 46-31
SWMU	46-004(z)	Outfall from Building 46-31
SWMU	46-005	Surface impoundment
SWMU	46-006(a)	Operational release
SWMU	46-006(b)	Former storage shed
SWMU	46-006(c)	Operational release
SWMU	46-006(d)	Operational release
SWMU	46-006(f)	Storage area
SWMU	46-006(g)	Storage area
SWMU	46-007	Operational release
SWMU	46-008(a)	Storage area
SWMU	46-008(b)	Storage area
SWMU	46-008(d)	Storage area
SWMU	46-008(e)	Storage area
SWMU	46-008(f)	Storage area
SWMU	46-008(g)	Storage area
SWMU	46-009(a)	Landfill
SWMU	46-009(b)	Surface disposal site
SWMU	46-010(d)	Storage Area
AOC	C-46-001	Spill/Non-intentional release area
AOC	C-46-002	Soil contamination from stack emissions – Non-intentional release
AOC	C-46-003	Soil contamination from stack emissions – Non-intentional release
TA-48		
AOC	48-001	Air exhaust system
SWMU	48-002(a)	Container storage area

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	48-002(b)	Container storage area
AOC	48-002(e)	Container storage
SWMU	48-003	Soil contamination associated with former septic system
SWMU	48-004(a)	Sumps
SWMU	48-004(b)	Tanks
SWMU	48-004(c)	Tanks
SWMU	48-005	Waste lines
SWMU	48-007(a)	Outfall associated with Building 48-1
SWMU	48-007(b)	Outfall from Building 48-1
SWMU	48-007(c)	Outfall from Building 48-1
SWMU	48-007(d)	Outfall associated with Building 48-1
SWMU	48-007(f)	Outfall from Building 48-46
SWMU	48-010	Surface Impoundment
AOC	48-011	Disposal shaft
SWMU	48-012	Soil Contamination
TA-49		
SWMU	49-001(a)	Shafts at Area 1 (MDA AB)
SWMU	49-001(b)	Shafts at Area 2 (MDA AB)
SWMU	49-001(c)	Shafts at Area 2A (MDA AB)
SWMU	49-001(d)	Shafts at Area 2B (MDA AB)
SWMU	49-001(e)	Shafts at Area 3 (MDA AB)
SWMU	49-001(f)	Shafts at Area 4 (MDA AB)
SWMU	49-001(g)	Soil contamination (MDA AB)
AOC	49-002	Operational facility (Area 10 underground chamber)
SWMU	49-003	Leach field (Area 11 rad/chem and small shot area)
SWMU	49-004	Burn site and landfill (Area 6)
SWMU	49-005(a)	Landfill (east of Area 10)
AOC	49-005(b)	Landfill - Area 5
SWMU	49-006	Sump (Area 5)
AOC	49-008(a)	Soil contamination (Area 5)
AOC	49-008(b)	Soil contamination (Area 6)
AOC	49-008(c)	Soil contamination (Area 11)
AOC	49-008(d)	Firing sites (Bottle House area) soil contamination and underground chamber
TA-50		
SWMU	50-001(a)	Waste treatment facility
AOC	50-001(b)	Waste lines
SWMU	50-002(a)	Underground tanks
SWMU	50-002(b)	Vaulted underground tank
SWMU	50-002(c)	Vaulted underground tank
AOC	50-002(d)	Aboveground storage tank
SWMU	50-004(a)	Soil contamination from former waste lines
SWMU	50-004(b)	Soil contamination from former vault and Tanks

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	50-004(c)	Soil contamination from former Waste lines and Manholes
SWMU	50-006(a)	Operational release
SWMU	50-006(c)	Operational release
SWMU	50-006(d)	Outfall associated with Building 50-1
AOC	50-007	Former Incinerator complex
AOC	50-008	Reduction site
SWMU	50-009	Material disposal area (MDA C)
AOC	50-010	Decontamination facility
SWMU	50-011(a)	Soil contamination associated with former Septic system (includes SWMU 50-011(misc))
AOC	50-011(b)	Lift stations
AOC	C-50-001	Former Transformer
TA-51		
AOC	51-001	Former Septic system
TA-52		
SWMU	52-001(d)	Former facility equipment
SWMU	52-002(a)	Septic system
AOC	52-003(a)	Former Wastewater Treatment Plant
TA-53		
SWMU	53-001(a)	Storage area
SWMU	53-001(b)	Storage area
SWMU	53-002(a)	Former surface impoundment
SWMU	53-002(b)	Former surface impoundment
SWMU	53-005	Soil contamination from former disposal pit
SWMU	53-006(b)	Underground tank
SWMU	53-006(c)	Underground tank
SWMU	53-006(d)	Underground tank
SWMU	53-006(e)	Underground tank
SWMU	53-006(f)	Underground tank
SWMU	53-007(a)	Aboveground neutralizer tank
AOC	53-008	Storage area
AOC	53-009	Aboveground tanks
AOC	53-010	Container storage
AOC	53-012(e)	Outfall from Building 53-2
SWMU	53-013	Soil contamination – Lead storage site I
SWMU	53-014	Soil contamination – Lead storage site II
SWMU	53-015	Radioactive Liquid Waste Treatment System
TA-54		
SWMU	54-004	MDA H
SWMU	54-005	MDA J
SWMU	54-006	MDA L
SWMU	54-007(a)	Former Septic system (includes SWMU 54-007 (misc))

Table K-1

SWMUs and AOCs Requiring Corrective Action

AOC	54-007(d)	Former Septic system (includes SWMU 54-007(misc))
AOC	54-012(a)	Former drum compactor
SWMU	54-012(b)	Drum crusher
SWMU	54-013(b)	Vehicle Monitoring/Decontamination area (MDA G)
AOC	54-014(a)	Storage Shafts at MDA L
SWMU	54-014(b)	Pit 9 (MDA G)
SWMU	54-014(c)	Shafts 200-233 (MDA G)
SWMU	54-014(d)	Storage trenches A, B, C, and D (MDA G)
AOC	54-015(b)	Storage Area
SWMU	54-015(k)	Layer of TRU waste
AOC	54-016(b)	Sump
SWMU	54-017	Disposal Pits (MDA G)
SWMU	54-018	Disposal Pits (MDA G)
SWMU	54-019	Disposal Pits (MDA G)
SWMU	54-020	Disposal Shafts MDA G
TA-55		
SWMU	55-008	Sumps and tanks
TA-57		
AOC	57-001(b)	Former Settling ponds
AOC	57-001(c)	Former Settling ponds
AOC	57-002	Sludge pit
AOC	57-004(a)	Former Settling ponds
AOC	57-004(b)	Former Settling ponds
AOC	57-006	Former Drum and contents
AOC	57-007	Leach field
TA-59		
AOC	59-004	Outfall from Building 59-1
AOC	C-59-001	Transformer
TA-60		
SWMU	60-002	Storage area
AOC	60-004(b)	Storage area
AOC	60-004(c)	Storage area
AOC	60-004(d)	Storage area
AOC	60-004(e)	Storage area
AOC	60-004(f)	Storage area
SWMU	60-005(a)	Surface impoundment
SWMU	60-006(a)	Septic Ssytem
SWMU	60-007(a)	Operational Release
SWMU	60-007(b)	Operational Release
TA-61		
SWMU	61-002	Transformer storage area
SWMU	61-005	Landfill (Los Alamos municipal)
SWMU	61-006	Waste oil tank (renumbered from 00-002)

Table K-1

SWMUs and AOCs Requiring Corrective Action

SWMU	61-007	Soil contamination associated with transformer staging area
AOC	C-61-002	Subsurface contamination
TA-63		
SWMU	63-001(a)	Septic system
SWMU	63-001(b)	Septic system
TA-69		
SWMU	69-001	Two-Mile Incinerator Facility
TA-72		
AOC	72-001	Firing range
TA-73		
SWMU	73-001(a)	Landfill
SWMU	73-001(b)	Soil contamination from former waste oil pit
SWMU	73-001(c)	Bunkers
SWMU	73-001(d)	Landfill
SWMU	73-002	Incinerator Surface Disposal
AOC	73-003	Soil contamination from former Steam cleaning plant
SWMU	73-004(a)	Former septic tank
SWMU	73-004(b)	Former septic tank
SWMU	73-004(c)	Septic System
SWMU	73-004(d)	Soil contamination form former septic tank
SWMU	73-006	Airport Building Outfalls

Table K-2

SWMUs and AOCs
Corrective Action Complete With Controls

(At the time of permit issuance (XXXXX), this table has no entries.)

Table K-2

SWMUs and AOCs
Corrective Action Complete With Controls

Unit #	Unit Type	Date Corrective Action Completed	SWMU/AOC
+			

Table K-3

SWMUs and AOCs
Corrective Action Complete Without Controls

Unit #	Unit Description	Date Corrective Action Completed	SWMU/AOC
TA-0			
00-003	Container Storage, Western Steam Plant	9/5/2003	SWMU
00-004	Container Storage, 6th street warehouses	2/23/2006	AOC
00-005	Landfill	12/23/1998	SWMU
00-008	Surface disposal site	1/26/2005	AOC
00-010(a)	Surface disposal site	1/26/2005	AOC
00-010(b)	Surface disposal site, 6th street warehouses	2/23/2006	AOC
00-012	Underground Storage Tank, Western Steam Plant	9/5/2003	SWMU
00-016	Firing Range	11/9/2001	SWMU
00-024	Cistern (never located)	01/26/05	AOC
00-025	Landfill	01/26/05	AOC
00-026	Landfill	01/26/05	AOC
00-028(a)	Effluent discharge, golf course	9/5/2003	SWMU
00-028(b)	Effluent discharge, golf course	9/5/2003	SWMU
00-029(a)	Transformer	1/26/2005	AOC
00-029(b)	Transformer	1/26/2005	AOC
00-029(c)	Transformer	1/26/2005	AOC
00-030(c)	Septic system	1/26/2005	AOC
00-030(i)	Septic tank	09/05/03	AOC
00-030(k)	Septic System	12/6/2006	AOC
00-030(q)	Septic system – Land Transfer parcel (11/9/1995)	1/26/2005	AOC
00-032	Soil contamination beneath former motor pool (UST for used motor oil)	1/26/2005	AOC
00-033(b)	Soil Contamination from Drainlines	2/23/2006	AOC
00-034(a)	Landfill, eastern area	12/6/2006	AOC
00-035(a)	Surface disposal	1/26/2005	AOC
00-040	Underground Tank	1/26/2005	AOC
C-00-036(a)	Borrow pit 1, Bandelier NM	1/26/2005	AOC
C-00-036(b)	Borrow pit 2, Bandelier NM	1/26/2005	AOC
C-00-036(c)	Borrow pit 3, Bandelier NM	1/26/2005	AOC
C-00-036(d)	Borrow pit 4, Bandelier NM	1/26/2005	AOC
TA-1			
01-001(h)	Septic Tank 142	12/23/1998	SWMU
01-001(i)	Septic Tank 143	12/23/1998	SWMU
01-001(j)	Septic Tank 149	12/23/1998	SWMU
01-001(k)	Septic Tank 268	12/23/1998	SWMU
01-001(l)	Septic Tank 269	12/23/1998	SWMU
01-001(m)	Septic Tank 275	9/5/2003	SWMU
01-001(n)	Septic Tank 276	12/23/1998	SWMU
01-001(p)	Septic sytem,	1/26/2005	AOC
01-001(q)	Septic sytem	1/26/2005	AOC
01-001(r)	Septic sytem	1/26/2005	AOC
01-001(v)	Septic sytem	1/26/2005	AOC
01-001(w)	Septic sytem	1/26/2005	AOC
01-004(a)	Soil Contamination from former Incinerator	1/26/2005	AOC
01-004(b)	Soil Contamination from former Incinerator	1/26/2005	AOC
01-005	Soil Contamination from former Incinerator	1/26/2005	AOC
01-006(f)	Drainlines and outfall	1/26/2005	AOC
01-006(i)	Drainlines and outfall	1/26/2005	AOC
01-006(j)	Drainlines and outfall	1/26/2005	AOC
01-006(k)	Drainlines and outfall	1/26/2005	AOC

01-006(l)	Drainlines and outfall	1/26/2005	AOC
01-006(m)	Drainlines and outfall	1/26/2005	AOC
01-006(p)	Storm drain and outfall	1/26/2005	AOC
01-006(q)	Drainlines and outfall	1/26/2005	AOC
01-006(r)	Drainlines and outfall	1/26/2005	AOC
01-006(s)	Drainlines and outfall	1/26/2005	AOC
01-006(t)	Drainlines and outfall	1/26/2005	AOC
01-007(f)	Soil contamination associated with TA-1 Buildings and Structures	1/26/2005	AOC
01-007(g)	Soil contamination associated with TA-1 Buildings and Structures	1/26/2005	AOC
01-007(h)	Soil contamination associated with TA-1 Buildings and Structures	1/26/2005	AOC
01-007(i)	Soil contamination associated with TA-1 Buildings and Structures	1/26/2005	AOC
01-007(m)	Soil contamination associated with TA-1 Buildings and Structures	1/26/2005	AOC
01-007(n)	Soil contamination associated with TA-1 Buildings and Structures	1/26/2005	AOC
01-007(o)	Soil contamination associated with TA-1 Buildings and Structures	1/26/2005	AOC
01-007(p)	Soil contamination associated with TA-1 Buildings and Structures	1/26/2005	AOC
TA-2			
02-001	Open burning ground (doesn't exist)	1/26/2005	AOC
02-002	Storage area	1/26/2005	AOC
02-008(b)	Outfall from photo processing facility, 2-4	11/9/2001	SWMU
02-013	Storage area - SAA	1/26/2005	AOC
C-02-001	Metal nugget pile	1/26/2005	AOC
TA-3			
03-001(a)	Less than 90-day Storage	12/23/1998	SWMU
03-001(b)	Satellite Accumulation Area	12/23/1998	SWMU
03-001(c)	Less than 90-day Storage	12/23/1998	SWMU
03-001(d)	Satellite Accumulation Area	1/26/2005	AOC
03-001(f)	Less-than-90-day storage	1/26/2005	AOC
03-001(g)	Satellite accumulation area	1/26/2005	AOC
03-001 (h)	Satellite accumulation area	1/26/2005	AOC
03-001(i)	Storage Area	10/13/2006	AOC
03-001 (j)	Satellite Accumulation Area	1/26/2005	AOC
03-001(l)	Less-than-90-day storage	1/26/2005	AOC
03-001(m)	Satellite Accumulation Area	1/26/2005	AOC
03-001(n)	Satellite Accumulation Area	1/26/2005	AOC
03-001(o)	Waste Container	1/26/2005	AOC
03-001(p)	Satellite Accumulation Area	1/26/2005	AOC
03-001(q)	Satellite Accumulation Area	1/26/2005	AOC
03-001(r)	Satellite Accumulation Area	1/26/2005	AOC
03-001(s)	Satellite Accumulation Area	1/26/2005	AOC
03-001(t)	Satellite Accumulation Area	1/26/2005	AOC
03-001(u)	Satellite Accumulation Area	1/26/2005	AOC
03-001(v)	Satellite Accumulation Area	1/26/2005	AOC
03-001(w)	Satellite Accumulation Area	1/26/2005	AOC
03-001(x)	Satellite Accumulation Area	1/26/2005	AOC
03-001(y)	Satellite Accumulation Area	1/26/2005	AOC
03-002(a)	Less than 90-day accumulation area	5/2/2001	SWMU
03-002(b)	Satellite Accumulation Area	12/23/1998	SWMU

03-002(d)	Former storage Area	5/2/2001	SWMU
03-003(m)	Former storage area	1/26/2005	AOC
03-004(a)	Container storage	1/26/2005	AOC
03-004(b)	Container storage	1/26/2005	AOC
03-004(e)	Storage area	1/26/2005	AOC
03-004(f)	Storage area	1/26/2005	AOC
03-005	Renumbered to 60-004(a-f)	1/26/2005	AOC
03-006	Burn Site (duplicate of 61-003)	1/26/2005	AOC
03-008(b)	Firing site	1/26/2005	AOC
03-009(b)	Surface disposal site	12/23/1998	SWMU
03-009(c)	Construction Debris Area	5/2/2001	SWMU
03-009(d)	Surface disposal site	4/22/2007	SWMU
03-009(e)	Surface Disposal Area	12/23/1998	SWMU
03-009(f)	Surface Disposal	12/23/1998	SWMU
03-009(g)	Soil Fill Area	5/2/2001	SWMU
03-009(h)	Surface Disposal Area	12/23/1998	SWMU
03-010(b)	Operational release	1/26/2005	AOC
03-010(c)	Operational release	1/26/2005	AOC
03-010(d)	Operational release	1/26/2005	AOC
03-012(a)	Controlled Operational Release	12/23/1998	SWMU
03-013(c)	Operational release	1/26/2005	AOC
03-013(d)	Operational release	1/26/2005	AOC
03-013(e)	Operational release	1/26/2005	AOC
03-013(f)	Operational release	1/26/2005	AOC
03-013(g)	Operational release	1/26/2005	AOC
03-013(h)	Operational release	1/26/2005	AOC
03-016(a)	Septic system	1/26/2005	AOC
03-016(b)	Septic system	1/26/2005	AOC
03-016(c)	Septic system	1/26/2005	AOC
03-016(d)	Septic system	1/26/2005	AOC
03-016(e)	Septic system – duplicate of 03-014(s)	1/26/2005	AOC
03-016(f)	Septic system – duplicate of 03-014(s)	1/26/2005	AOC
03-018	Septic System	12/23/1998	SWMU
03-019	Septic Tank	5/2/2001	SWMU
03-020(a)	Disposal pit	12/23/1998	SWMU
03-020(b)	Surface disposal site	1/26/2005	AOC
03-023	Sump	1/26/2005	AOC
03-024	Tank and/or Associated Equipment	12/8/1997	SWMU
03-025(a)	Tank and associated equipment (Oil Trap Sump)	5/2/2001	SWMU
03-026(b)	Sumps	5/2/2001	SWMU
03-030	Surface impoundment	1/26/2005	AOC
03-032	Tank and associated equipment	5/2/2001	SWMU
00-034(a)	Landfill, eastern area	12/6/06	AOC
03-035(a)	Underground Storage Tank	12/23/1998	SWMU
03-035(b)	Underground Storage Tank	12/23/1998	SWMU
03-036(e)	Aboveground tank	1/26/2005	AOC
03-036(f)	Aboveground tank	1/26/2005	AOC
03-036(g)	Aboveground tank	1/26/2005	AOC
03-036(h)	Aboveground tanks	1/26/2005	AOC
03-036(i)	Aboveground tank	1/26/2005	AOC
03-036(j)	Aboveground tanks	1/26/2005	AOC
03-038(e)	Waste lines	1/26/2005	AOC
03-039(a)	Silver Recovery unit	12/23/1998	SWMU
03-039(b)	Silver recovery unit	1/26/2005	AOC

03-039(c)	Silver recovery unit	1/26/2005	AOC
03-039(d)	Silver recovery unit	1/26/2005	AOC
03-039(e)	Silver recovery unit	1/26/2005	AOC
03-040(a)	Storage area	1/26/2005	AOC
03-040(b)	Storage area	1/26/2005	AOC
03-043(e)	Underground Storage Tan	5/2/2001	SWMU
03-043(i)	Aboveground tank	1/26/2005	AOC
03-044(a)	Container Storage Area	5/2/2001	SWMU
03-044(b)	Container storage	1/26/2005	AOC
03-045(d)	Storage tank (aboveground)	12/8/1997	SWMU
03-045(i)	Outfall	5/2/2001	SWMU
03-047(a)	Storage area	1/26/2005	AOC
03-047(b)	Storage area	1/26/2005	AOC
03-047(c)	Drum storage	1/26/2005	AOC
03-047(e)	Storage area	1/26/2005	AOC
03-047(f)	Storage area	1/26/2005	AOC
03-047(h)	Storage area	1/26/2005	AOC
03-047(i)	Satellite accumulation area	1/26/2005	AOC
03-047(j)	Drum storage	1/26/2005	AOC
03-047(k)	Drum storage	1/26/2005	AOC
03-048	Satellite accumulation area	1/26/2005	AOC
03-049(c)	Outfall	5/2/2001	SWMU
03-049(d)	Outfall	5/2/2001	SWMU
03-050(b)	Exhaust emissions, off-gas scrubber of HEPA filter system	1/26/2005	AOC
03-050(c)	Exhaust emissions, off-gas scrubber of HEPA filter system	1/26/2005	AOC
03-050(e)	Filter Unit	5/2/2001	SWMU
03-051(d)	Soil contamination (oil from leaking compressor)	1/26/2005	AOC
03-052(c)	One time Release	5/2/2001	AOC
03-052(d)	Storm drainage	6/26/2003	AOC
03-055(b)	Outfall	1/26/2005	AOC
03-055(d)	Storm Drain	5/2/2001	SWMU
03-056(b)	Container storage area	6/26/2003	AOC
03-056(e)	Satellite accumulation area	1/26/2005	AOC
03-056(f)	Drum storage	1/26/2005	AOC
03-056(g)	Satellite accumulation area	1/26/2005	AOC
03-056(i)	Drum storage	1/26/2005	AOC
03-056(j)	Storage area	1/26/2005	AOC
03-056(m)	Drum Storage Area (Inactive)	5/2/2001	SWMU
03-056(n)	Container Storage Area	5/2/2001	SWMU
03-057	Sump/grease trap	1/26/2005	AOC
03-058	Container Storage	1/26/2005	AOC
C-03-001	Gas trap	1/26/2005	AOC
C-03-002	One-time spill - leak from asphalt machine	1/26/2005	AOC
C-03-003	One time spill - stained asphalt	1/26/2005	AOC
C-03-004	Miscellaneous debris	1/26/2005	AOC
C-03-005	Oil spill	1/26/2005	AOC
C-03-007	Storage area	1/26/2005	AOC
C-03-008	Storage area/rad contaminated	1/26/2005	AOC
C-03-009	Storage area	1/26/2005	AOC
C-03-010	Outfall	1/26/2005	AOC
C-03-011	Waste oil tank	1/26/2005	AOC
C-03-012	Satellite accumulation area	1/26/2005	AOC
C-03-015	Underground storage tank	1/26/2005	AOC

C-03-017	Underground storage tank	1/26/2005	AOC
C-03-018	Underground storage tank	1/26/2005	AOC
C-03-019	Underground storage tank	1/26/2005	AOC
C-03-020	Storage tanks	1/26/2005	AOC
C-03-021	Underground storage tanks	1/26/2005	AOC
TA-4			
C-04-001	Former building location	1/26/2005	AOC
TA-5			
05-006(a)	Former building location	1/26/2005	AOC
05-006(d)	Former building location	1/26/2005	AOC
05-006(f)	Former building location	1/26/2005	AOC
05-006(g)	Former building location	1/26/2005	AOC
C-05-001	Former building location	1/26/2005	AOC
TA-6			
06-003(b)	Firing Site	1/26/2005	AOC
06-003(g)	Firing Site and Building TA-6-10	11/9/2001	SWMU
06-004	Sump	1/26/2005	AOC
C-06-003	Building TA-6-11 - control building for explosive shots	3/14/2000	AOC
C-06-006	Building TA-6-14 – explosive pressing and storage	3/14/2000	AOC
C-06-007	Building TA-6-15 - boiler for steam generation	3/14/2000	AOC
C-06-008	Building TA-6-16 - magazine for explosives	3/14/2000	AOC
C-06-009	Building TA-6-17 - magazine	3/14/2000	AOC
C-06-010	Building TA-6-21 - magazines for explosives storage	3/14/2000	AOC
C-06-011	Building TA-6-22 - magazine	3/14/2000	AOC
C-06-012	Building TA-6-23 - magazine	3/14/2000	AOC
C-06-013	Building TA-6-24 - magazine for explosives storage	3/14/2000	AOC
C-06-014	Building TA-6-25 - magazine for explosives storage	3/14/2000	AOC
C-06-015	Building TA-6-27 - magazine for explosives storage	3/14/2000	AOC
C-06-016	Soil Contamination from former Magazine 06-28	3/14/2000	AOC
C-06-017	Building TA-6-29 - magazine for explosives storage	3/14/2000	AOC
C-06-018	Building TA-6-30 - magazine for explosives storage	3/14/2000	AOC
C-06-019	Soil contamination from former Building 6-38	3/14/2000	AOC
C-06-020	Soil Contamination from former Building	3/14/2000	AOC
C-06-021	Building TA-6-26 – magazine used for explosives storage	3/14/2000	AOC
TA-7			
07-003(c)	Typographical Error	12/23/1998	SWMU
07-003(d)	Typographical Error	12/23/1998	SWMU
TA-8			
08-003(b)	Septic System	12/23/1998	SWMU
08-003(c)	Septic System	12/23/1998	SWMU
08-006(b)	Landfill	12/23/1998	SWMU
08-007	Silver Recovery unit	12/23/1998	SWMU
08-008(a)	Storage area	1/26/2005	AOC
08-008(b)	Storage area	1/26/2005	AOC
08-008(c)	Storage area	1/26/2005	AOC
08-008(d)	Storage area	1/26/2005	AOC
08-009(b)	Industrial or sanitary wastewater treatment	1/26/2005	AOC
08-010(a)	Storage area	1/26/2005	AOC
08-010(b)	Storage area	1/26/2005	AOC
08-010(c)	Storage area	1/26/2005	AOC
08-011(a)	Underground tank	1/26/2005	AOC
08-011(b)	Underground tank	1/26/2005	AOC
C-08-001	Building	1/26/2005	AOC

C-08-002	Building	1/26/2005	AOC
C-08-003	Building	1/26/2005	AOC
C-08-004	Building	1/26/2005	AOC
C-08-005	Building	1/26/2005	AOC
C-08-006	Building	1/26/2005	AOC
C-08-007	Building	1/26/2005	AOC
C-08-008	Building	1/26/2005	AOC
C-08-009	Building	1/26/2005	AOC
C-08-010	Soil contamination from former Drum Storage Structure 8-34	4/22/2007	SWMU
C-08-011	Building	1/26/2005	AOC
C-08-012	Building	1/26/2005	AOC
C-08-013	Building	1/26/2005	AOC
C-08-015	Building	1/26/2005	AOC
C-08-016	Building	1/26/2005	AOC
C-08-017	Storage area	1/26/2005	AOC
C-08-018	Storage area	1/26/2005	AOC
C-08-019	Storage area	1/26/2005	AOC
C-08-020	Disposal area	1/26/2005	AOC
TA-9			
09-003(c)	Manhole	12/23/1998	SWMU
09-003(f)	Settling Tank	12/23/1998	SWMU
09-005(b)	Septic System	12/23/1998	SWMU
09-005(c)	Septic System	12/23/1998	SWMU
09-005(e)	Septic System	12/23/1998	SWMU
09-005(f)	Septic System	12/23/1998	SWMU
09-005(h)	Septic System	12/23/1998	SWMU
09-007	Basket Pit	12/23/1998	SWMU
09-008(a)	Surface impoundment	1/26/2005	AOC
09-010(c)	Storage area	1/26/2005	AOC
09-011(a)	Storage area	1/26/2005	AOC
09-015	Manhole	1/26/2005	AOC
09-016	Underground tank	1/26/2005	AOC
C-09-002	Buildings	1/26/2005	AOC
C-09-003	Buildings	1/26/2005	AOC
C-09-004	Buildings	1/26/2005	AOC
C-09-005	Soil Contamination from former Firing Site Structure 09-58	1/26/2005	AOC
C-09-006	Buildings	1/26/2005	AOC
C-09-007	Buildings	1/26/2005	AOC
C-09-008	Underground tank	1/26/2005	AOC
C-09-009	Non-intentional release	1/26/2005	AOC
C-09-010	Burn site – doesn't exist	1/26/2005	AOC
C-09-011	Burn site	1/26/2005	AOC
TA-10			
10-001(e)	Detonatioin test area – doesn't exist	1/26/2005	AOC
TA-11			
11-003(a)	Mortar impact area	1/26/2005	AOC
11-007	Surface Disposal	12/23/1998	SWMU
11-008	Surface disposal	1/26/2005	AOC
11-010(a)	Container storage area	1/26/2005	AOC
11-010(b)	Container storage	1/26/2005	AOC
11-011(c)	Boiler Discharge	5/2/2001	SWMU
C-11-003	One-time release site (never located)	1/26/2005	AOC

TA-12			
12-003	Storage area	1/26/2005	AOC
C-12-006	Pole – duplicate of 12-004(a)	1/26/2005	AOC
TA-14			
14-004(b)	Satellite Accumulation Area	12/23/1998	SWMU
14-004(c)	Storage area	1/26/2005	AOC
14-008	Landfill and surface disposal	1/26/2005	AOC
TA-15			
15-004(e)	Manhole bunker – mistakenly called firing site	1/26/2005	AOC
15-005(a)	Storage area	1/26/2005	AOC
15-005(d)	Storage area	1/26/2005	AOC
15-008(e)	Surface disposal	1/26/2005	AOC
15-009(d)	Septic tank	1/26/2005	AOC
15-009(j)	Septic Tank	11/9/2001	SWMU
15-010(c)	Drainline	4/22/2007	SWMU
15-012(a)	Surface disposal (not located) – doesn't exist	11/9/2001	SWMU
15-012(b)	Surface Disposal Site	11/9/2001	SWMU
15-013(a)	Underground tank	1/26/2005	AOC
15-013(b)	Underground tank	1/26/2005	AOC
15-014(c)	Industrial or sanitary wastewater treatment	1/26/2005	AOC
15-014(e)	Industrial or sanitary wastewater treatment	1/26/2005	AOC
15-014(f)	Industrial or sanitary wastewater treatment	1/26/2005	AOC
15-014(m)	Drainline and Outfall	12/23/1998	SWMU
C-15-002	Surface disposal	1/26/2005	AOC
C-15-003	Surface disposal	1/26/2005	AOC
C-15-008	Non-intentional release	1/26/2005	AOC
C-15-009	Underground tank	1/26/2005	AOC
C-15-012	Underground tank	1/26/2005	AOC
C-15-013	Underground tank	1/26/2005	AOC
TA-16			
16-005(b)	Septic System (removed)	5/2/2001	SWMU
16-005(f)	Decommissioned Septic System	12/23/1998	SWMU
16-005(i)	Septic Tank	12/23/1998	SWMU
16-005(o)	Septic System	12/23/1998	SWMU
16-006(b)	Septic System	12/23/1998	SWMU
16-006(f)	Septic System	12/23/1998	SWMU
16-006(i)	Septic Tank	12/23/1998	SWMU
16-007(b)	Surface disposal site – site doesn't exist	1/26/2005	AOC
16-010(g)	Wastewater Treatment Facility	12/23/1998	SWMU
16-012(a)	Container Storage-Rest House	12/23/1998	SWMU
16-012(a2)	Container storage	1/26/2005	AOC
16-012(b)	Container Storage-Rest House	12/23/1998	SWMU
16-012(c)	Container Storage-Rest House	12/23/1998	SWMU
16-012(d)	Satellite Accumulation Area	12/23/1998	SWMU
16-012(e)	Container Storage-Rest House	12/23/1998	SWMU
16-012(f)	Container Storage-Rest House	12/23/1998	SWMU
16-012(g)	Container Storage-Rest House	12/23/1998	SWMU
16-012(h)	Container Storage-Rest House	12/23/1998	SWMU
16-012(i)	Satellite Accumulation Area	12/23/1998	SWMU
16-012(j)	Satellite Accumulation Area	12/23/1998	SWMU
16-012(k)	Container Storage-Rest House	12/23/1998	SWMU
16-012(l)	Satellite Accumulation Area	12/23/1998	SWMU
16-012(m)	Satellite Accumulation Area	12/23/1998	SWMU

16-012(n)	Satellite Accumulation Area	12/23/1998	SWMU
16-012(o)	Container Storage-Rest House	12/23/1998	SWMU
16-012(p)	Less Than 90-day Storage	12/23/1998	SWMU
16-012(q)	Container Storage-Rest House	12/23/1998	SWMU
16-012(r)	Container Storage-Rest House	12/23/1998	SWMU
16-012(s)	Container Storage-Rest House	12/23/1998	SWMU
16-012(t)	Satellite Accumulation Area	12/23/1998	SWMU
16-012(u)	Satellite Accumulation Area	12/23/1998	SWMU
16-012(v)	Container Storage-Rest House	12/23/1998	SWMU
16-012(w)	Container Storage-Rest House	12/23/1998	SWMU
16-012(x)	Satellite Accumulation Area	12/23/1998	SWMU
16-012(y)	Container Storage-Rest House	12/23/1998	SWMU
16-012(z)	Container Storage-Rest House	12/23/1998	SWMU
16-023(a)	Incinerator – doesn't exist	1/26/2005	AOC
16-025(c)	Abandoned utility building and appurtenances	12/23/1998	SWMU
16-025(e2)	Soil Contamination from former Magazine 16-106	4/22/2007	SWMU
16-025(f2)	Soil Contamination from former Magazine 16-107	4/22/2007	SWMU
16-025(g2)	Magazine	12/23/1998	SWMU
16-025(h2)	Soil Contamination from former Magazine 16-109	4/22/2007	SWMU
16-026(a2)	Outfall from 16-200	4/22/2007	SWMU
16-026(d2)	Outfall from 16-435	4/22/2007	SWMU
16-026(e2)	Outfall from Building 16-415	4/22/2007	SWMU
16-026(f2)	Outfallfrom Building 16-413	4/22/2007	SWMU
16-026(g2)	Outfall from Building 16-285	4/22/2007	SWMU
16-026(h)	Outfall from Building 16-281	4/22/2007	SWMU
16-026(i2)	Outfall	12/23/1998	SWMU
16-026(k)	Outfall from former Building 16-221	4/22/2007	SWMU
16-026(t)	Outfall from Building 16-207	4/22/2007	SWMU
16-026(x)	Outfall from Building 16-437	4/22/2007	SWMU
16-030(b)	Outfall from former Building 16-343	4/22/2007	SWMU
16-030(e)	Outfall from former Building 16-225	4/22/2007	SWMU
16-030(f)	Outfall from former Building 16-223	4/22/2007	SWMU
16-031(g)	Cooling Tower Outfall	12/23/1998	SWMU
16-032(b)	Decommissioned HE sump	1/26/2005	AOC
16-032(d)	Decommissioned HE Sump	12/23/1998	SWMU
16-032(e)	Decommissioned HE Sump	12/23/1998	SWMU
16-034(g)	Soil Contamination	12/23/1998	SWMU
C-16-003	Septic system [see 16-005(n)]	1/26/2005	AOC
C-16-004	Building	1/26/2005	AOC
C-16-007	Tank stand	1/26/2005	AOC
C-16-021	Building	1/26/2005	AOC
C-16-022	Building	1/26/2005	AOC
C-16-023	Warehouse	1/26/2005	AOC
C-16-024	Building	1/26/2005	AOC
C-16-027	Building	1/26/2005	AOC
C-16-029	Building	1/26/2005	AOC
C-16-032	Building	1/26/2005	AOC
C-16-033	Warehouse	1/26/2005	AOC
C-16-037	Storage area	1/26/2005	AOC
C-16-038	Storage area	1/26/2005	AOC
C-16-039	Building	1/26/2005	AOC
C-16-040	Building	1/26/2005	AOC
C-16-042	Steam manhole	1/26/2005	AOC
C-16-043	Steam manhole	1/26/2005	AOC

C-16-045	Manhole	1/26/2005	AOC
C-16-048	Steam manhole	1/26/2005	AOC
C-16-052	Steam manhole	1/26/2005	AOC
C-16-053	Water manhole	1/26/2005	AOC
C-16-054	Steam manhole	1/26/2005	AOC
C-16-055	Switch box	1/26/2005	AOC
C-16-056	Steam manhole	1/26/2005	AOC
C-16-057	Steam manhole	1/26/2005	AOC
C-16-059	Electrical pit	1/26/2005	AOC
C-16-066	Storage area	1/26/2005	AOC
TA-18			
18-007	Buried Armored Vehicle	5/2/2001	SWMU
18-009(a)	Transformer, PCB only site	1/26/2005	AOC
18-009(b)	Transformer, PCB only site	1/26/2005	AOC
18-009(c)	Transformer, PCB only site	1/26/2005	AOC
18-009(d)	Transformer, PCB only site	1/26/2005	AOC
18-009(e)	Transformer, PCB only site	1/26/2005	AOC
18-010(a)	Outfall	1/26/2005	AOC
18-012(d)	Drainline	1/26/2005	AOC
C-18-001	Laboratory	1/26/2005	AOC
C-18-002	Building	1/26/2005	AOC
C-18-003	Storage area	1/26/2005	AOC
TA-19			
C-19-001	Soil contamination from former Buildings	6/27/2006	AOC
TA-20			
20-003(a)	Soil contamination associated with a former Control building at a firing site	4/22/2007	SWMU
20-003(d)	Firing site	1/26/2005	AOC
C-20-001	Storage building	1/26/2005	AOC
C-20-002	Storage building	1/26/2005	AOC
C-20-003	Building	1/26/2005	AOC
TA-21			
21-004(d)	Drainline from Structure 21-223	1/26/2005	AOC
21-005	Disposal Pit	11/9/2001	SWMU
21-008	Incinerator	1/26/2005	AOC
21-012(a)	Dry Well	12/23/1998	SWMU
21-019(a)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(b)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(c)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(d)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(e)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(f)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(g)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(h)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(i)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(j)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(k)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(l)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-019(m)	Soil contamination from Filter House/Exhaust stacks	1/26/2005	AOC
21-020(a)	Soil contamination from former Filter House	1/26/2005	AOC
21-020(b)	Soil contamination from former Filter House	1/26/2005	AOC
21-024(m)	Drain Line	12/23/1998	SWMU
21-025(a)	Operational facility	1/26/2005	AOC

21-025(b)	Operational facility	1/26/2005	AOC
21-027(b)	Drain Line	12/23/1998	SWMU
21-028(b)	Container storage	1/26/2005	AOC
21-028(e)	Container storage	1/26/2005	AOC
21-030	Sump	9/30/2005	AOC
C-21-002	Non-intentioinal release area	1/26/2005	AOC
C-21-003	Non-intentioinal release area	1/26/2005	AOC
C-21-004	Non-intentioinal release area	1/26/2005	AOC
C-21-008	One-time spill	1/26/2005	AOC
C-21-010	Systematic leak	1/26/2005	AOC
C-21-011	One-time spill	1/26/2005	AOC
C-21-013	Disposal pit	1/26/2005	AOC
C-21-014	Warehouse	1/26/2005	AOC
C-21-015	Building	9/30/2005	AOC
C-21-016	Storage area	1/26/2005	AOC
C-21-017	Storage area	1/26/2005	AOC
C-21-018	Storage area	1/26/2005	AOC
C-21-019	Storage area	1/26/2005	AOC
C-21-020	Storage area	1/26/2005	AOC
C-21-021	Storage area	1/26/2005	AOC
C-21-022	Laboratory	1/26/2005	AOC
C-21-023	Laboratory	1/26/2005	AOC
C-21-024	Warehouse	1/26/2005	AOC
C-21-025	Building	1/26/2005	AOC
C-21-026	Building	1/26/2005	AOC
C-21-028	Soil contamination from former tank	1/26/2005	AOC
C-21-029	Aboveground tank	1/26/2005	AOC
C-21-030	Aboveground tank	1/26/2005	AOC
C-21-031	Tank	1/26/2005	AOC
C-21-032	Machinery and tanks	1/26/2005	AOC
TA-22			
22-001	Building	1/26/2005	AOC
22-003(a)	Satellite accumulation area	1/26/2005	AOC
22-003(b)	Satellite accumulation area	1/26/2005	AOC
22-003(c)	Satellite accumulation area	1/26/2005	AOC
22-003(d)	Satellite accumulation area	1/26/2005	AOC
22-003(e)	Satellite accumulation area	1/26/2005	AOC
22-003(f)	Satellite accumulation area	1/26/2005	AOC
22-003(g)	Satellite accumulation area	1/26/2005	AOC
22-013	Liquid waste treatment/storage	1/26/2005	AOC
22-014(c)	Unit does not exist	1/26/2005	AOC
TA-25			
25-001	Pit	1/26/2005	AOC
C-25-001	Building	1/26/2005	AOC
TA-27			
27-001	Buried Naval Guns	5/2/2001	SWMU
27-004	Former Control Building	1/26/2005	AOC
TA-30			
30-001	Surface disposal and landfill	1/26/2005	AOC
TA-31			
C-31-001	Buildings	1/26/2005	AOC
TA-32			
C-32-001	Buildings	1/26/2005	AOC

TA-33			
33-004(e)	Seepage Pit	12/23/1998	SWMU
33-004(f)	Septic System	12/23/1998	SWMU
33-004(l)	Outfall	1/26/2005	AOC
33-004(n)	Septic system	1/26/2005	AOC
33-010(e)	Surface disposal (Area 6)	1/26/2005	AOC
33-012(b)	Satellite accumulation area	1/26/2005	AOC
33-012(c)	Satellite accumulation area	1/26/2005	AOC
33-012(d)	Satellite accumulation area	1/26/2005	AOC
TA-35			
35-001	Material disposal area (MDA W)	1/26/2005	AOC
35-003(i)	Wastewater Treatment Facility	12/23/1998	SWMU
35-004(c)	Storage areas	1/26/2005	AOC
35-004(d)	Container storage area	1/26/2005	AOC
35-004(e)	Container storage area	5/2/2001	SWMU
35-004(f)	Container storage area	1/26/2005	AOC
35-004(i)	Container storage area	1/26/2005	AOC
35-004(j)	Container storage area	1/26/2005	AOC
35-004(k)	Container storage area	1/26/2005	AOC
35-004(l)	Container storage area	1/26/2005	AOC
35-004(n)	Container storage area	1/26/2005	SWMU
35-004(o)	Container storage area	1/26/2005	AOC
35-005(a)	Surface impoundment (closure) building 85 duplicate of 35-006	1/26/2005	AOC
35-005(b)	Surface impoundment (closure) building 125	1/26/2005	AOC
35-006	Surface Impoundment	5/2/2001	SWMU
35-007	Waste oil treatment	1/26/2005	AOC
35-011(a)	Above ground storage tanks	5/2/2001	SWMU
35-011(b)	Underground storage tank	1/26/2005	AOC
35-011(c)	Underground storage tank	1/26/2005	AOC
35-011(d)	Underground storage tank	1/26/2005	AOC
35-012(a)	Underground storage tank	1/26/2005	AOC
35-012(b)	Underground storage tank	1/26/2005	AOC
35-013(d)	Floor Drains	5/2/2001	SWMU
35-014(c)	Operational release	1/26/2005	AOC
35-014(e3)	Operational release	1/26/2005	AOC
35-017	Soil contamination from reactor	1/26/2005	AOC
35-018(b)	Former transformer site – PCB only site	1/26/2005	AOC
C-35-001	Former UST site	1/26/2005	AOC
C-35-002	Former UST site	1/26/2005	AOC
C-35-003	Former UST site	1/26/2005	AOC
C-35-004	Operational release	1/26/2005	AOC
C-35-005	Operational release	1/26/2005	AOC
C-35-006	Operational release	1/26/2005	AOC
C-35-008	Leaking transformer – PCB only site	1/26/2005	AOC
TA-36			
36-003(c)	Septic System	12/23/1998	SWMU
36-003(d)	Septic system	1/26/2005	AOC
36-004(f)	Firing site	1/26/2005	AOC
36-007(a)	Storage area	1/26/2005	AOC
36-007(b)	Storage area	1/26/2005	AOC
36-007(c)	Storage area	1/26/2005	AOC
36-007(d)	Storage area	1/26/2005	AOC
36-007(e)	Storage area	1/26/2005	AOC

36-007(f)	Storage area	1/26/2005	AOC
C-36-002	Surface disposal	1/26/2005	AOC
TA-37			
37-001	Septic system	1/26/2005	AOC
TA-39			
39-002(g)	Storage area	1/26/2005	AOC
39-003	Incinerator	12/23/1998	SWMU
39-006(b)	Septic System	12/23/1998	AOC
39-007(b)	Storage area	1/26/2005	AOC
39-007(c)	Storage area	1/26/2005	AOC
39-007(e)	Storage area	1/26/2005	AOC
39-009	Outfall	1/26/2005	AOC
TA-40			
40-001(a)	Septic System	12/23/1998	SWMU
40-002(a)	Container storage area SAA located inside building TA-40-23	1/26/2005	AOC
40-002(b)	Container storage area SAA located inside building TA-40-23	1/26/2005	AOC
40-002(c)	Container storage area SAA located inside building TA-40-05	1/26/2005	AOC
40-008	HE storage area (decommissioned)	1/26/2005	AOC
C-40-001	Usage Site	1/26/2005	AOC
TA-41			
41-004	Container storage	1/26/2005	AOC
C-41-001	Sump	1/26/2005	AOC
C-41-002	Underground tank	1/26/2005	AOC
C-41-003	Underground tank	1/26/2005	AOC
C-41-005	Underground tank	1/26/2005	AOC
TA-42			
42-004	Canyon disposal	1/26/2005	AOC
TA-43			
43-001(b1)	Outfall	1/26/2005	AOC
43-003	Carcass storage	1/26/2005	AOC
43-004	Waste storage	1/26/2005	AOC
43-005	Radioactive liquid storage	1/26/2005	AOC
TA-46			
46-001	Aboveground tank	1/26/2005	AOC
46-004(i)	Outfall	1/26/2005	AOC
46-004(j)	Outfall	1/26/2005	AOC
46-004(k)	Outfall	1/26/2005	AOC
46-004(l)	Outfall	1/26/2005	AOC
46-004(n)	Outfall	1/26/2005	AOC
46-004(o)	Outfall	1/26/2005	AOC
46-006(e)	Surface disposal	1/26/2005	AOC
46-008(c)	Storage Area	12/23/1998	SWMU
46-008(misc)	Storage area – doesn't exist	1/26/2005	AOC
46-010(a)	Storage area	1/26/2005	AOC
46-010(b)	Storage area	1/26/2005	AOC
46-010(c)	Storage area	1/26/2005	AOC
46-010(e)	Storage area	1/26/2005	AOC
46-010(f)	Storage area	1/26/2005	AOC
46-010(misc)	Storage area – doesn't exist	1/26/2005	AOC
TA-48			

48-002(c)	Container storage area	1/26/2005	AOC
48-002(d)	Container storage area	1/26/2005	AOC
48-004(d)	Sumps and tanks	1/26/2005	AOC
48-006	Septic system	1/26/2005	AOC
48-007(e)	Outfall	1/26/2005	AOC
48-008	Transformer leak-PCB only site	1/26/2005	AOC
48-009	Soil contamination	1/26/2005	AOC
TA-49			
49-007(a)	Septic system (Area 6)	1/26/2005	AOC
49-007(b)	Septic system (HDT area)	1/26/2005	AOC
49-009	Aboveground tank (former location)	1/26/2005	AOC
TA-50			
50-003(b)	Storage area	1/26/2005	AOC
50-003(c)	Storage area	1/26/2005	AOC
50-003(d)	Storage area	1/26/2005	AOC
50-003(e)	Storage area	1/26/2005	AOC
50-005	Waste treatment facility	1/26/2005	AOC
50-006(b)	Operational release	1/26/2005	AOC
50-006(e)	Aboveground tank	1/26/2005	AOC
TA-51			
51-002(a)	usage site (Environmental research caisson)	1/26/2005	AOC
51-002(b)	usage site (Environmental research caisson)	1/26/2005	AOC
C-51-001	Storage area	1/26/2005	AOC
C-51-002	Buildings	1/26/2005	AOC
TA-52			
52-001(a)	UHTREX Equipment	12/23/1998	SWMU
52-001(b)	UHTREX Equipment	12/23/1998	SWMU
52-001(c)	UHTREX Equipment	12/23/1998	SWMU
52-002(b)	Septic System	12/23/1998	SWMU
52-002(c)	Septic System	12/23/1998	SWMU
52-002(d)	Septic System	12/23/1998	SWMU
52-002(e)	Septic Tank and seepage pit	12/8/1997	SWMU
52-002(f)	Septic System	12/23/1998	SWMU
52-002(g)	Septic system	1/21/2005	AOC
52-003(b)	Industrial waste line	1/26/2005	AOC
52-004	Evaporator	1/26/2005	AOC
C-52-001	Former transformer site -PCB only site	1/26/2005	AOC
C-52-002	Former transformer site -PCB only site	1/26/2005	AOC
TA-53			
53-001(c)	Storage area	1/26/2005	AOC
53-001(d)	Storage area	1/26/2005	AOC
53-001(e)	Storage area	1/26/2005	AOC
53-001(f)	Storage area	1/26/2005	AOC
53-001(g)	Storage area	1/26/2005	AOC
53-001(h)	Storage area	1/26/2005	AOC
53-001(i)	Storage area	1/26/2005	AOC
53-001(j)	Storage area	1/26/2005	AOC
53-001(k)	Storage area	1/26/2005	AOC
53-001(l)	Storage area	1/26/2005	AOC
53-001(m)	Storage area	1/26/2005	AOC
53-001(n)	Storage area	1/26/2005	AOC
53-001(o)	Storage area	1/26/2005	AOC
53-003	Septic tank	1/26/2005	AOC

53-004	Operational facility	1/26/2005	AOC
53-006(a)	Underground tank	1/26/2005	AOC
53-007(b)	Aboveground storage Tanks	12/23/1998	SWMU
53-011(a)	Transformer, PCB only site	1/26/2005	AOC
53-011(b)	Transformer, PCB only site	1/26/2005	AOC
53-011(c)	Transformer, PCB only site	1/26/2005	AOC
53-011(d)	Transformer, PCB only site	1/26/2005	AOC
53-011(e)	Transformer doesn't exist	1/26/2005	AOC
53-012(a)	Outfall	1/26/2005	AOC
53-012(b)	Outfall	1/26/2005	AOC
53-012(c)	Outfall	1/26/2005	AOC
53-012(d)	Outfall	1/26/2005	AOC
53-012(f)	Outfall	1/26/2005	AOC
53-012(g)	Outfall	1/26/2005	AOC
53-012(h)	Outfall	1/26/2005	AOC
C-53-001	Transformer – PCB only site	1/26/2005	AOC
C-53-002	Transformer – PCB only site	1/26/2005	AOC
C-53-003	Transformer – PCB only site	1/26/2005	AOC
C-53-004	Transformer– PCB only site	1/26/2005	AOC
C-53-005	Transformer– PCB only site	1/26/2005	AOC
C-53-006	Transformer– PCB only site	1/26/2005	AOC
C-53-007	Transformer– PCB only site	1/26/2005	AOC
C-53-008	Transformer– PCB only site	1/26/2005	AOC
C-53-009	Transformer– PCB only site	1/26/2005	AOC
C-53-010	Transformer– PCB only site	1/26/2005	AOC
C-53-011	Transformer– PCB only site	1/26/2005	AOC
C-53-012	Transformer– PCB only site	1/26/2005	AOC
C-53-013	Transformer– PCB only site	1/26/2005	AOC
C-53-014	Transformer– PCB only site	1/26/2005	AOC
C-53-015	Transformer– PCB only site	1/26/2005	AOC
C-53-016	Transformer– PCB only site	1/26/2005	AOC
C-53-017	One-time spill	1/26/2005	AOC
C-53-018	One-time spill	1/26/2005	AOC
C-53-019	One-time spill	1/26/2005	AOC
TA-54			
54-001(c)	Storage Area	12/23/1998	SWMU
54-001(f)	Storage Area	1/26/2005	AOC
54-007(b)	Septic system	5/2/2001	SWMU
54-007(c)	septic systems	9/5/2003	SWMU
54-007(e)	Septic system		AOC
54-008	Underground tank	1/26/2005	AOC
54-010	Underground tank - supply wash-water tank	1/26/2005	AOC
54-013(a)	Decontamination Facility	12/23/1998	SWMU
54-015(g)	Storage area - Pb casks near shaft 4	1/26/2005	AOC
54-015(h)	Drum Storage Area	5/2/2001	SWMU
54-015(i)	Storage area - forklift battery	1/26/2005	AOC
54-016(a)	Sump	1/26/2005	AOC
54-021	Aboveground oil storage tanks (6)	1/26/2005	AOC
54-022	Transformer spill (PCB), PCB only site	1/26/2005	AOC
TA-55			
55-001	Cement plant	1/26/2005	AOC
55-002(a)	Rad waste storage area	1/26/2005	AOC
55-002(b)	Rad waste storage area	1/26/2005	AOC
55-002(c)	Container storage area	1/26/2005	AOC

55-003	Containment area	1/26/2005	AOC
55-004	Evaporator	1/26/2005	AOC
55-005	Filtration Unit	1/26/2005	AOC
55-006	Glass breaker	1/26/2005	AOC
55-007	Thermal combustion unit	1/26/2005	AOC
55-009	Sumps and Tanks	4/22/2007	SWMU
55-010	Solvent spills	1/26/2005	AOC
55-011(a)	Storm drain	1/26/2005	AOC
55-011(b)	Storm drain	1/26/2005	AOC
55-011(c)	Storm drain	1/26/2005	AOC
55-011(d)	Storm drain	1/26/2005	AOC
55-011(e)	Storm drain	1/26/2005	AOC
55-012	Container storage area	1/26/2005	AOC
55-013(a)	Storage area	1/26/2005	AOC
55-013(b)	Storage area	1/26/2005	AOC
TA-57			
57-001(a)	Drilling mud pits	1/26/2005	AOC
57-003	Container storage facility	1/26/2005	AOC
57-005	Pond filtration unit	1/26/2005	AOC
TA-59			
59-001	Former Septic System	5/2/2001	SWMU
59-002	Container storage area	1/26/2005	AOC
59-003	Sump	1/26/2005	AOC
TA-60			
60-001(a)	Storage Area	6/26/2003	AOC
60-001(b)	Storage Area	1/26/2005	AOC
60-001(c)	Storage Area	1/26/2005	AOC
60-001(d)	Storage area - pesticide shed	1/26/2005	AOC
60-003	Oil-water separator	1/26/2005	AOC
60-004(a)	Storage area	1/26/2005	AOC
60-005(b)	Drilling mud pit	1/26/2005	AOC
60-006(b)	Septic system	1/26/2005	AOC
60-006(c)	Septic tank	1/26/2005	AOC
C-60-001	Underground tank	1/26/2005	AOC
C-60-002	Underground tank	1/26/2005	AOC
C-60-003	One-time spill at pesticide shed	1/26/2005	AOC
C-60-004	Underground tank	1/26/2005	AOC
TA-61			
61-001	Storage area	1/26/2005	AOC
61-003	Burn sites	1/26/2005	AOC
61-004(a)	Former Septic Tank	5/2/2001	SWMU
61-004(b)	Septic tank	1/26/2005	AOC
61-004(c)	Septic System	1/26/2005	AOC
C-61-001	Leak from transformer storage area – PCB only site	1/26/2005	AOC
TA-63			
63-002	Container storage area	1/26/2005	AOC
TA-64			
64-001	Storage area	1/26/2005	AOC
TA-69			
69-002(a)	Septic system	1/26/2005	AOC
69-002(b)	Septic system	1/26/2005	AOC
TA-72			
72-002	Firing site	1/26/2005	AOC

72-003(a)	Septic system	1/26/2005	AOC
72-003(b)	Septic system	1/26/2005	AOC
TA-73			
73-005	Surface disposal site	09/05/2003	SWMU
73-007	Septic Tank and Drainlines	09/05/2003	AOC
C-73-001	Underground tank	1/26/2005	AOC
C-73-002	Underground tank	1/26/2005	AOC
C-73-003	Underground tank	1/26/2005	AOC
C-73-004	Underground tank	1/26/2005	AOC
C-73-005(a)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(b)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(c)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(d)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(e)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC
C-73-005(f)	Unlined Septic Tank/Outhouse Trench	09/05/2003	AOC

ATTACHMENT L

LISTING OF OFF-SITE FACILITIES

TABLE L

List of Off-Site Waste Management Facilities that May Return Treatment-Derived Waste or Waste Residuals to the Los Alamos National Laboratory

Off-Site Facility	EPA Identification Number
Diversified Scientific Services, Inc., Kingston, TN	TND982109142
Energy Solutions, TN	TND982157570
Energy Solutions, Clive, UT	UTD 982598898
Materials and Energy Corporation, Oak Ridge, TN	TNR000005397
Perma-Fix, Gainesville, FL	FLG980711071
Perma-Fix Northwest, Richland, WA	WAR000010355
Waste Control Specialists, Andrews, TX	TXD988088464

ATTACHMENT M

(RESERVED)

ATTACHMENT N

FIGURES

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Figure 5: Reserved
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Figure 7: TA-54, Area L, Security Fences, Entry Gates, and Entry Stations
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Figure 33: TA-54, Area G, Pad 6 (Domes 153 & 283)
Figure 34: TA-54, Area G, Storage Shed 8
Figure 35: TA-54, Area G, Building 33
Figure 36: TA-54, Area G, Pad 11 (Dome 375)
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Figure 43: TA-55, Building 4, Room B45 – UCNI

Figure 44: TA-55, Building 4, Vault– UCNI
Figure 45: TA-55, Building 4, Outdoor Container Storage Pad
Figure 46: TA-55, Building 185
Figure 47: TA-55, Building 4, Room 401, Storage Tank System Process Flow Diagram
Figure 48: TA-55, Building 4, Room 401, Cementation Unit Process Flow Diagram
Figure 49: Emergency Facilities at Los Alamos National Laboratory
Figure 50: TA-54, MDA H

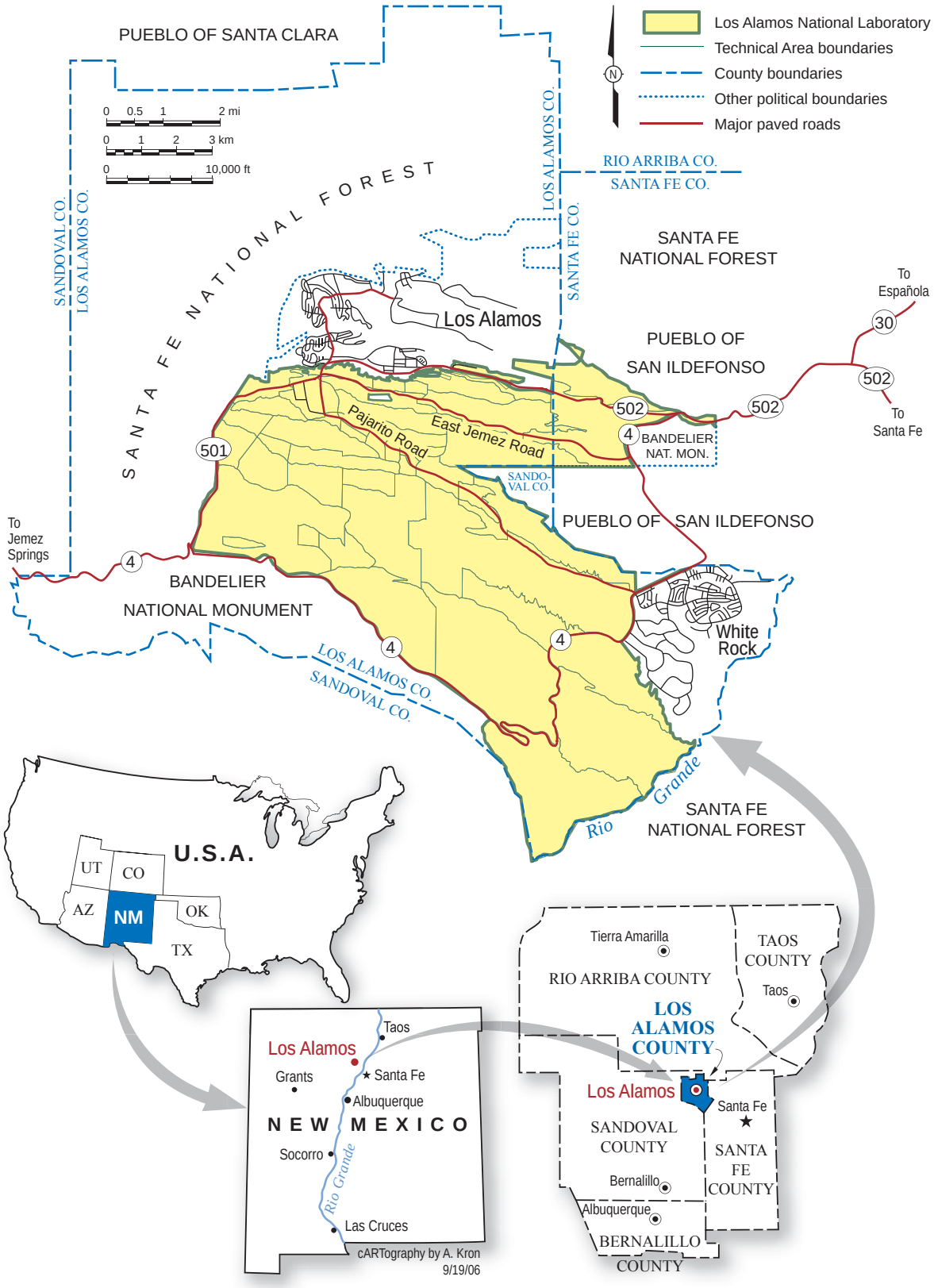
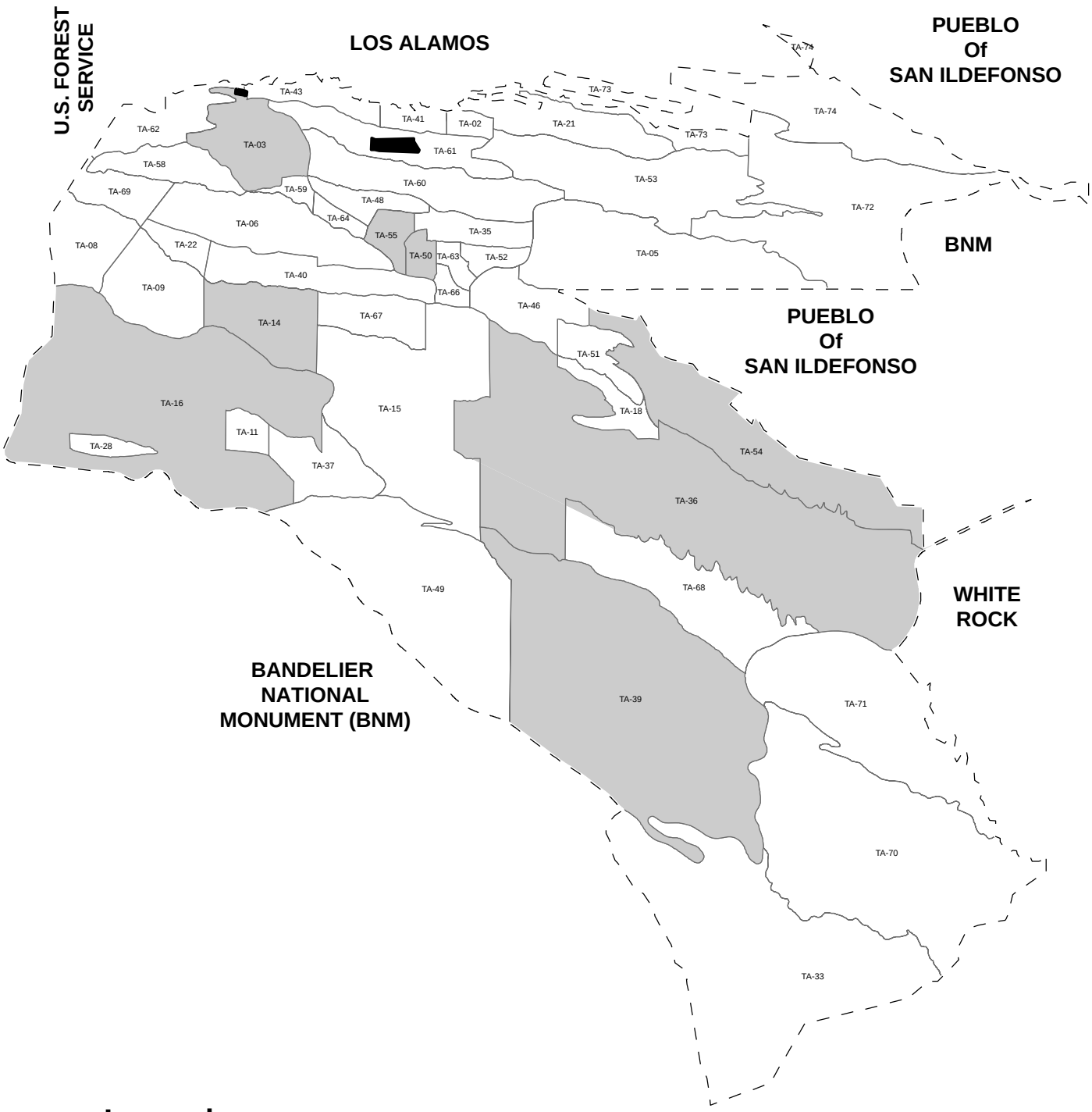


Figure 1

Regional Location Map of Los Alamos National Laboratory



Legend

Not LANL Property

0 5,000 10,000 Feet

Figure 2

Facility Boundary and Location Map of Los Alamos National Laboratory (LANL) Technical Areas (TAs)

Created by ERSS GIS TEAM. Map Number 06-0108 September12, 2005
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-ERSS staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 10 February 2006
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 01 February 2003 as captured 07 September 2004.

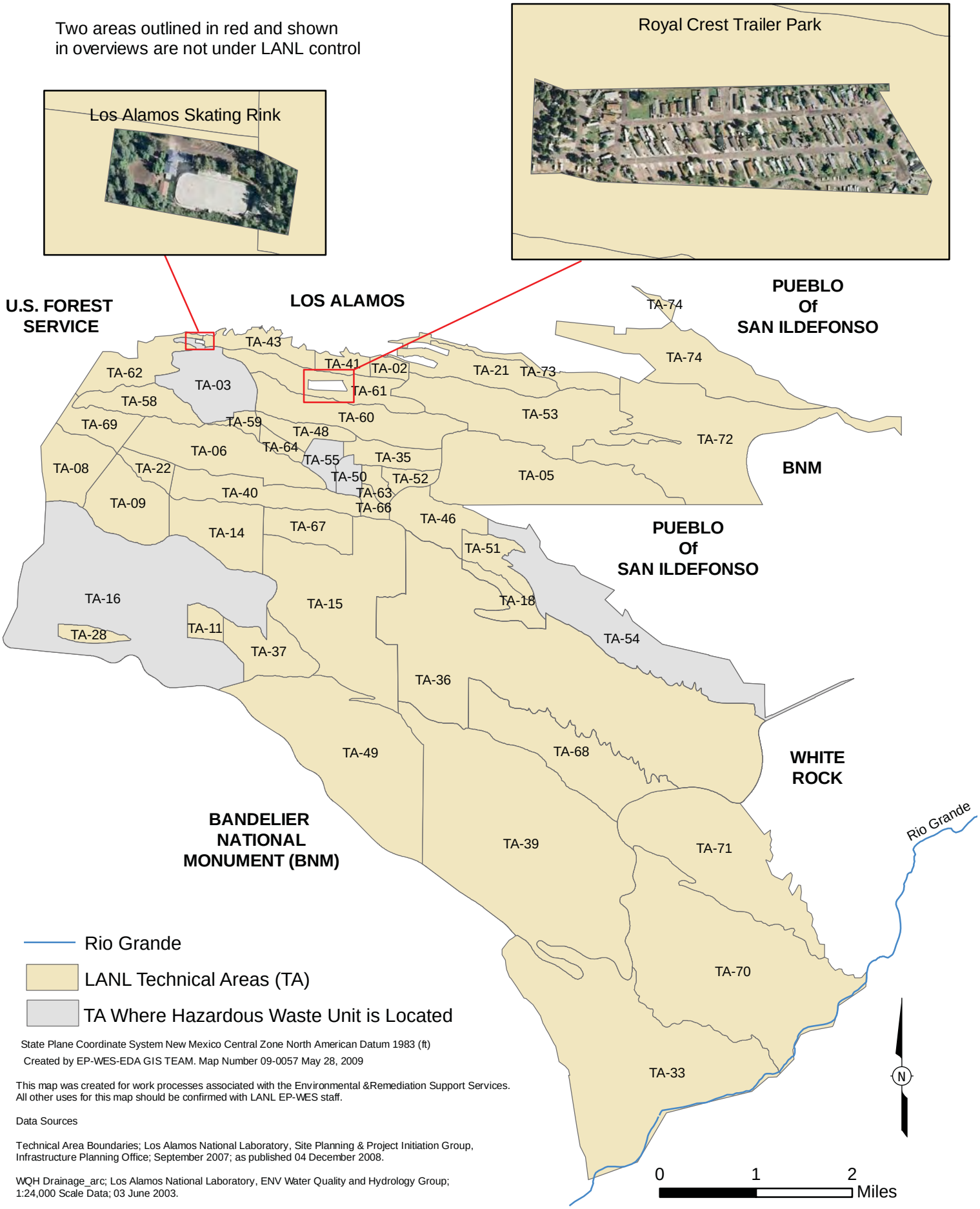


Figure 3: Los Alamos National Laboratory Facility Boundary with Detail of Non-LANL Areas

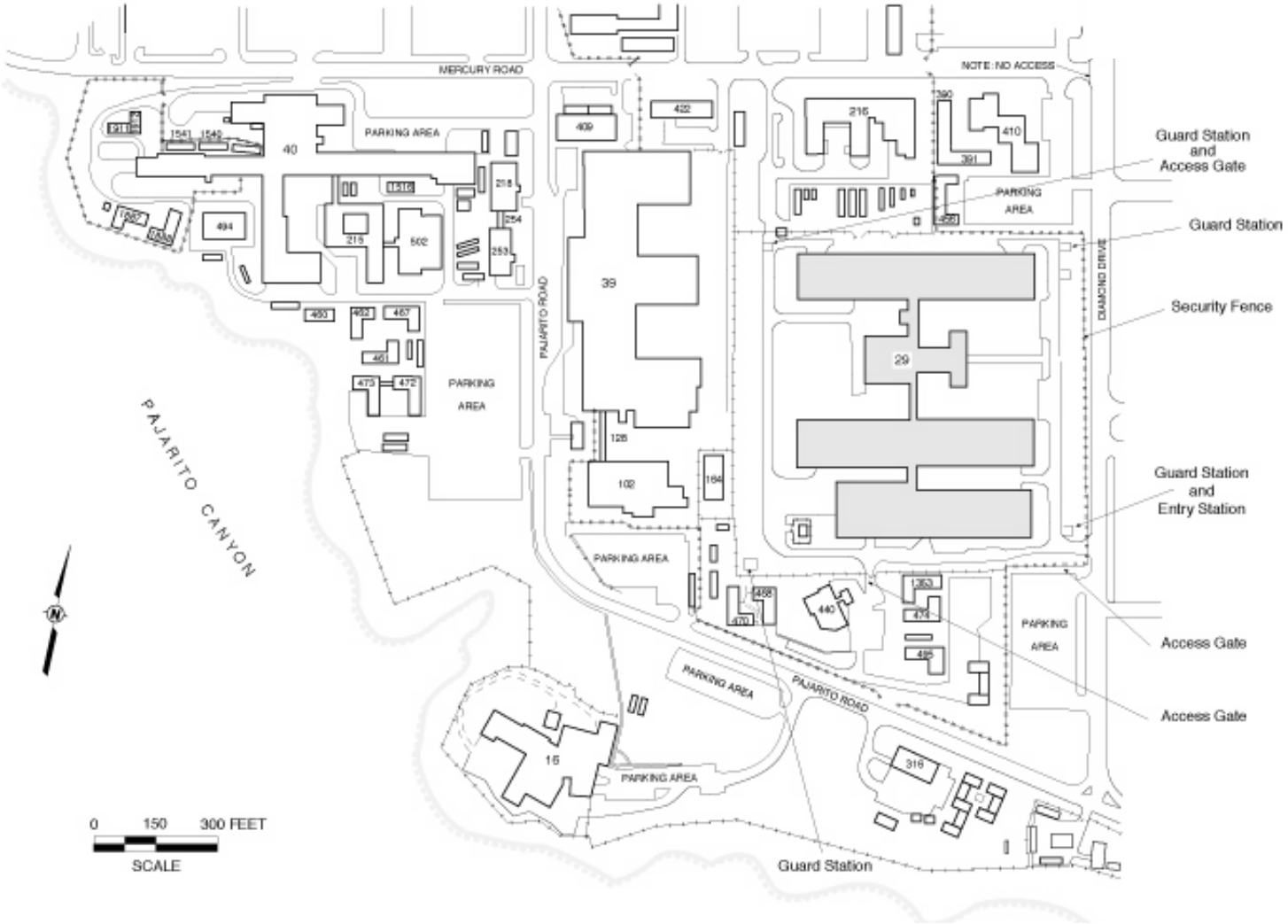


Figure 4
Technical Area (TA) 3 Location Map Showing Security Fences, Entry Gates, and Entry Stations

FIGURE 5 – RESERVED

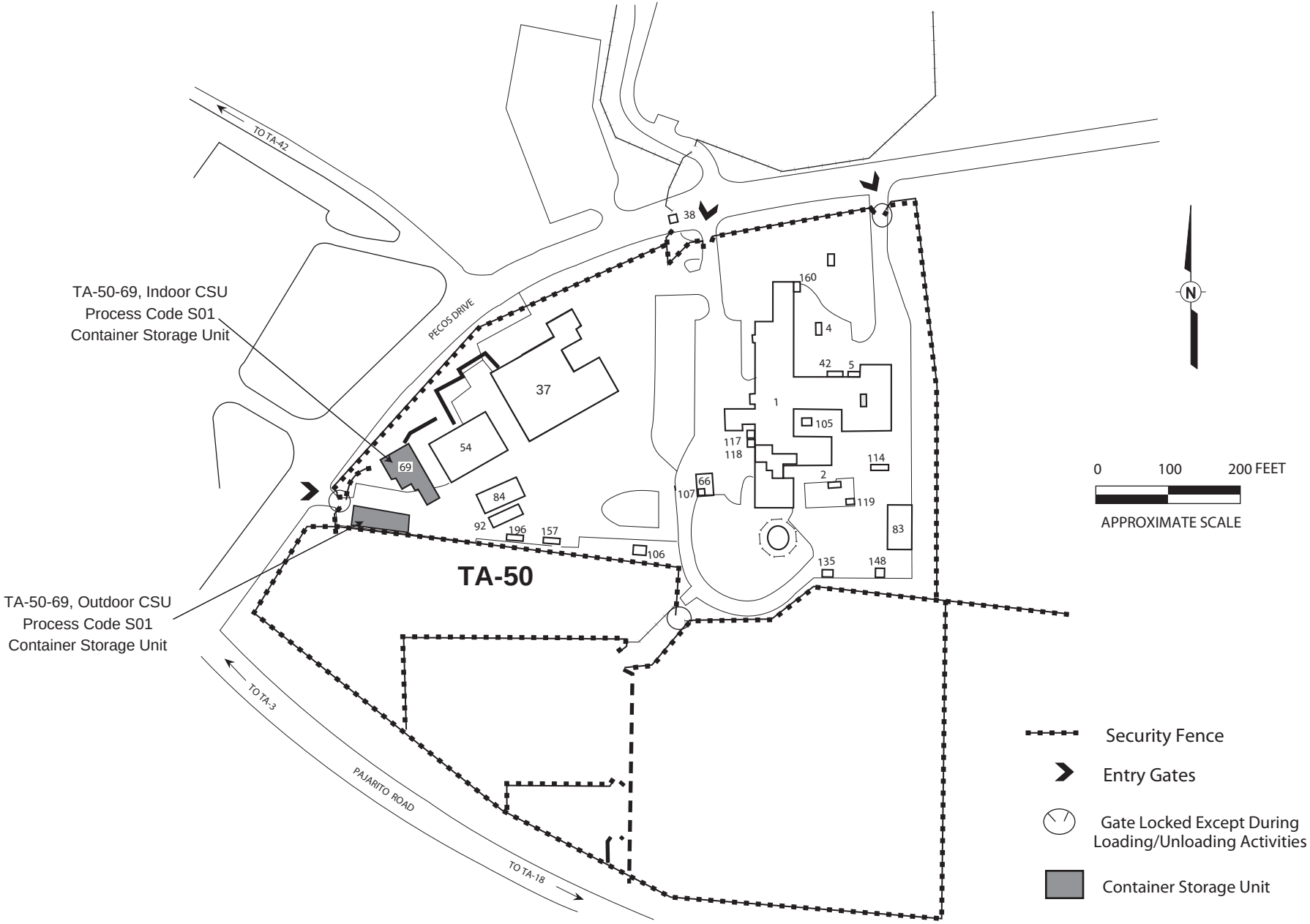


Figure 6:
Technical Area (TA) 50 Location Map Showing Security Fences, Entry Gates, and Entry Stations

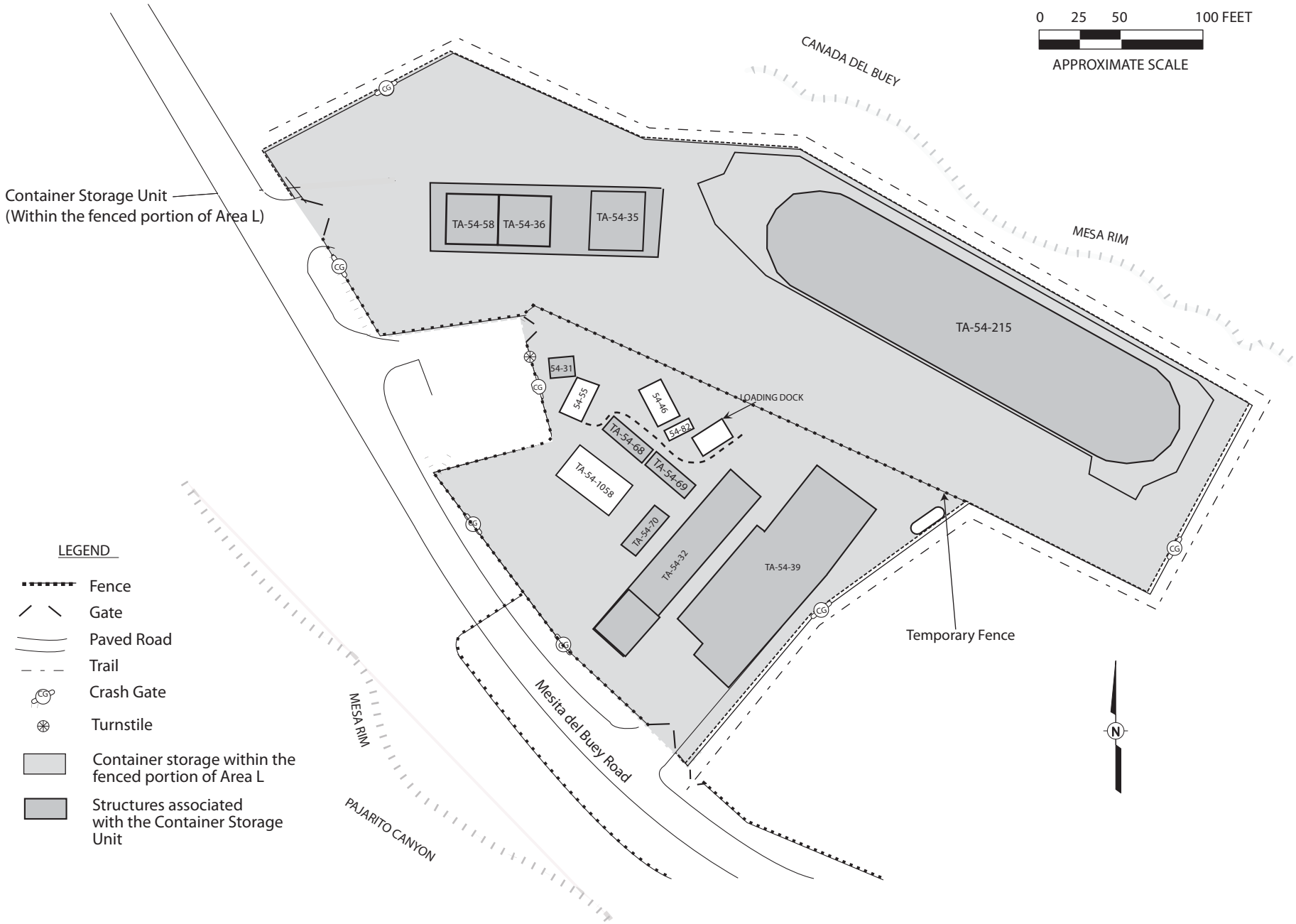
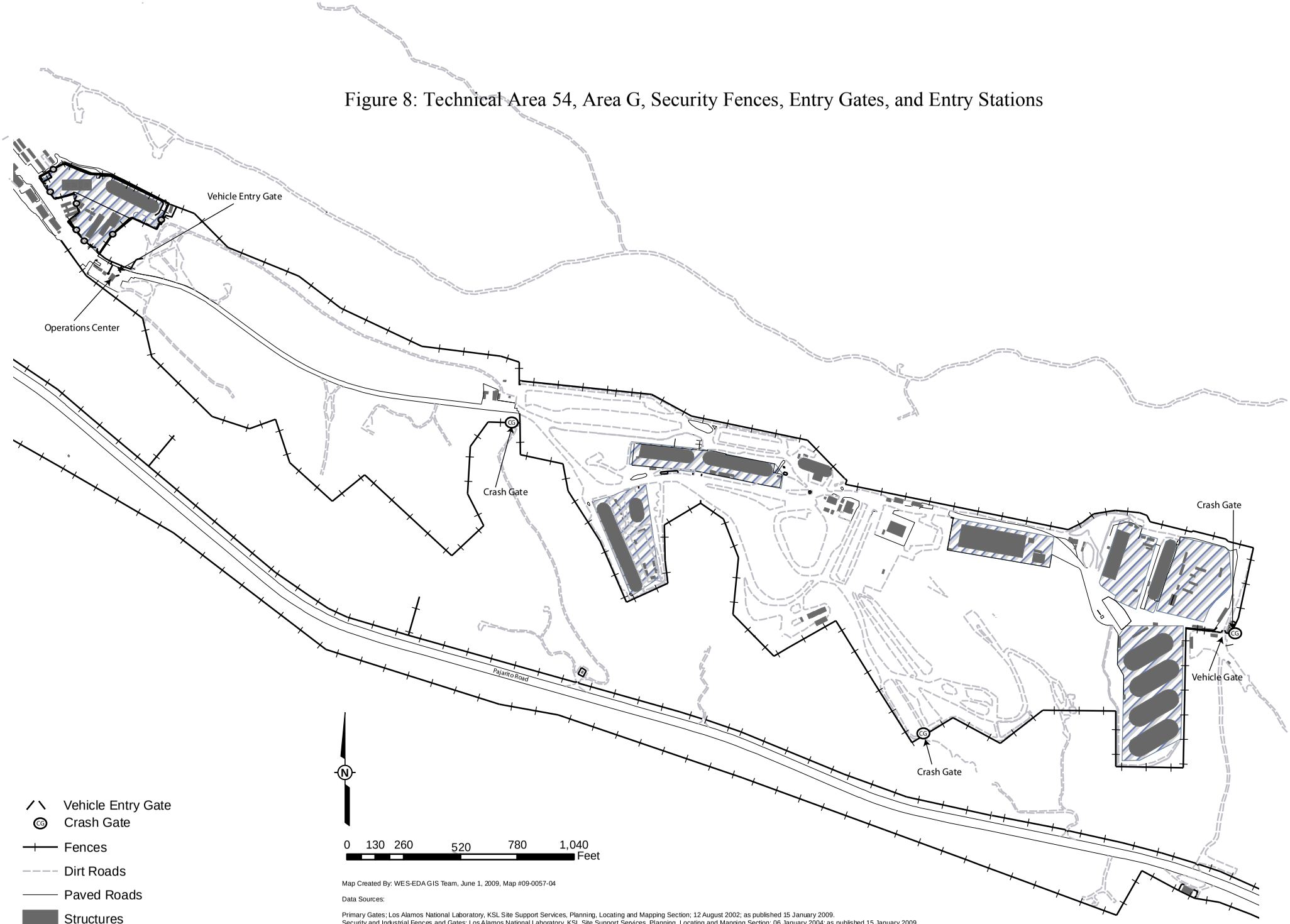


Figure 7: Technical Area 54, Area L, Security Fences, Entry Gates, and Entry Stations

Figure 8: Technical Area 54, Area G, Security Fences, Entry Gates, and Entry Stations



Map Created By: WES-EDA GIS Team, June 1, 2009, Map #09-0057-04

Data Sources:

Primary Gates; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 12 August 2002; as published 15 January 2009.
Security and Industrial Fences and Gates; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 15 January 2009.
Paved Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 15 January 2009.
Structures; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 15 January 2009.
Resource Conservation and Recovery Act (RCRA) Storage and Treatment Units; Los Alamos National Laboratory; Solid Wast Regulatory Compliance Group; 04 August 2005.
Waste Storage Features; Los Alamos National Laboratory, Environment and Remediation Support Services Division, GIS/Geotechnical Services Group, EP2007-0032; 1:2,500 Scale Data; 13 April 2007.
Materials Disposal Areas; Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program; ER2004-0221; 1:2,500 Scale Data; 23 April 2004.

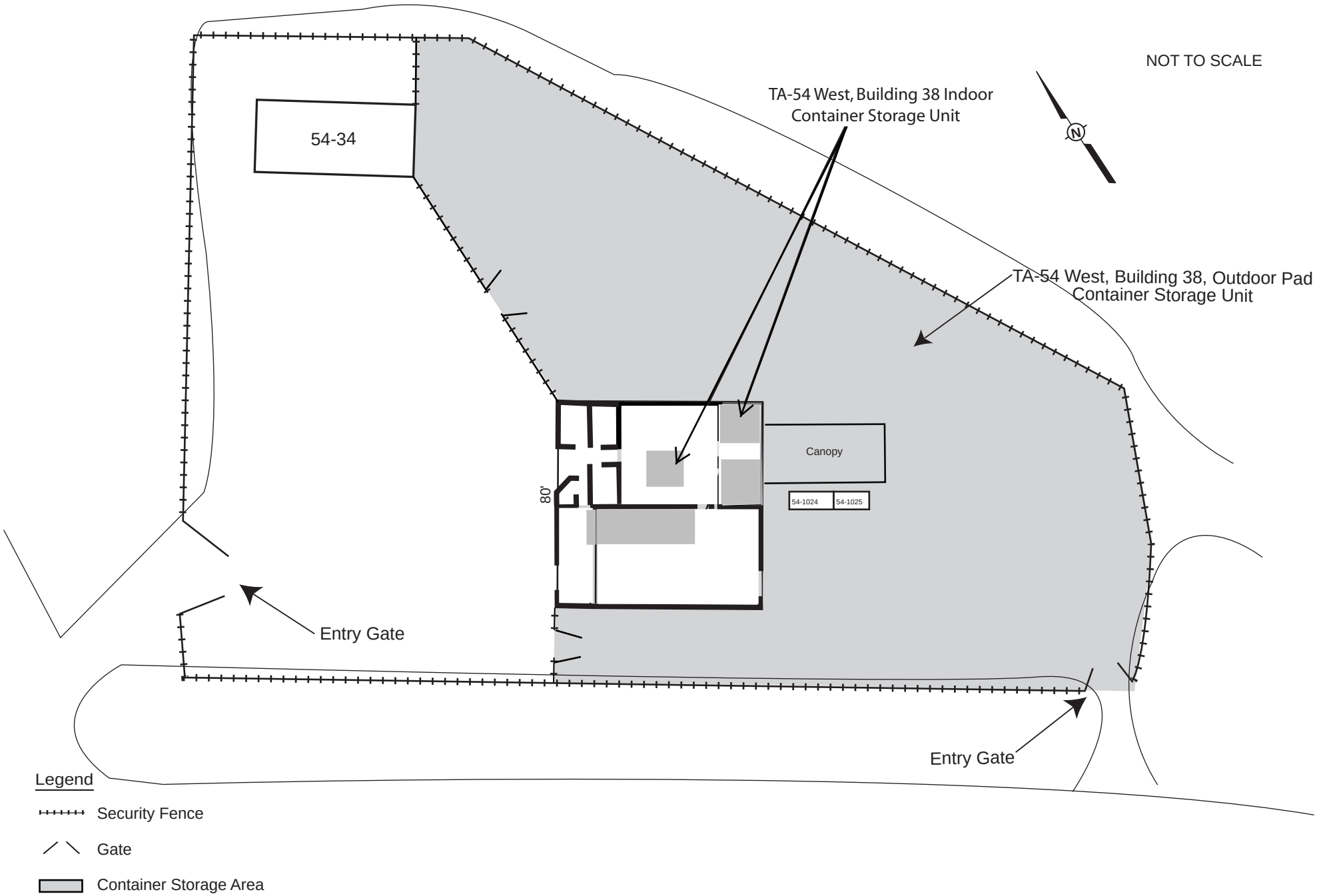


Figure 9
Technical Area (TA) 54 West Location Map Showing Security Fences, Entry Gates, and Entry Stations

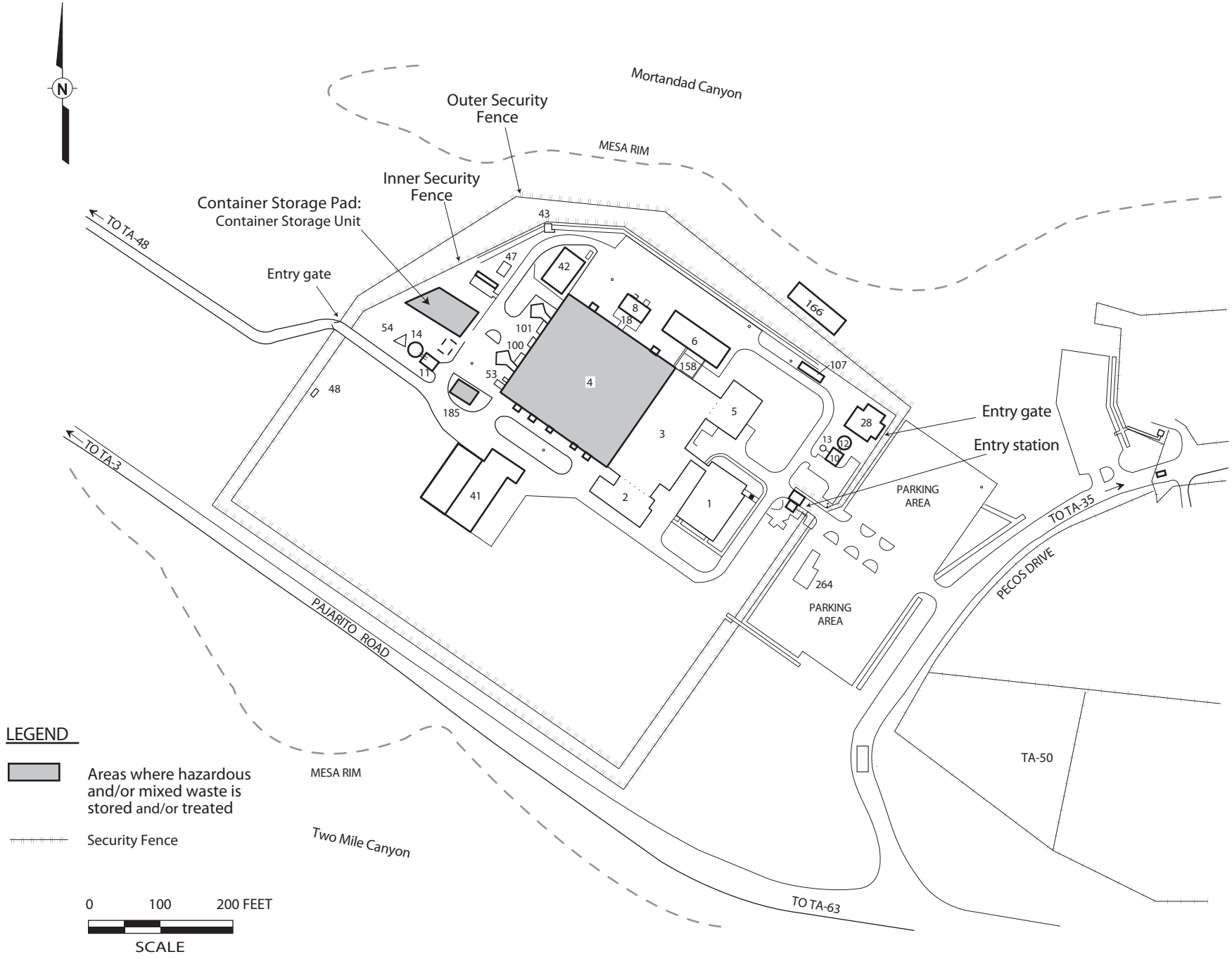


Figure 10
Technical Area (TA) 55 Location Map Showing Security Fences, Entry Gates, and Entry Stations

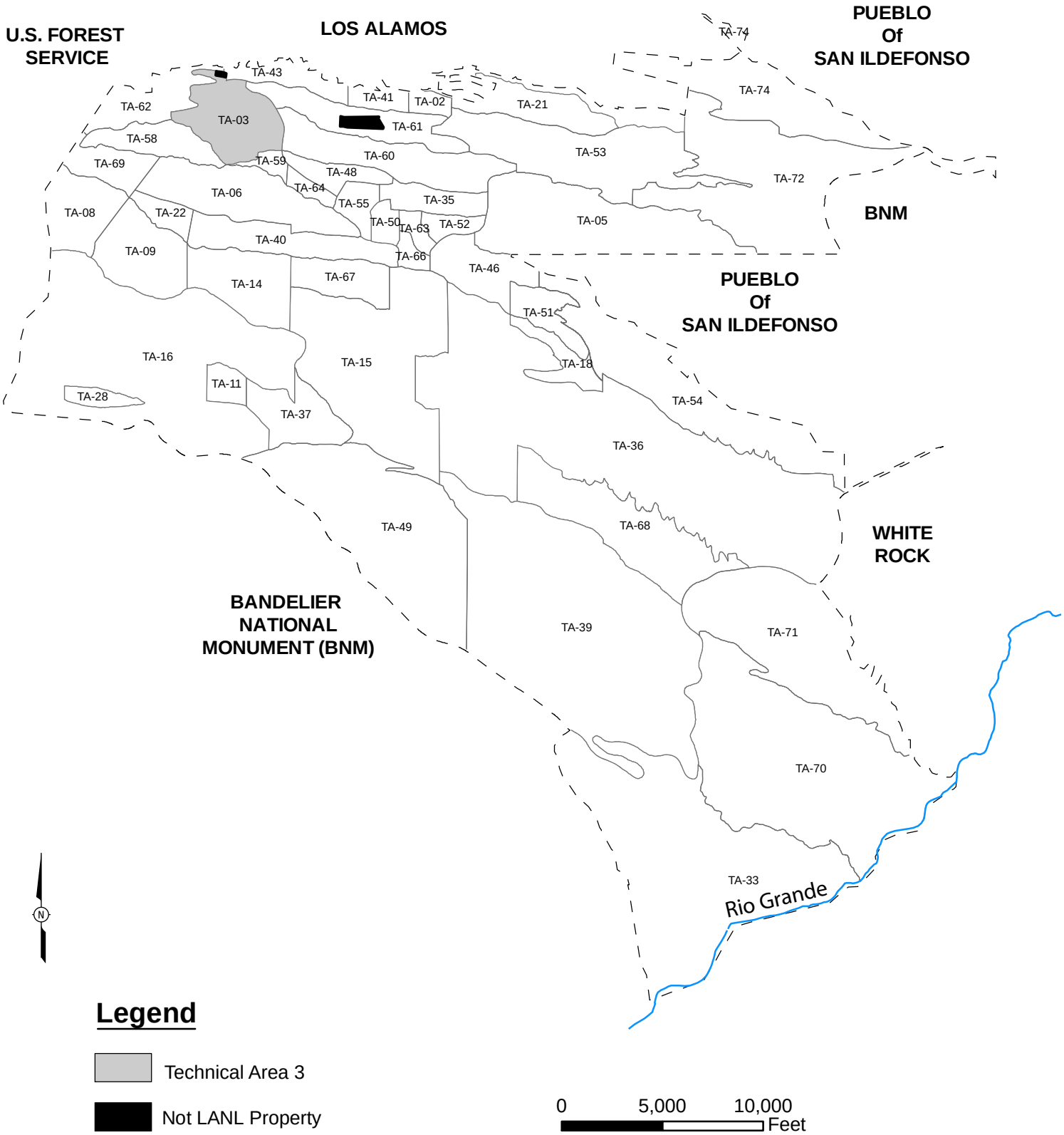


Figure 11:

Technical Area (TA) 3 Location Map

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
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Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008

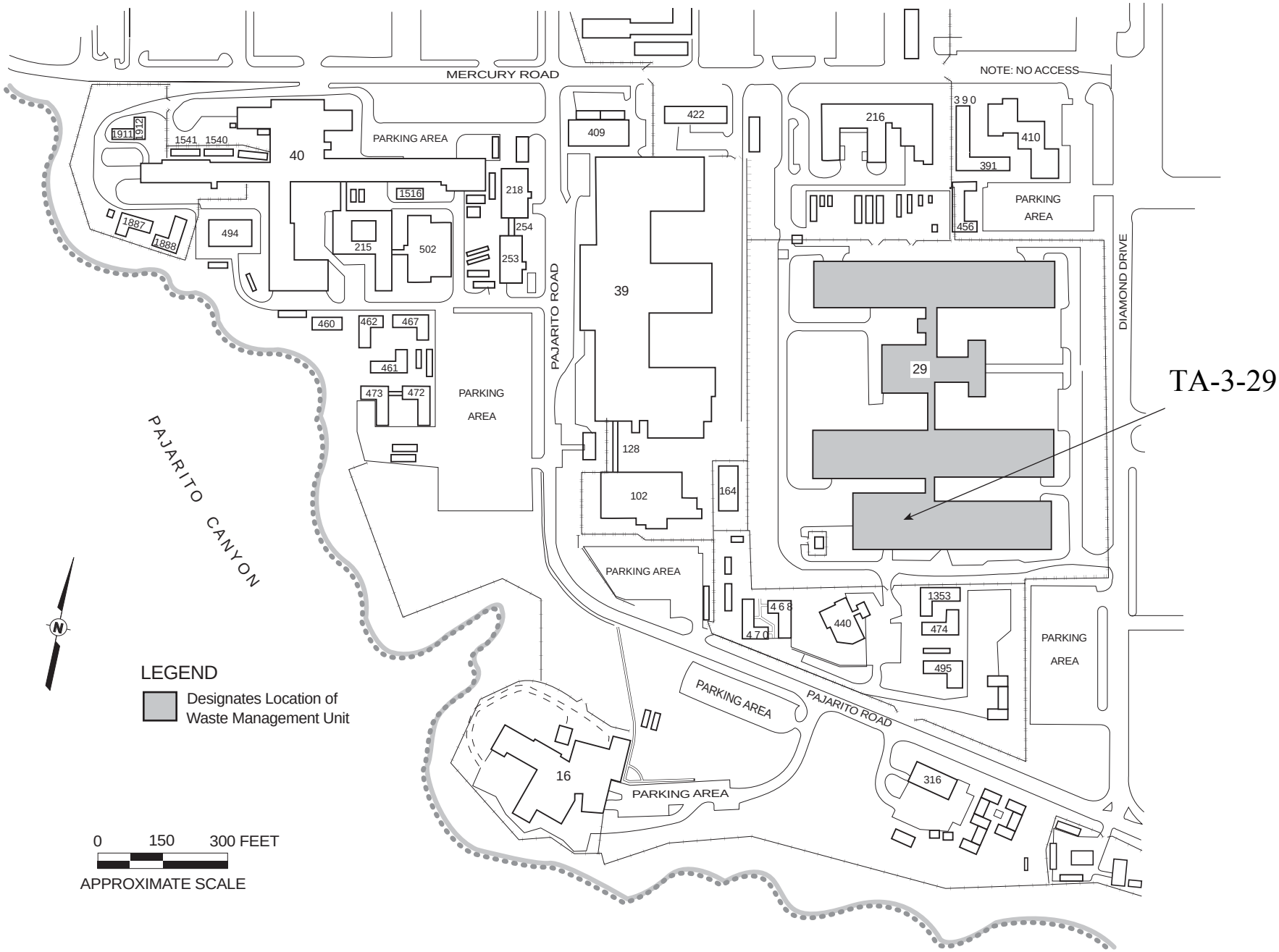


Figure 12:
Technical Area (TA) 3, Building 29, Location Map

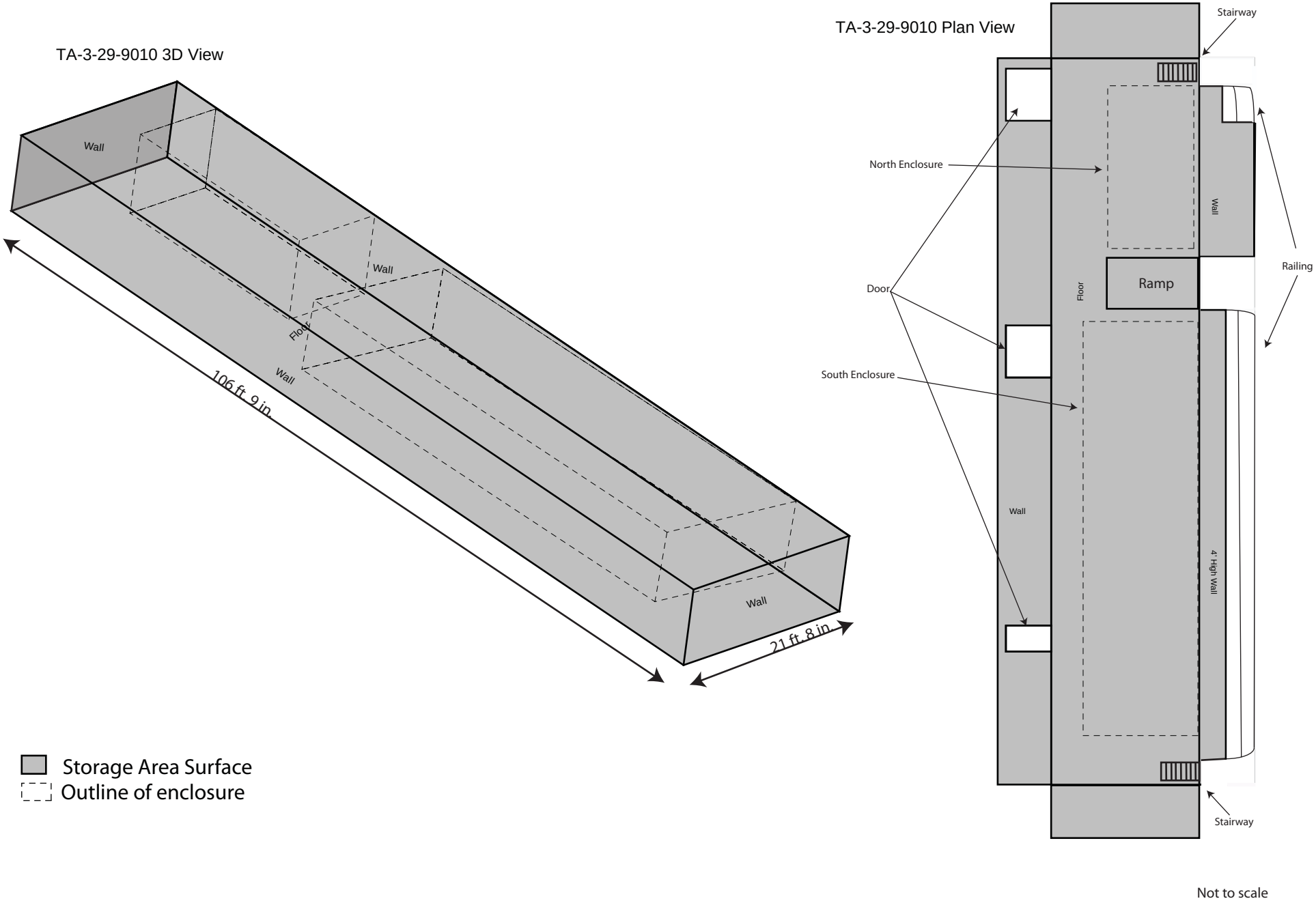


Figure 13:
Technical Area (TA) 3, Building 29, Room 9010

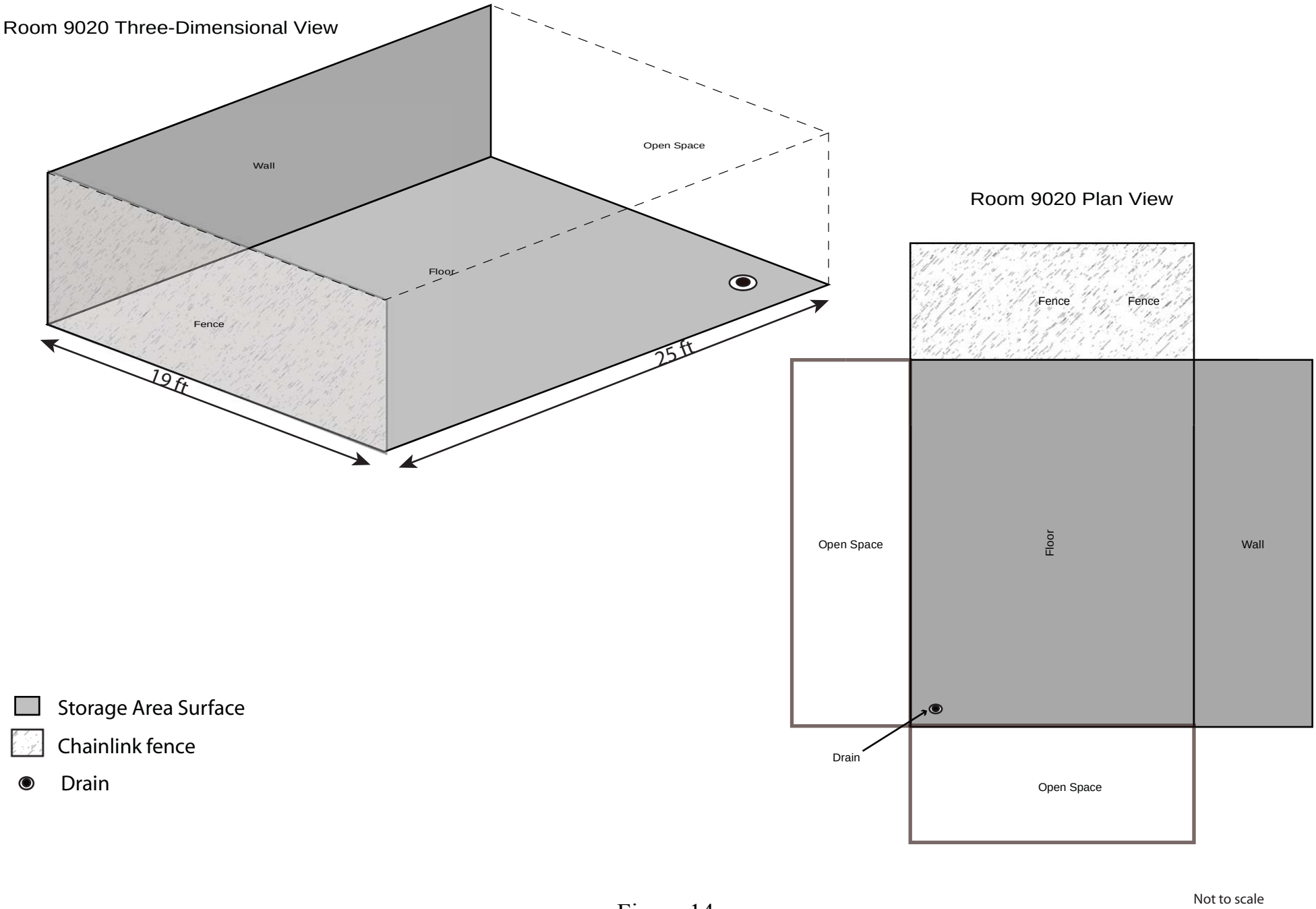


Figure 14:

Technical Area (TA) 3, Building 29, Portion of Room 9020

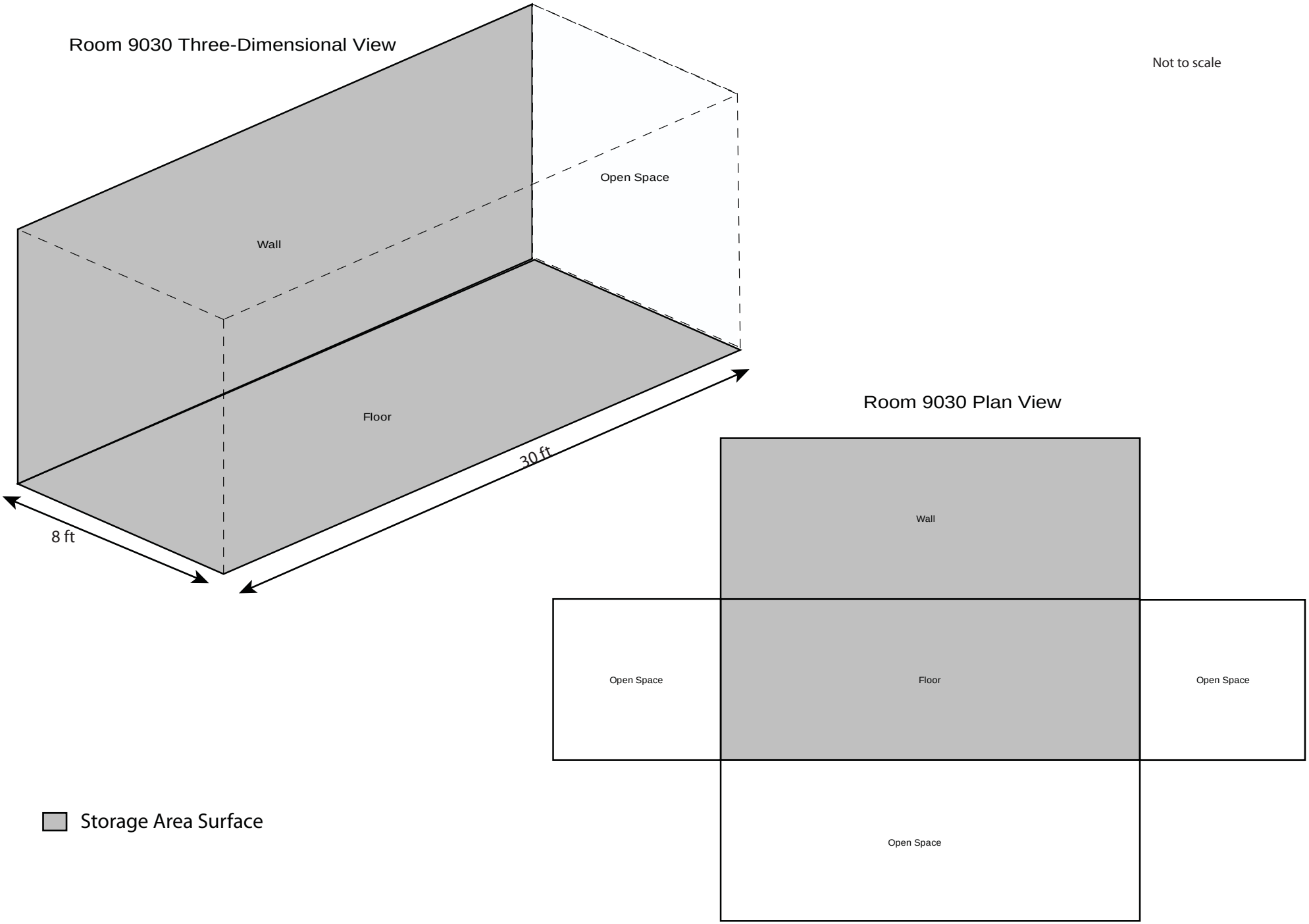


Figure 15:

Technical Area 3, Building 29, Portion of Room 9030

FIGURE 16 – RESERVED

FIGURE 17 – RESERVED

FIGURE 18 – RESERVED

FIGURE 19 – RESERVED

FIGURE 20 – RESERVED

FIGURE 21 – RESERVED

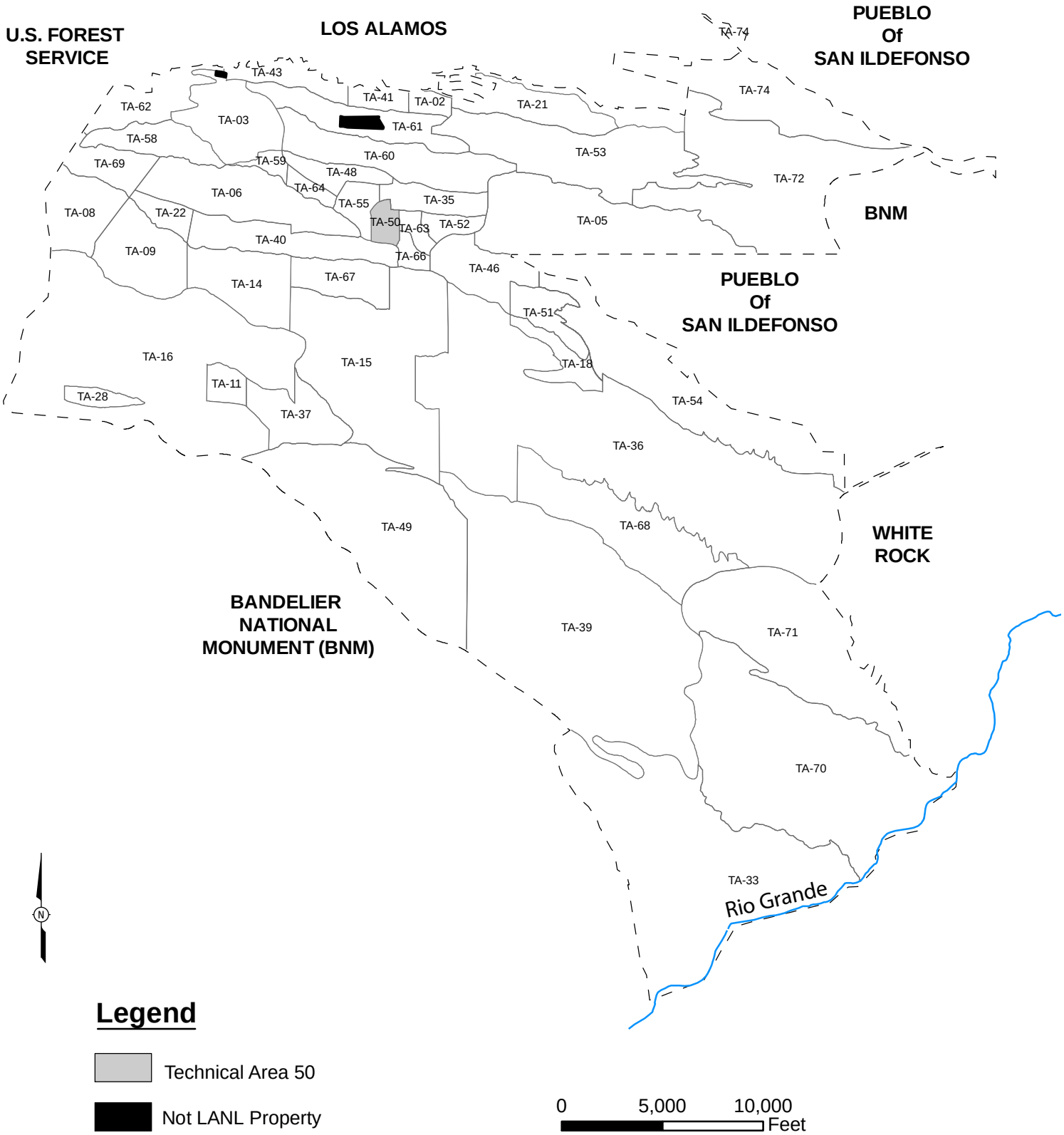
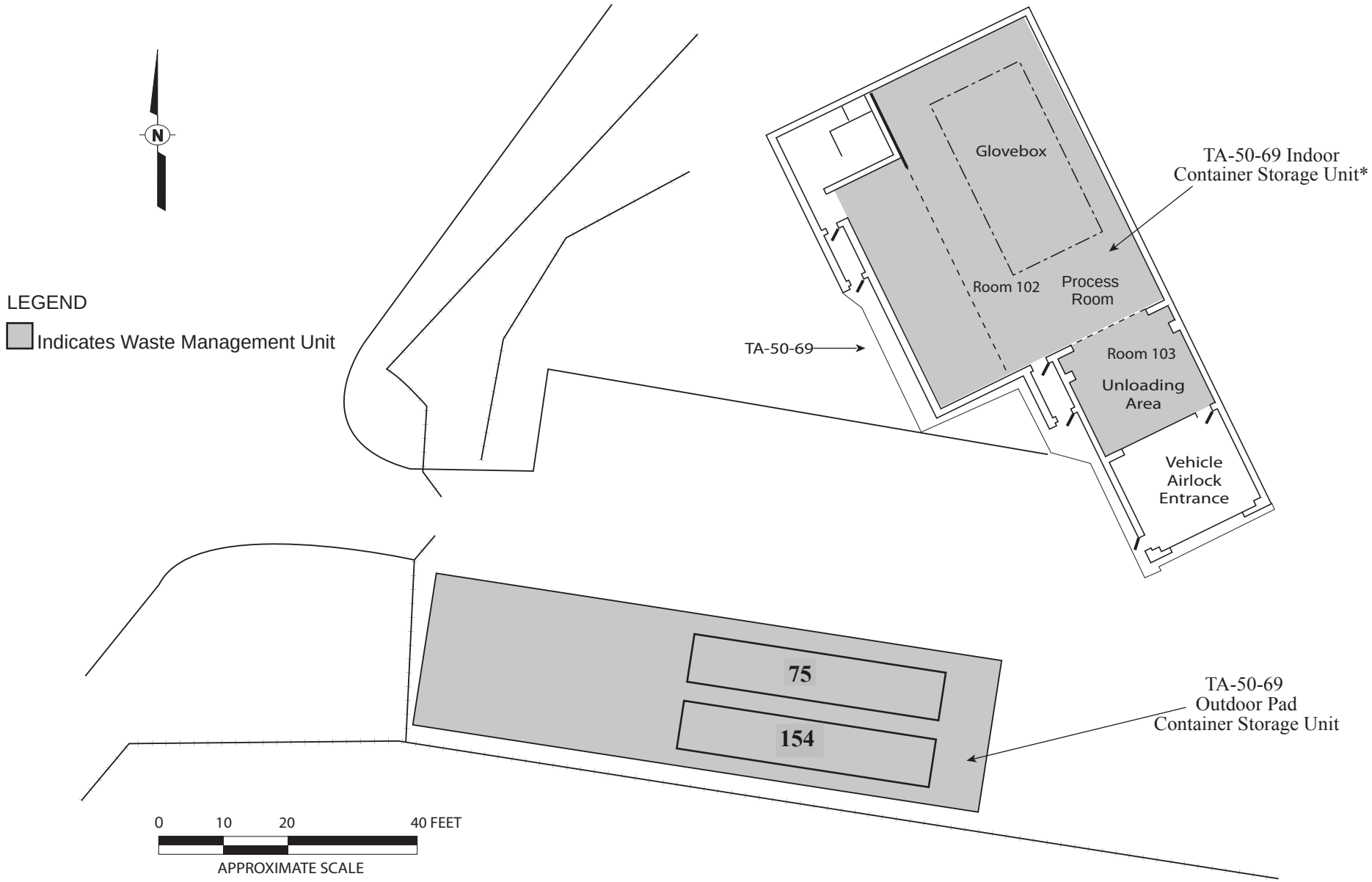


Figure 22:

Technical Area (TA) 50 Location Map

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-WES staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008



*Note: Container Storage Area in Building 69 does not include mezzanine.

Figure 23
Technical Area (TA) 50, Building 69, Indoor and Outdoor Container Storage Units

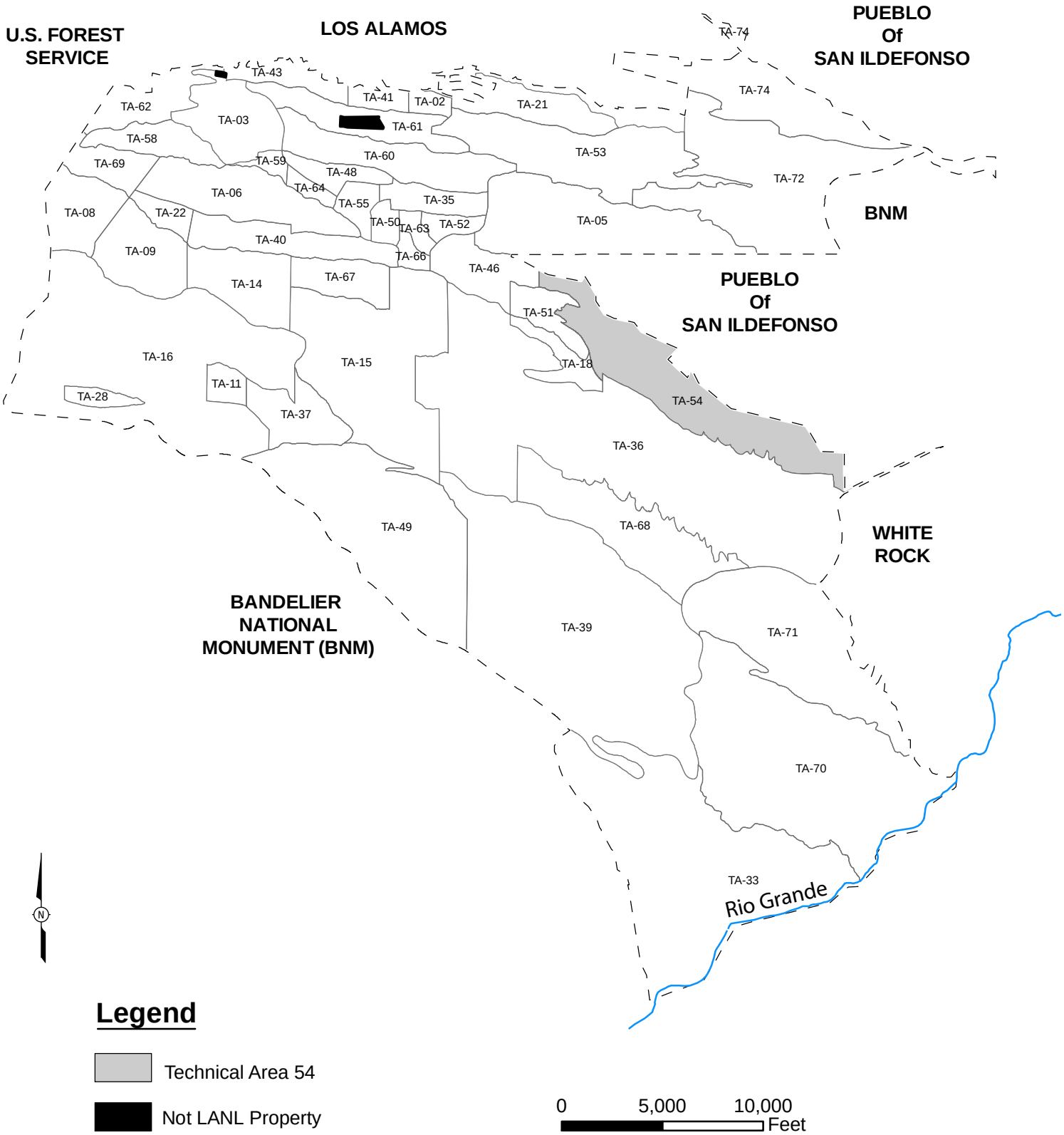


Figure 24:

Technical Area (TA) 54 Location Map

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
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Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008

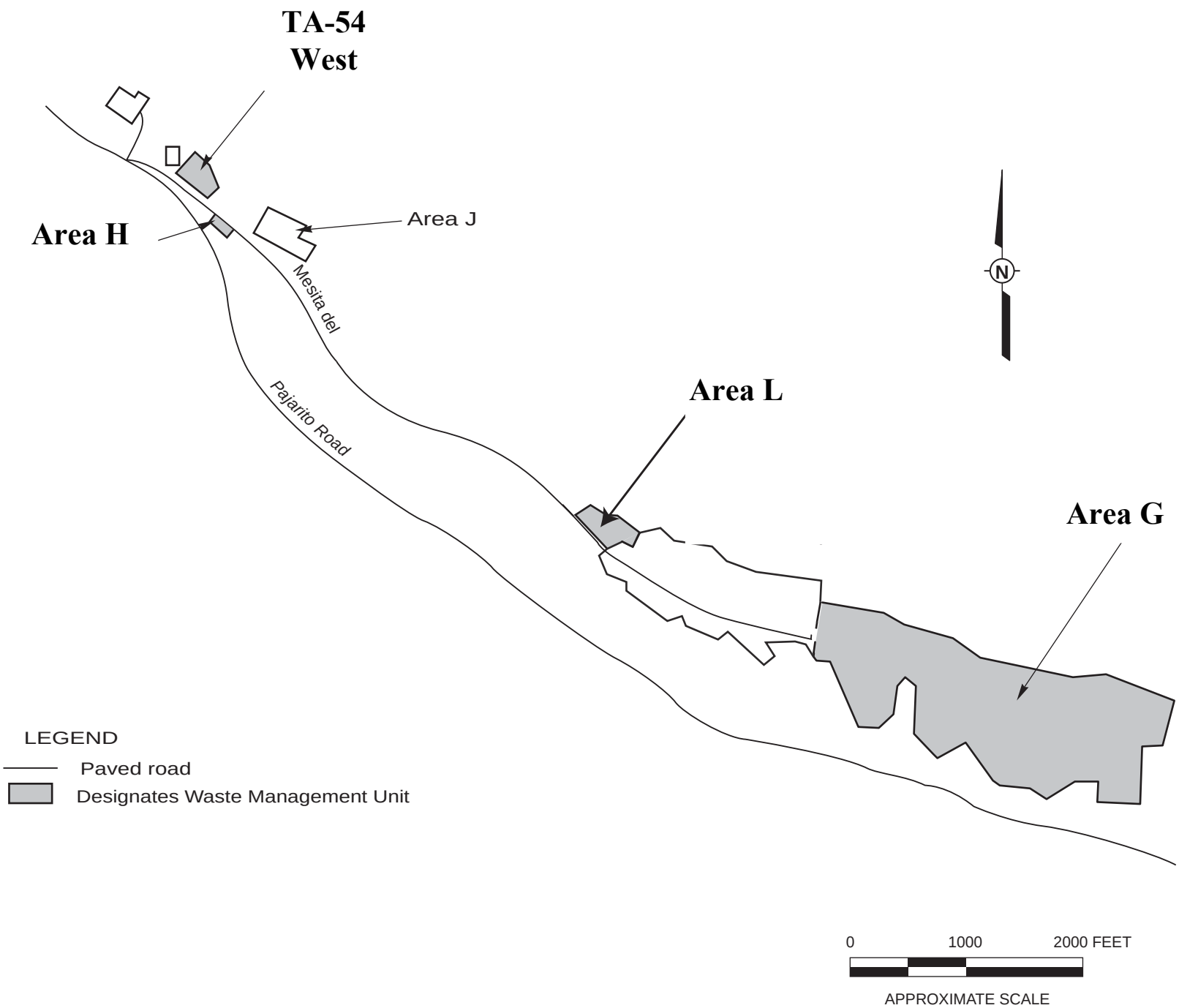


Figure 25
Technical Area (TA)-54, Areas G, H, L, and TA-54 West Location Map

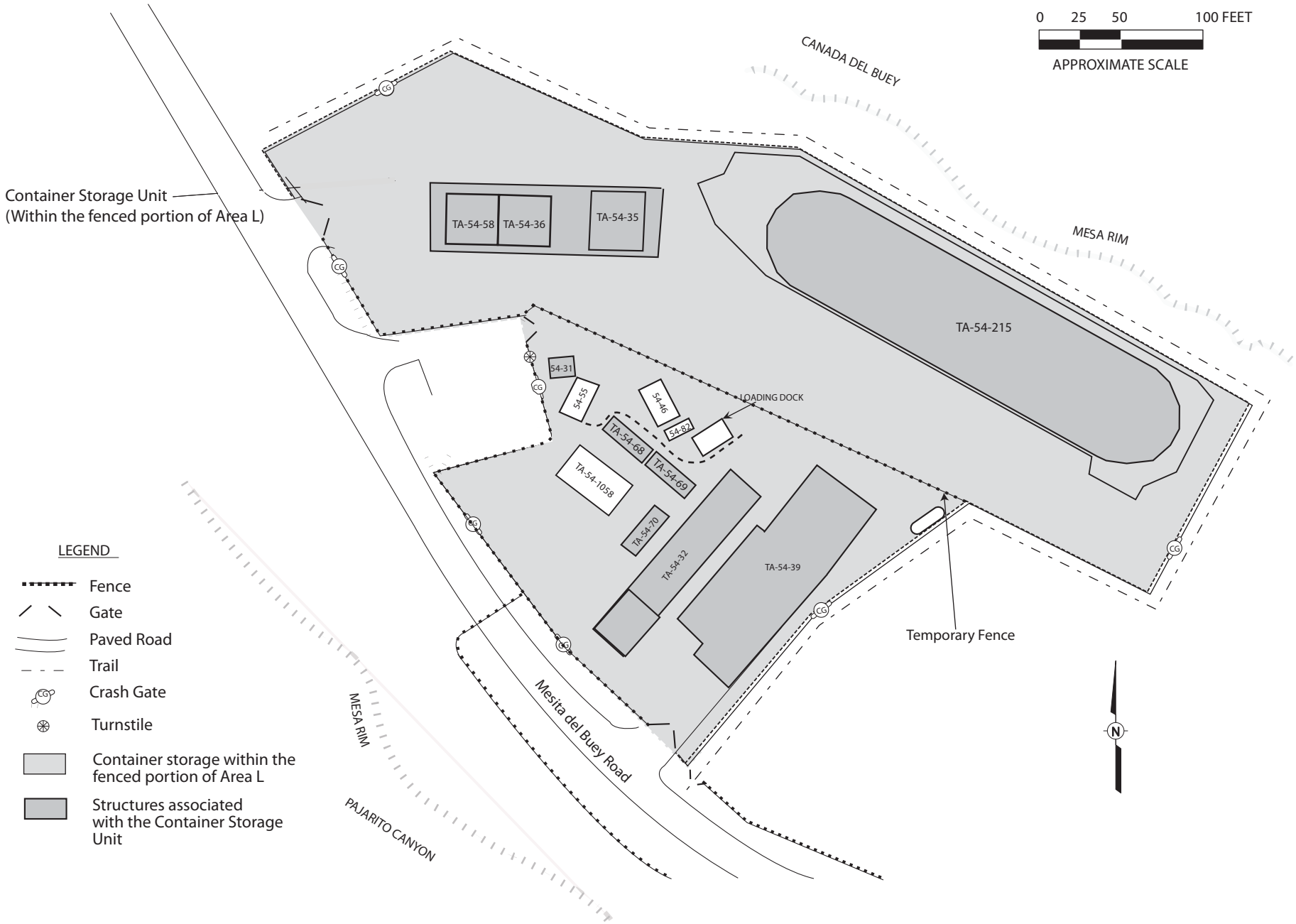


Figure 26: Technical Area 54, Area L, Container Storage Unit

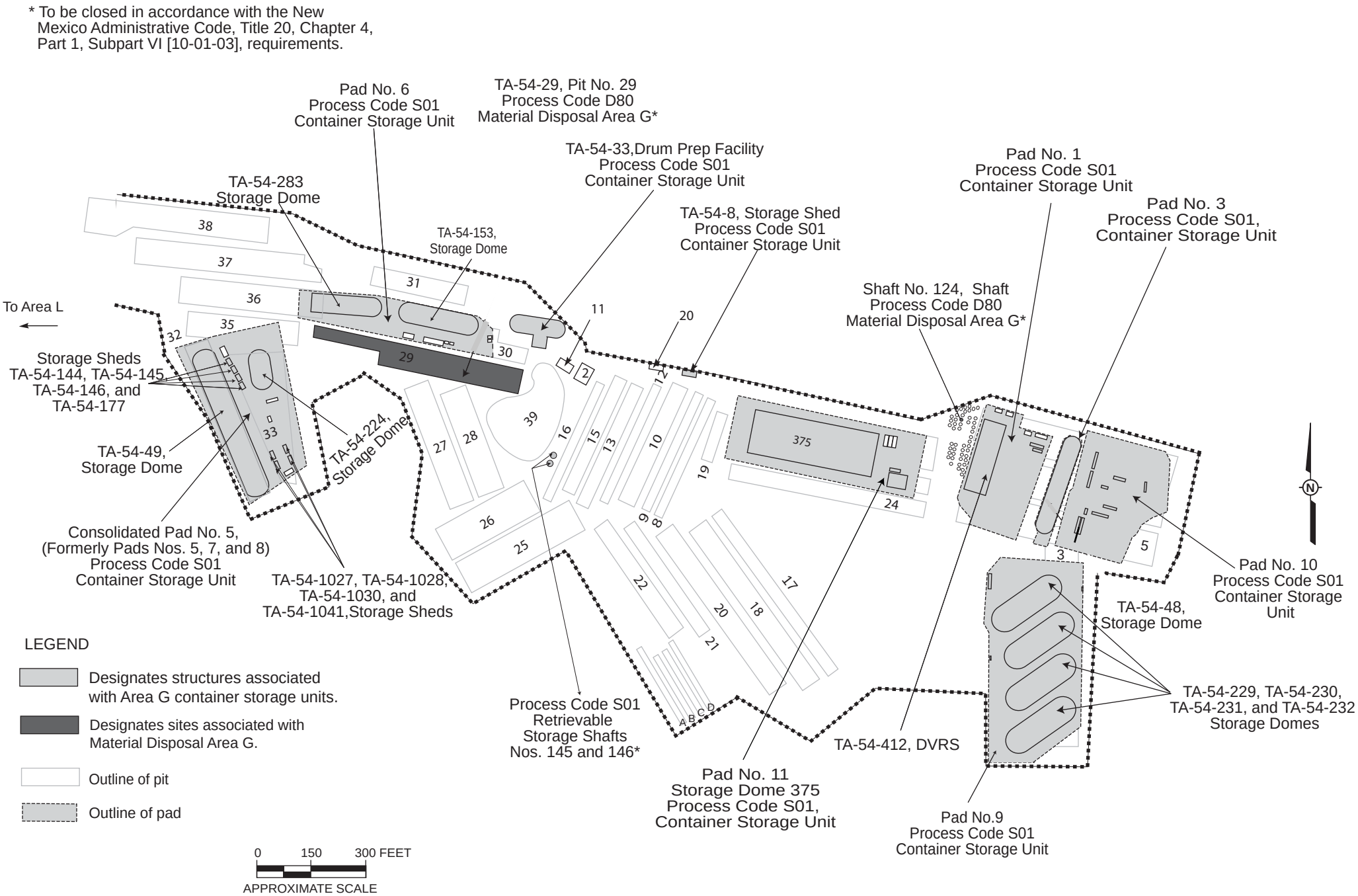


Figure 27: Technical Area 54, Area G, Container Storage Units

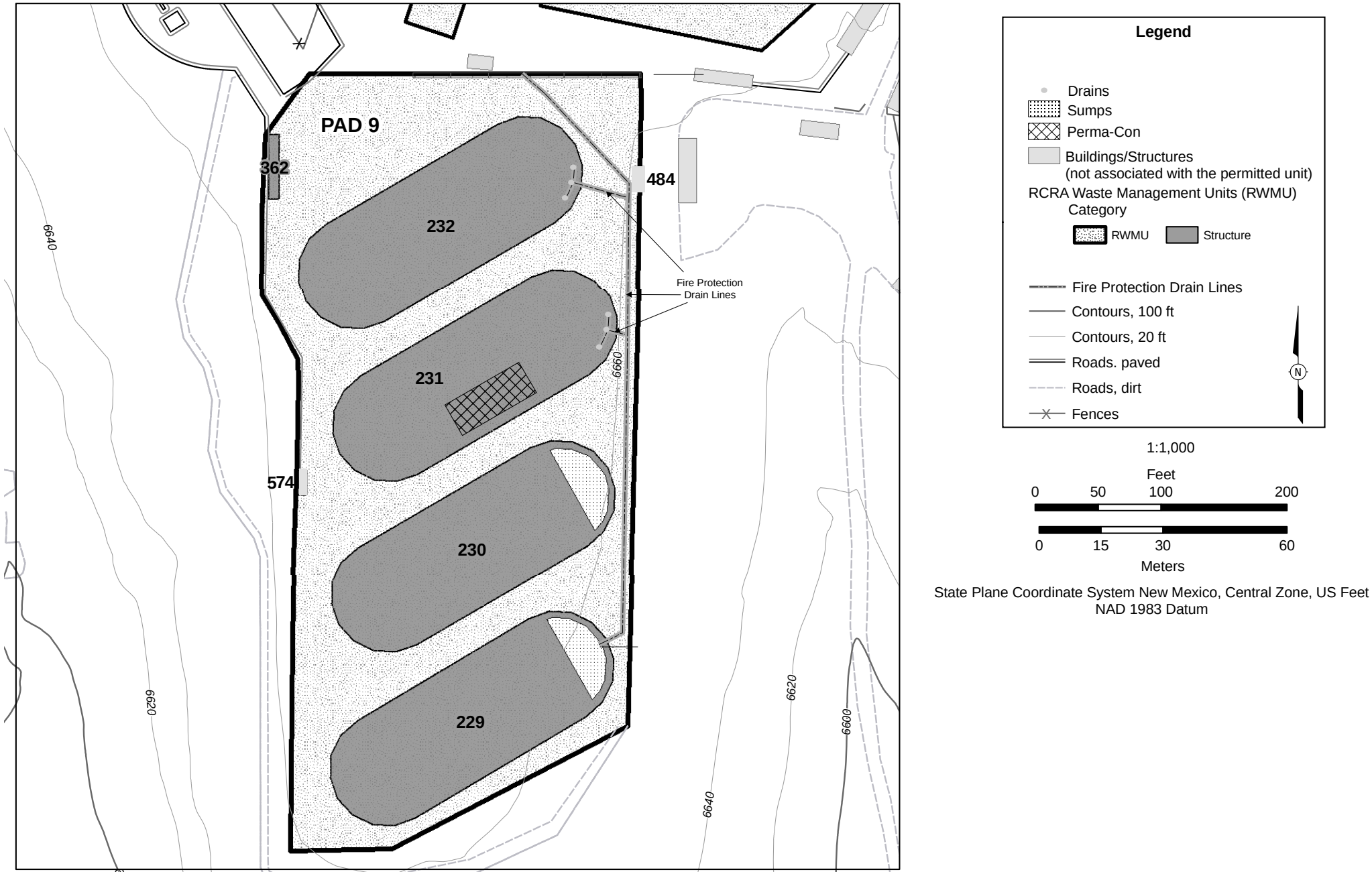


Figure 28
Technical Area (TA)-54 Area G, Pad 9, (TWISP Domes 229, 230, 231 & 232)

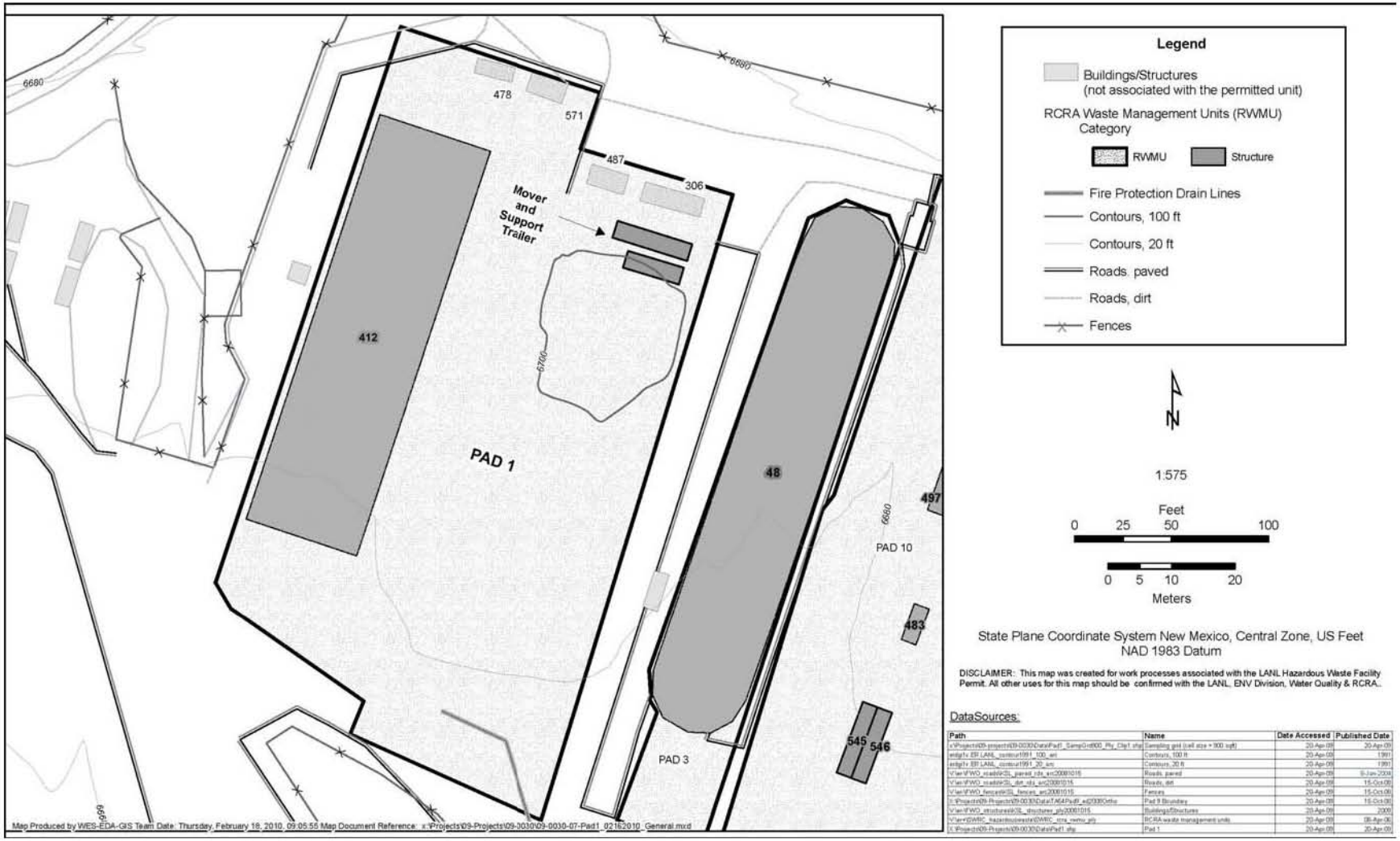
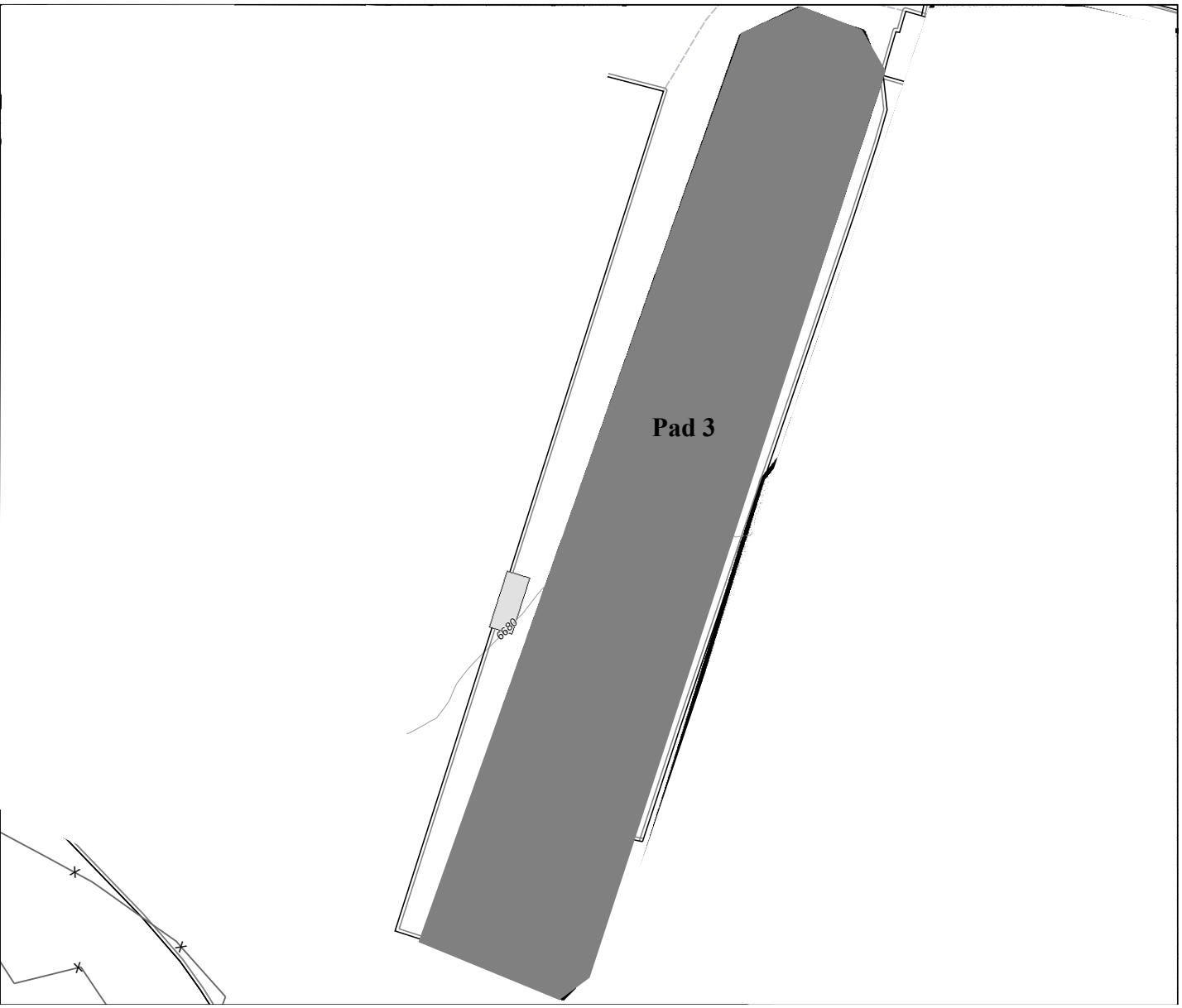


Figure 29: TA-54, Area G, Pad 1



Legend

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU)
Category

RWMU

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

N

1:475

Feet
0 25 50 100

0 3.5 7 14
Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

DISCLAIMER: This map was created for work processes associated with the LANL Hazardous Waste Facility Permit. All other uses for this map should be confirmed with the LANL, ENV Division, Water Quality & RCRA..

Figure 30:
Technical Area (TA)-54, Area G, Pad 3

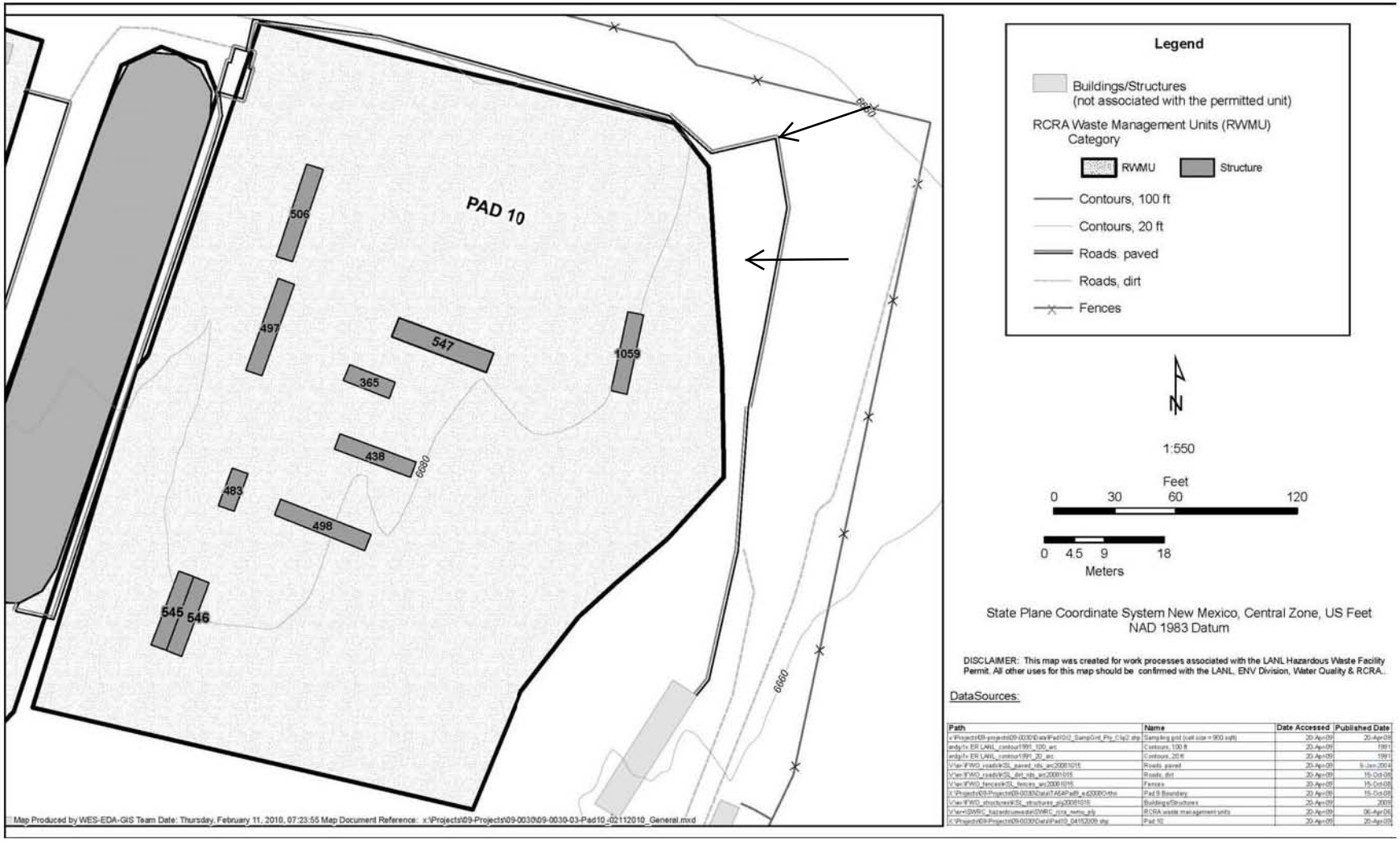
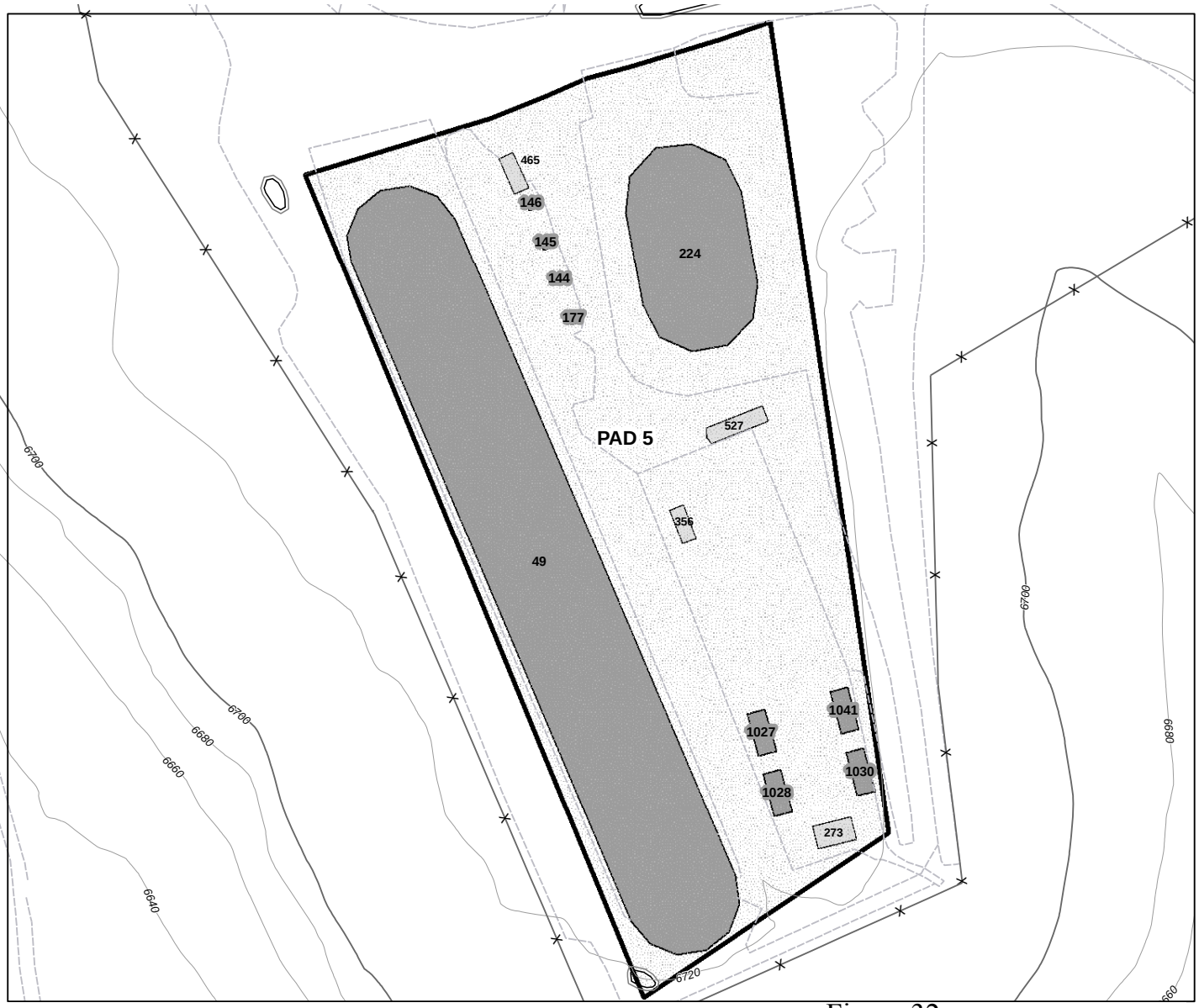


Figure 31: TA-54, Area G, Pad 10



Legend

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU) Category

RWMU

Structure

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

N

1:750

Feet

0 37.5 75 150

0 12.5 25 50

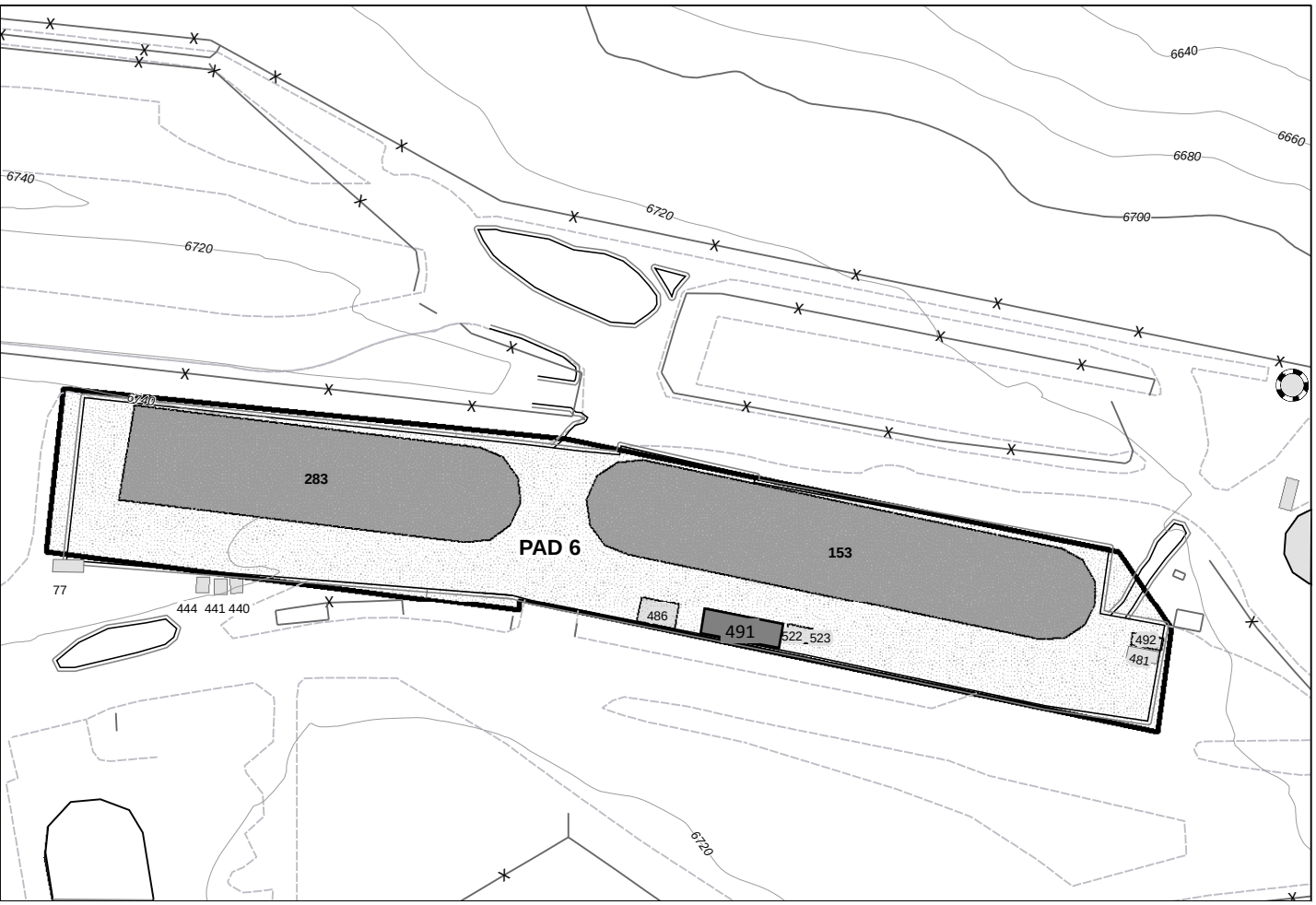
Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

DISCLAIMER: This map was created for work processes associated with the LANL Hazardous Waste Facility Permit. All other uses for this map should be confirmed with the LANL, ENV Division, Water Quality & RCRA..

Figure 32

Technical Area (TA)-54, Area G, Pad 5 (Domes 49 and 224; Storage Sheds 144, 145, 146, 177, 1027,1028, 1030, and 1041)



Legend

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU)
Category

RWMU

Structure

Sediment Trap

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

N

1:975

Feet
0 40 80 160

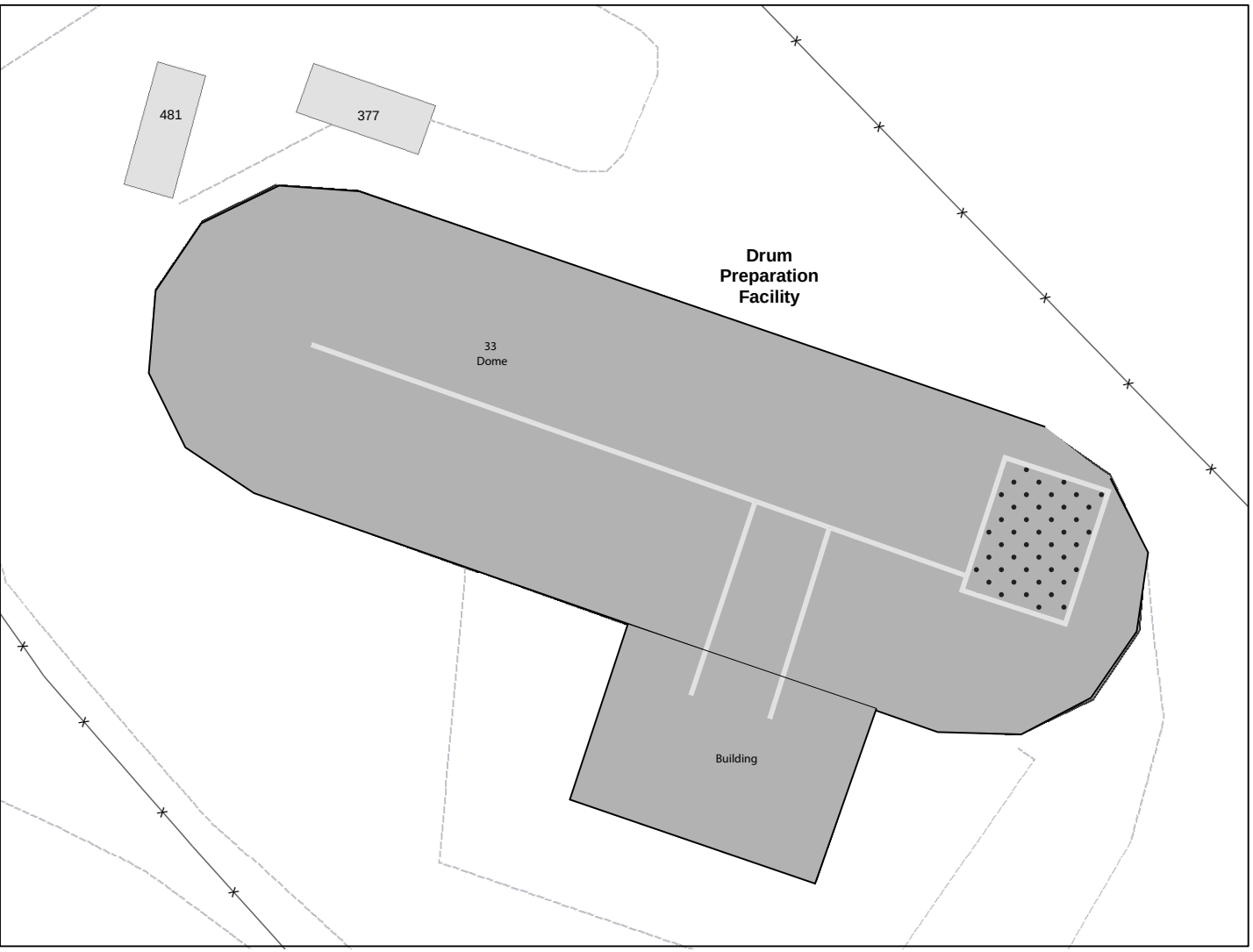
0 12.5 25 50
Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

DISCLAIMER: This map was created for work processes associated with the LANL Hazardous Waste Facility Permit. All other uses for this map should be confirmed with the LANL, ENV Division, Water Quality & RCRA..

Figure 33
Technical Area (TA)-54, Area G, Pad 6, (Domes 153 & 283)

Figure 34
Technical Area (TA)-54, Area G, Storage Shed 8



Legend

Sumps*

Buildings/Structures
(not associated with the permitted unit)

RCRA Waste Management Units (RWMU)
Category

RWMU

Structure

Drain Lines*

Contours, 100 ft

Contours, 20 ft

Roads. paved

Roads, dirt

Fences

** Location and size are approximate.*

N

1:230

Feet

0 15 30 60

0 4.5 9 18

Meters

State Plane Coordinate System New Mexico, Central Zone, US Feet
NAD 1983 Datum

DISCLAIMER: This map was created for work processes associated with the LANL Hazardous Waste Facility Permit. All other uses for this map should be confirmed with the LANL, ENV Division, Water Quality & RCRA..

Figure 35
Technical Area (TA)-54, Area G, Building 33

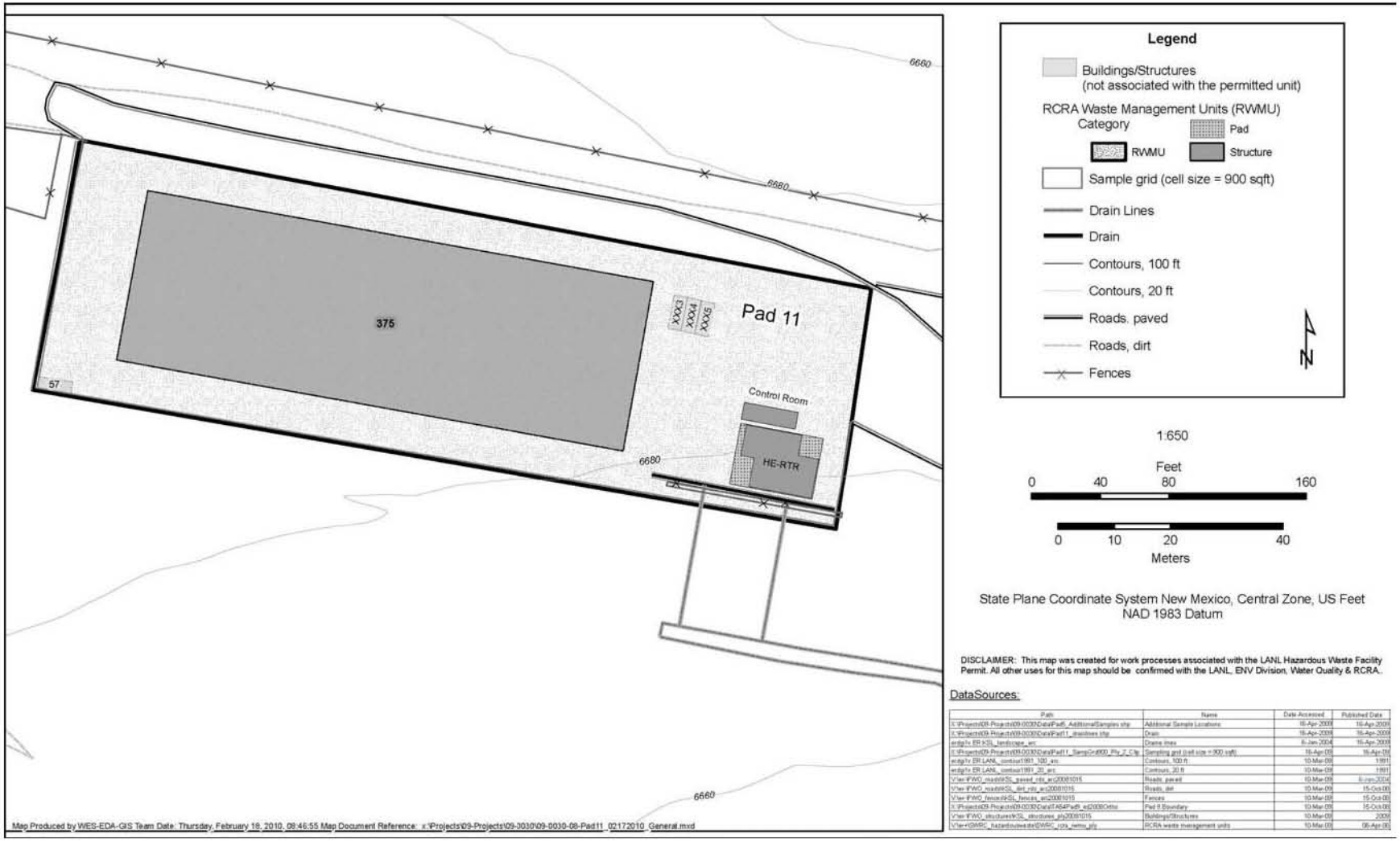


Figure 36: TA-54, Area G, Pad 11

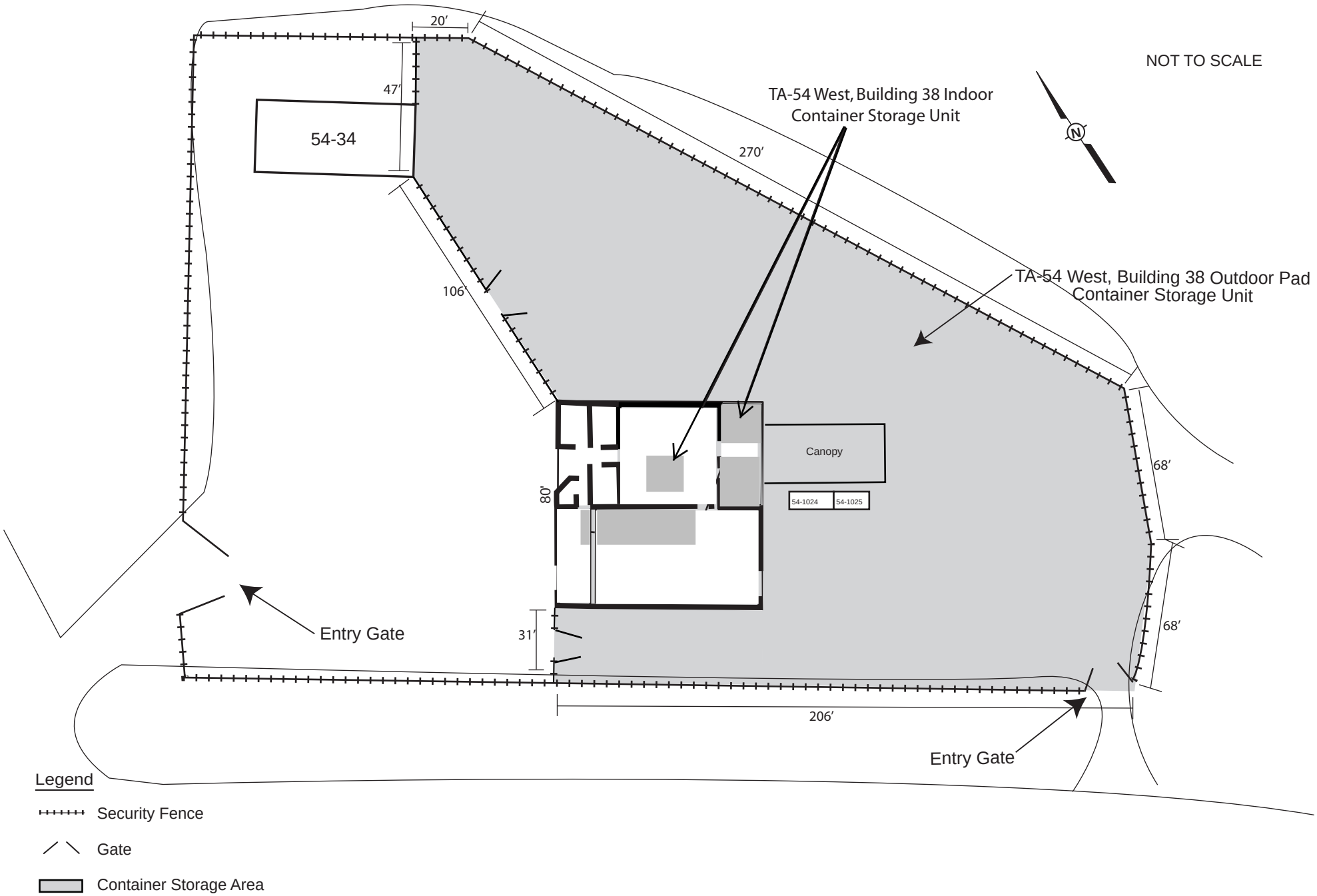


Figure 37
Technical Area (TA) 54 West, Building 38 Indoor (High Bay and Low Bay) and Outdoor Pad

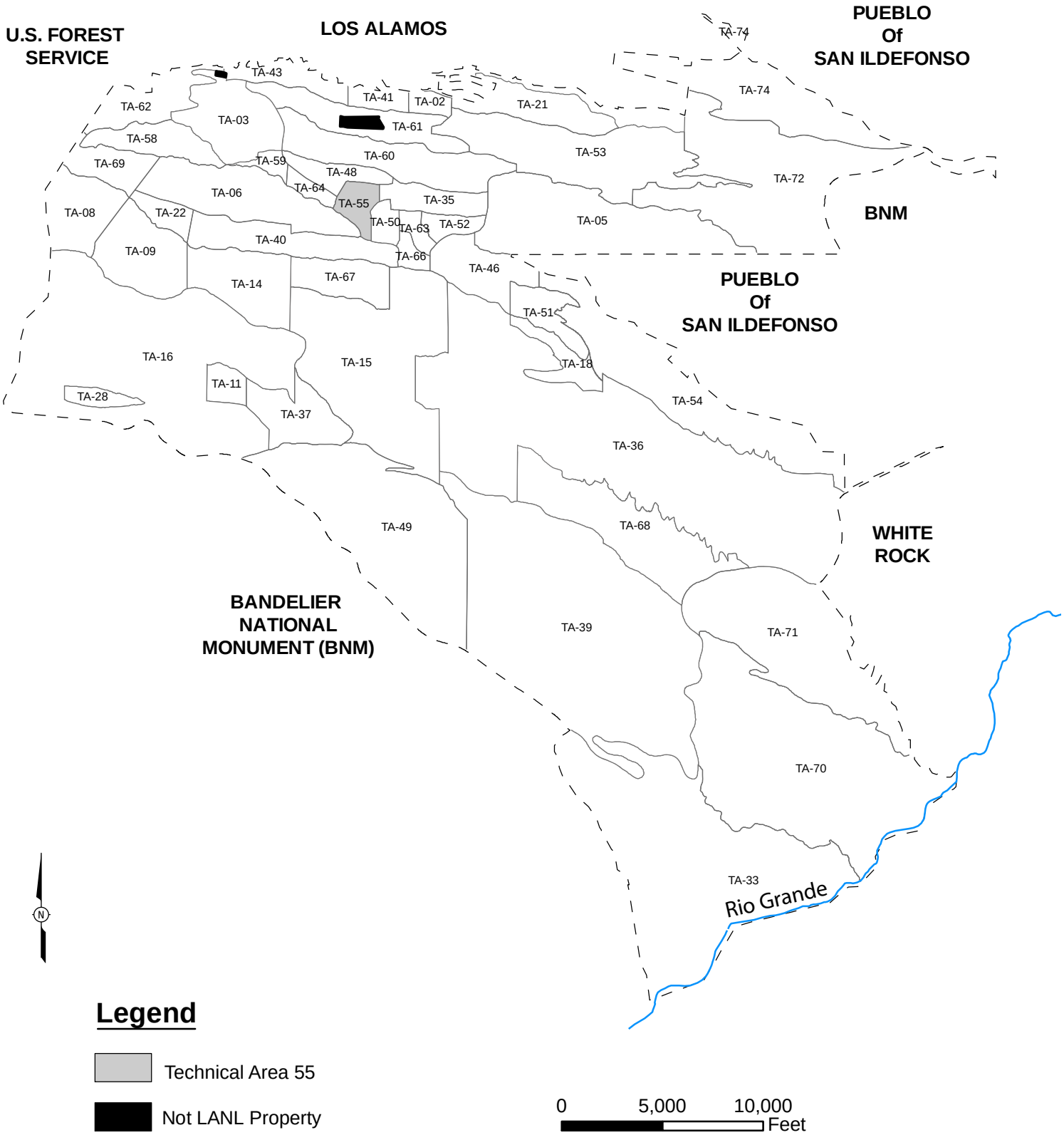


Figure 38:

Technical Area (TA) 55 Location Map

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-WES staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008

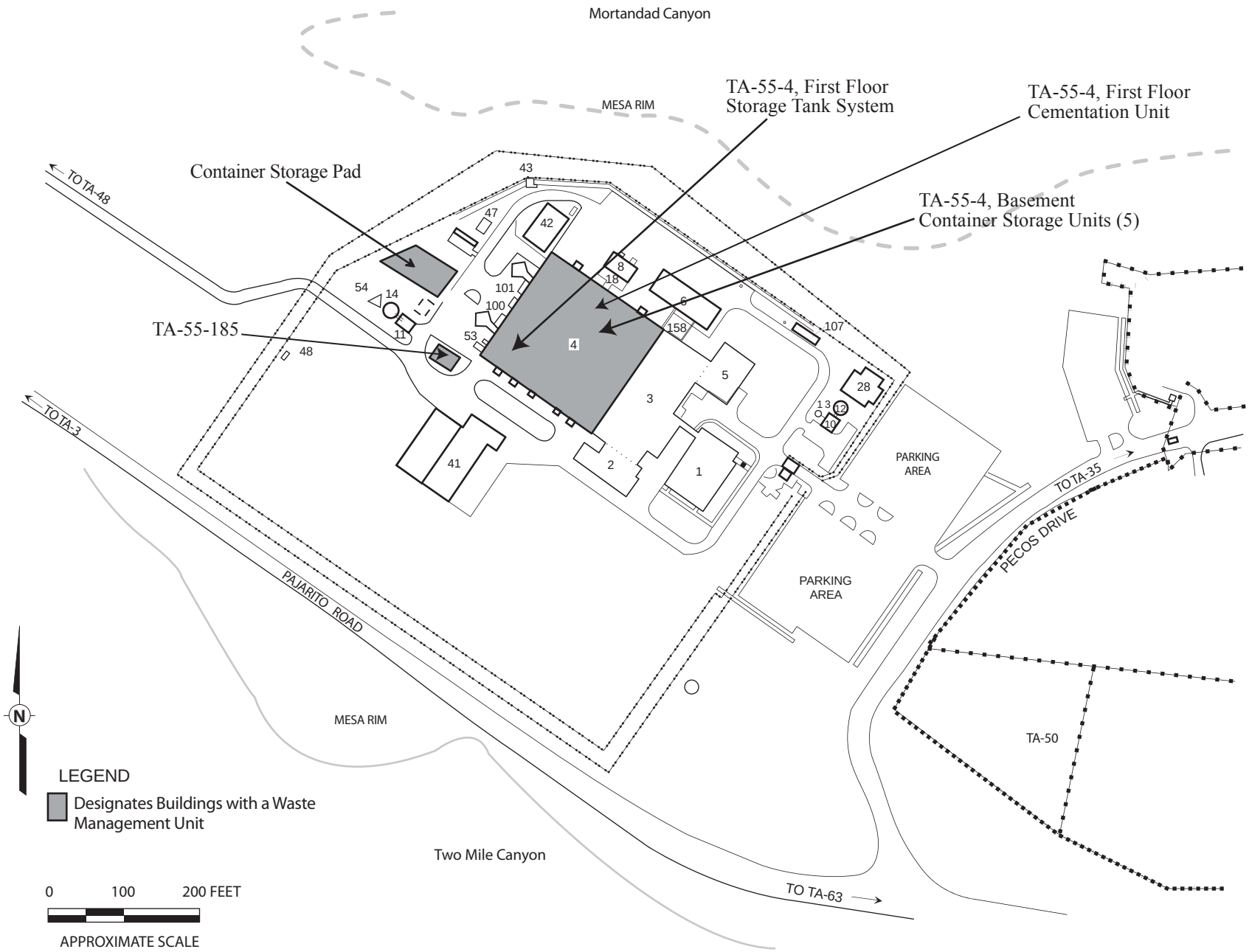


Figure 39
Technical Area (TA) 55, Building 4 Location Map

(FIGURE 40 - TA-55, BUILDING 4, ROOM B40)

UCNI

LOS ALAMOS NATIONAL LABORATORY

THIS FIGURE CONTAINS UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION (UCNI) AS DEFINED BY SECTION 148 OF THE ATOMIC ENERGY ACT

(FIGURE 41 - TA-55, BUILDING 4, ROOM K13)

UCNI

LOS ALAMOS NATIONAL LABORATORY

THIS FIGURE CONTAINS UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION (UCNI) AS DEFINED BY SECTION 148 OF THE ATOMIC ENERGY ACT

(FIGURE 42 - TA-55, BUILDING 4, ROOM B05)

UCNI

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THIS FIGURE CONTAINS UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION (UCNI) AS DEFINED BY SECTION 148 OF THE ATOMIC ENERGY ACT

(FIGURE 43 - TA-55, BUILDING 4, ROOM B45)

UCNI

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(FIGURE 44 - TA-55, BUILDING 4, VAULT)

UCNI

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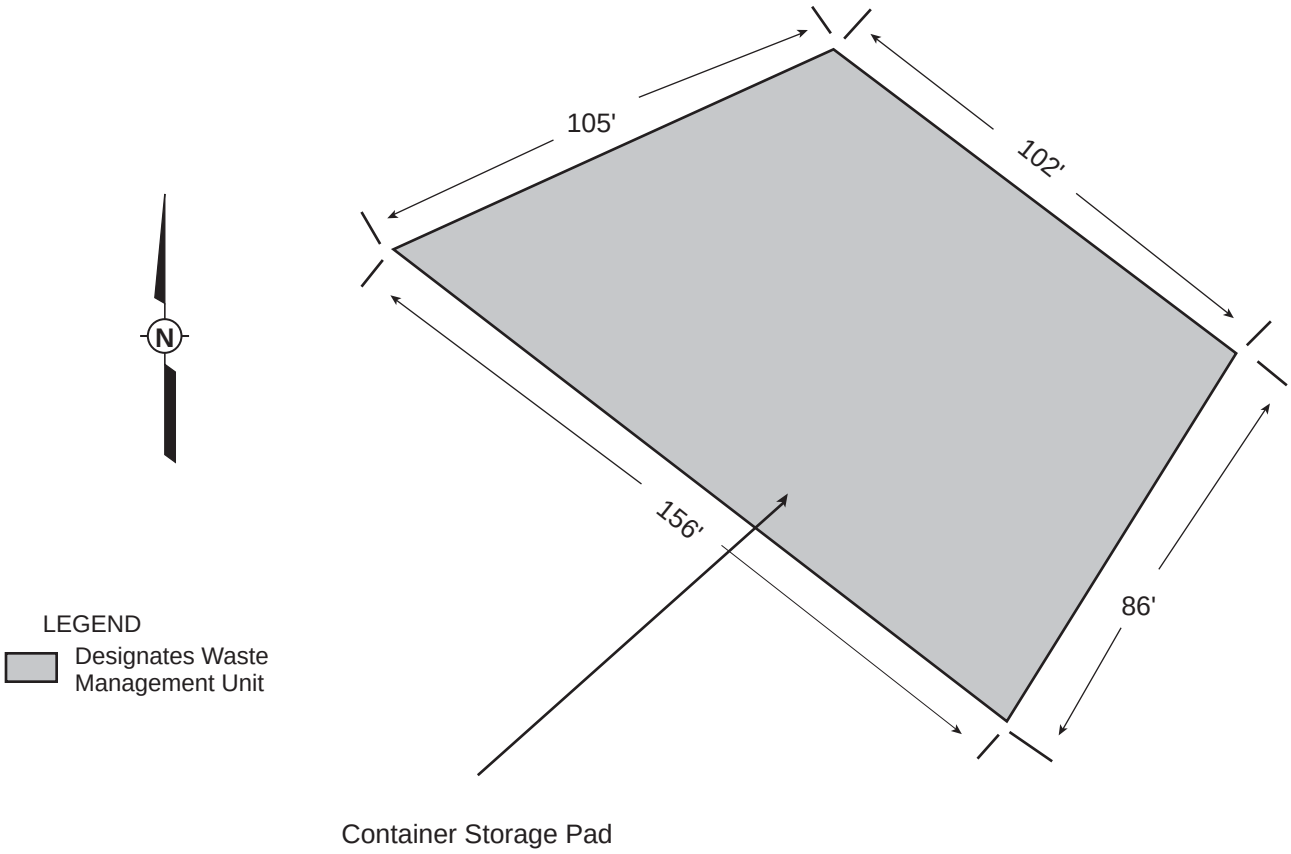
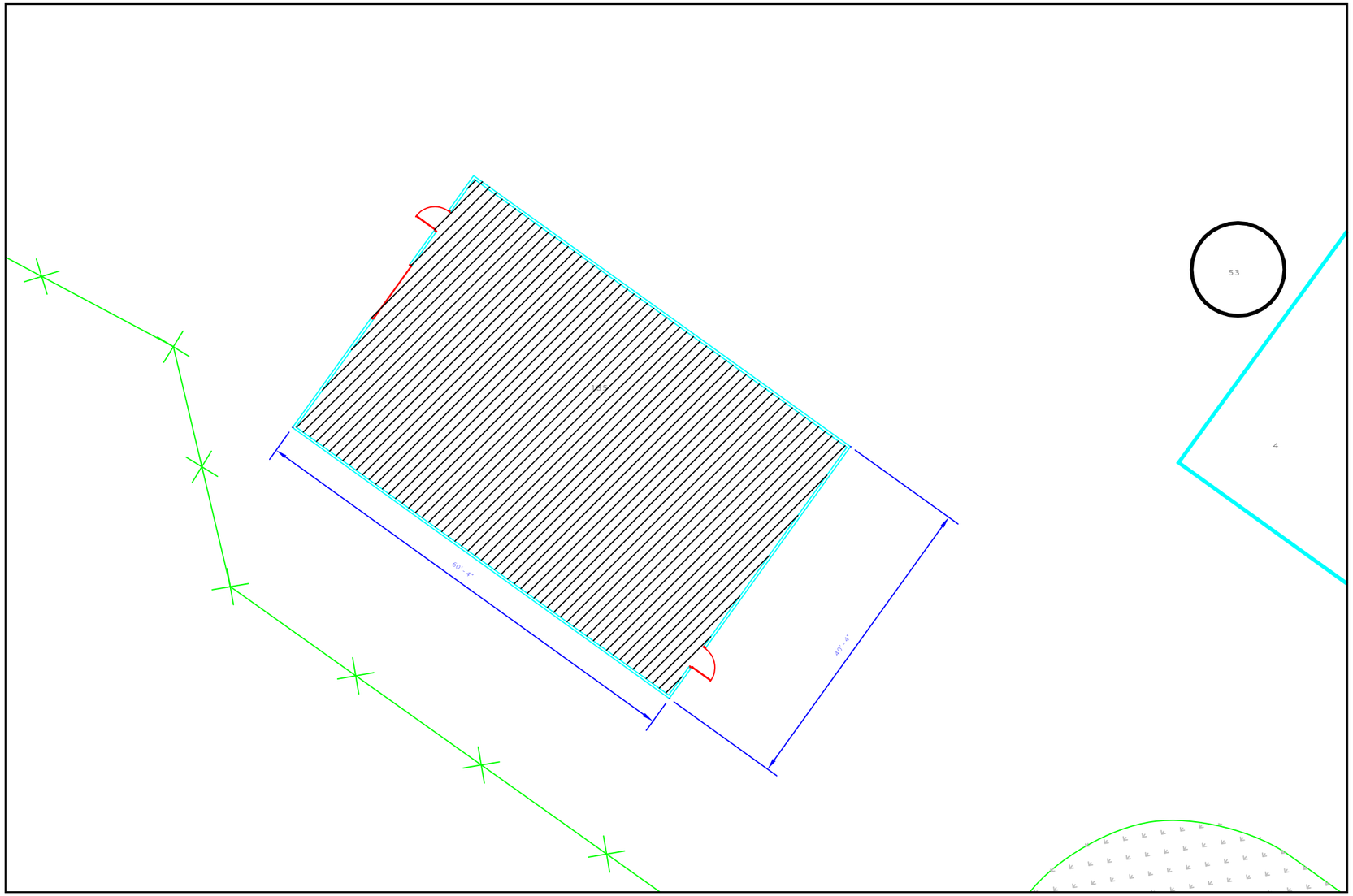
THIS FIGURE CONTAINS UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION (UCNI) AS DEFINED BY SECTION 148 OF THE ATOMIC ENERGY ACT



Note: TA-55-4 is located approximately 140 feet east of this container storage pad. Refer to Figure 39 for the general location of this container storage pad in relation to other buildings/structures at TA-55.

NOT TO SCALE

Figure 45
Technical Area (TA)-55, Building 4, Outdoor Container Storage Pad



LEGEND

CONTAINER STORAGE UNIT

CHAIN LINK SECURITY FENCE

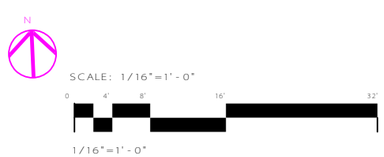
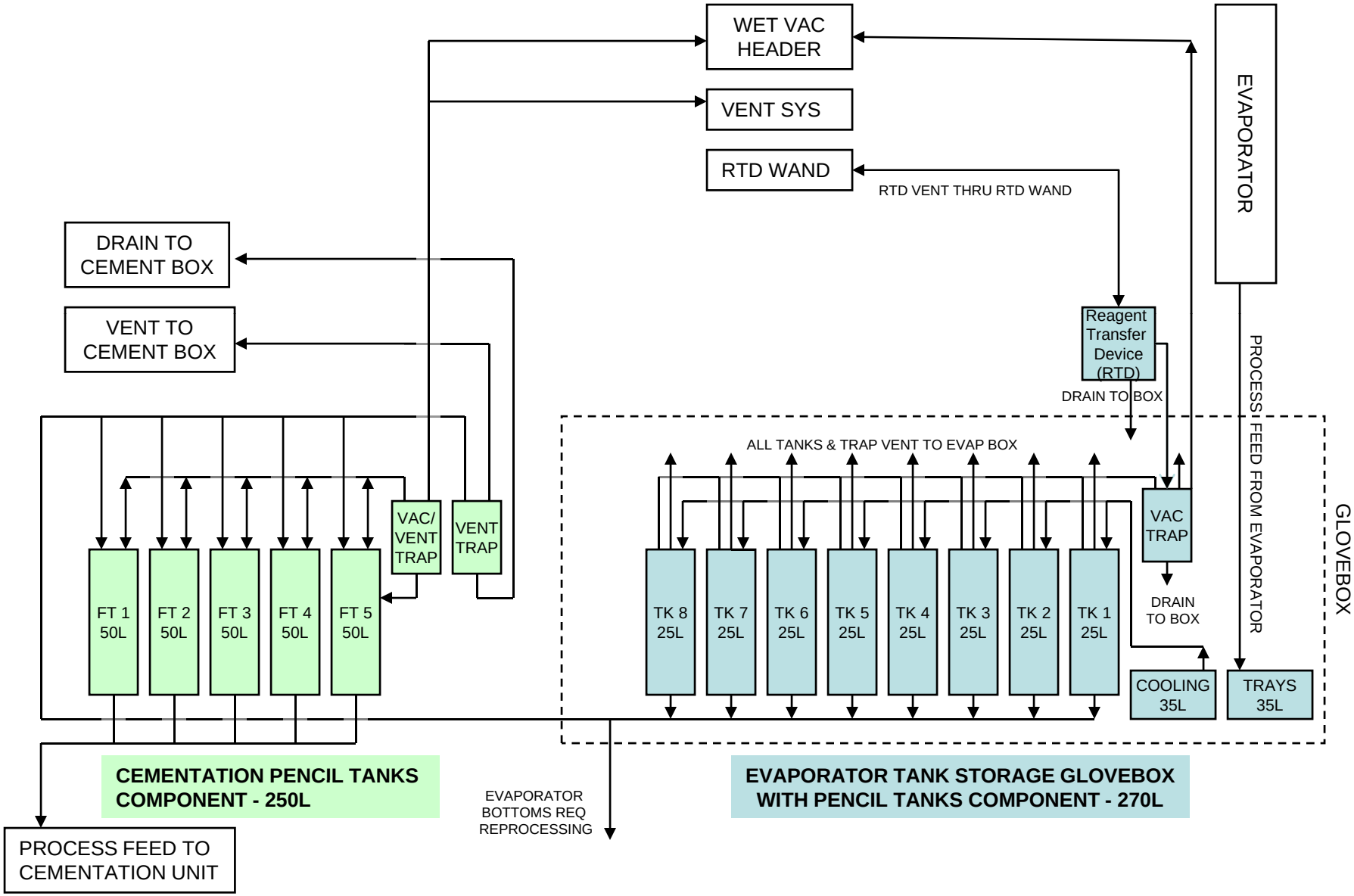


Figure 46
Technical Area (TA)-55, Building 185

Figure 47: TA-55, Building 4, Room 401, Storage Tank System Process Flow Diagram



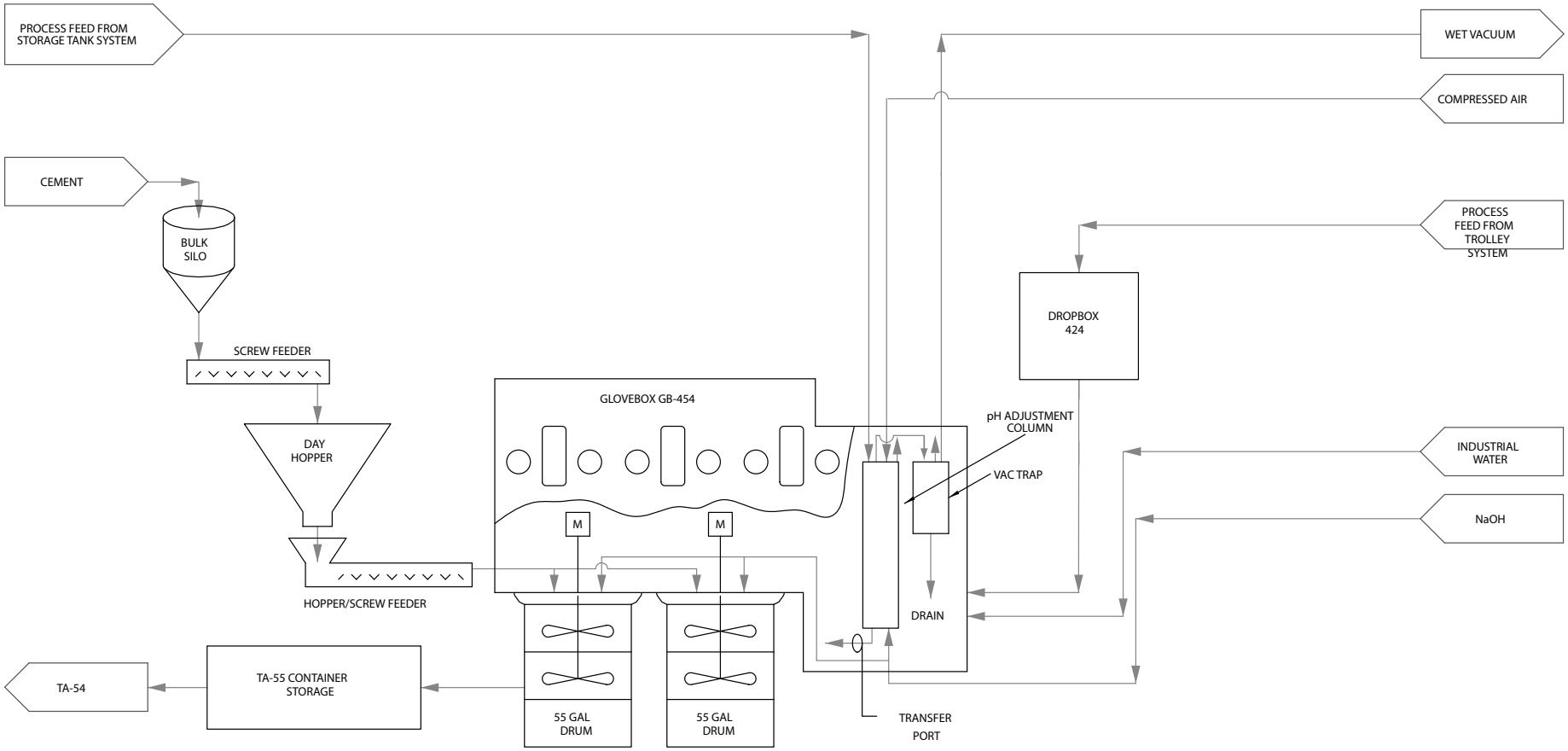


Figure 48
Technical Area (TA)-55, Building 4, Room 401, Cementation Unit Process Flow Diagram

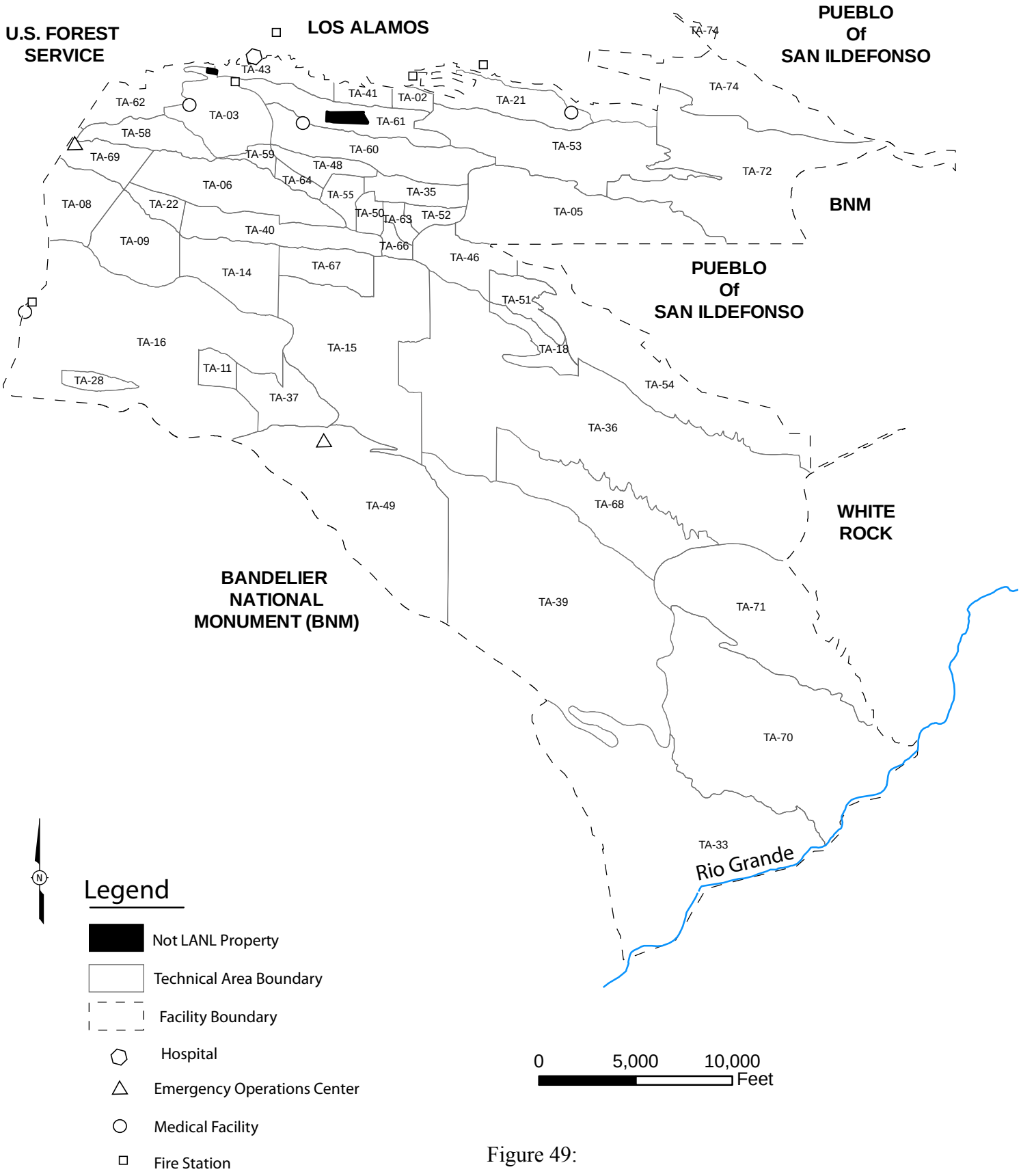
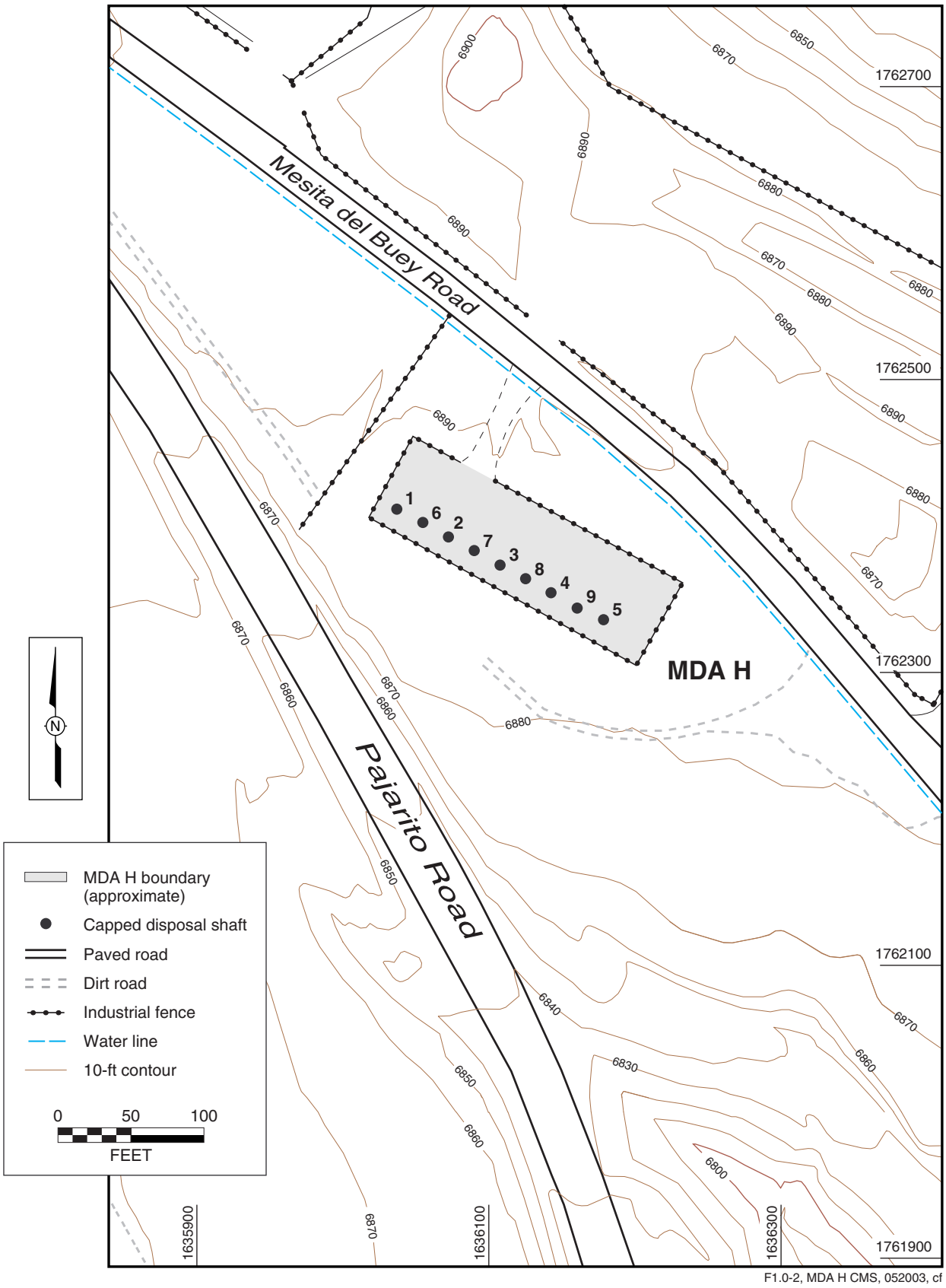


Figure 49:

Emergency Facilities at Los Alamos National Laboratory (LANL)

Created by EP-WES-EDA GIS TEAM. Map Number 06-0108 November 13, 2008, modified by ENV-RCRA August 2009
State Plane Coordinate System New Mexico Central Zone North American Datum 1983 (ft)
This map was created for work processes associated with the Environmental &Remediation Support Services. All other uses for this map should be confirmed with LANL EP-WES staff.
Boundary of Department of Energy Property I Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; infrastructure Planning Office. 04 June 2008
Boundary of Department of Energy Property In and Around the Los Alamos National Laboratory; Los Alamos National Laboratory, SSMO Site Planning & Project Initiation; 04 June 2008



F1.0-2, MDA H CMS, 052003, cf

Figure 50:
Technical Area (TA)-54, Material Disposal Area (MDA) H

ATTACHMENT O

LONG-TERM MONITORING AND MAINTENANCE PLANS

(Reserved)

NMED Response to Public Comment Submitted on the Draft LANL Permit
November 30, 2010

A response to public comment regarding a draft permit is required by NM statute and regulation at 20.4.1.901 NMAC. In accordance with those regulations all written comments submitted on the Renewal Permit are considered in formulating a final decision regarding the Permit and the Department must respond to all public comments briefly describing all comments and identifying all related changes made to the permit.

Public comment regarding the draft Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit (Renewal Permit) was first solicited by the New Mexico Environment Department (Department) on July 6, 2009. That comment period lasted 60 days, or until September 4, 2009. During that time the Department received numerous comments and requests for a public hearing on the Renewal Permit. On February 2, 2010, the Department issued a revised version of the Renewal Permit, noticed a public hearing to begin April 5, 2010, and reopened the revised Renewal Permit to public comment through the period of the hearing. The public hearing on the Renewal Permit ended May 7, 2010 and the Department stopped receiving public comment on that date.

The Department received written public comment by mail and e-mail on the Renewal Permit during the public comment period. Written public comment, non-technical oral public comment, and technical testimony was received during the public hearing. Written public comment was also received by the Hearing Clerk. This Response to Comments addresses only the public comment. The written public comment may be found on the Hazardous Waste Bureau's web site at [ftp://ftp.nmenv.state.nm.us/hwbdocs/HWB/lanl/permit/comments/].

The Department provides a notice of this Response to all persons presenting written comments or who requested notification of the Department's decision in writing. This Response is posted on the Bureau's website. Associated with this Response "matrix" is an associated document titled General Comment Response. This General Comment Response document addresses repetitive comments on 17 specific issues and is also posted on the Bureau's website.

No.	Loc.	Comment	NMED Response	Δ
1	Gen.	STOP Open Air Burning of Hazardous Waste. I object to NMED allowing DOE/LANL to use the open air for burning 12,500 pounds of hazardous waste each year. The open burning releases poisons into the air we breathe, which poses a direct threat to the wildlife, public health and the environment. In 2004, NMED stopped the open burning of household trash because of toxic emissions. I support NMED requiring DOE/LANL to install a confined burn facility as an alternative to open burning.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
2	Gen.	Prohibit open-air burning of hazardous waste. I collected over 500 signatures on the petition to require LANL to stop open-air burning of hazardous waste and instead use a confined facility. The various organizations working on this issue collected over 1000 signatures, a clear indication that citizens object to LANL's practice of open-air burning, which poses a direct threat to public health, wildlife and the environment. Copies of all the petitions were delivered to the NM Congressional delegation. The Loretto Community asks NMED to actively work with them to change the law/regulation that allows for the open-air burning of hazardous waste at LANL. In 2004, NMED stopped the open burning of household trash because of toxic emissions. If NM Environment Department cares about the environment of New Mexico, we urge NMED to also work with the NM legislators to ban all open-air burning of hazardous waste throughout the state. There are many new thermal treatment technologies to treat high explosives and associated hazardous waste that LANL could use as an alternative to open-air burning. One company offering this service is EI Dorado Engineering, Inc. Please check them out at www.eldoradoengineering.com.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding the commenters' call on the Department and the State to ban all open-air burning of hazardous waste throughout the state, the comment is noted.	Yes
3	Gen.	Open burning is very toxic and hazardous and is very harmful to people and the environment. I have environmental illness and this is horrible.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
4	Gen.	Please do not do any open air burning and install a confined burn facility. Please protect the people in this area. We are at risk with living downwind and many people have no health insurance.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
5	Gen.	Lichens receive their nutrients from the air in rain, not from the ground and are long lived plants, roughly 50 years. They take and store radioactive elements such as strontium 90 and cesium 137. They have been used in the arctic to analyze long term radioactive fallout. Have lichens down wind of LANL been analyzed to determine how much radioactive fallout, and other contaminants, have occurred from LANL during the past 50 years? If so, by who and where can the data be found? If not, why not? It seems to me that this analysis would be basic and preliminary to considering any hazardous waste incinerator.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding radionuclides, though the Department does have jurisdiction over the hazardous component of mixed wastes, the Department has no regulatory authority over the radioactive component or radionuclides in general. The Department is not aware that any wastes bearing radionuclides have ever been released to the environment at a RCRA permitted or interim status units, particularly wastes treated at the RCRA regulated open burn units at TA-16.	Yes
6	Gen.	First, I went to your website to see what was there. It seems like an intentional obfuscation of information, or at least that is the impact. I'm guessing that most visitors to the site would be the feel overwhelmed by sheer volume and possibly give up providing any opinion or response. So I'm just going to tell you my lay person's opinion without referring to all that overwhelming data online: a) Proposed hazardous waste facility for LANL: 1. I would only be in favor of this if there were safe storage and/or disposal of hazardous waste. Not the way it is now; not in shallow unlined pits and not in deep	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding the Bureau's web site, the Bureau is not intentionally obfuscating any information and limits documents placed on the site to documents requested by the public. The documentation	Yes

No.	Loc.	Comment	NMED Response	Δ
		shafts. 2. If burning is allowed, only in an incinerator with a filter to keep particles out of the air. 3. Transuranic waste should be taken to a more secure site. b) Intent to deny permit for open burn units – Yes, I agree. No permit for open burn. c) Closure plans for open burn units – Yes, close the open burn units now operating illegally.	placed on the Bureau's web site constitutes a very small fraction of the documentation managed by the Bureau Regarding transuranic wastes, New Mexico's hazardous waste regulations and the Renewal Permit limit the storage of large quantities of mixed wastes to one year. The Department is aware that the Permittees are making a concerted effort to abide with those limitations and is moving transuranic waste to the RCRA permitted Waste Isolation Pilot Plant near Carlsbad, New Mexico.	
7	Gen.	I am wearing 3 hats, one as a citizen, one as coordinator of Agua es Vida Action Team (AVAT), a citizen watchdog group concerned about emerging contaminants in Albuquerque's tap water, since it is now coming from the Rio Grande, and one as a Physician's Assistant (PA). I have practiced medicine since 1974. As coordinator of A VAT, I have lab reports from the Albuquerque Bernalillo County Water Utility Authority (ABCWUA), of the treated river water, that is now in our tap water. These reports show that our tap water contains Plutonium, Americium, Radium & Tritium, among many other radionuclides and chemicals. The Water Authority believes that these toxins in the river are coming from Los Alamos. Since I live down river and am environmentally sensitive, I am very concerned about these toxic chemicals. I'd like to see NMED be more timely and diligent and deny Los Alamos National Lab (LANL) the permit to continue burning hazardous waste in the open air. This is because LANL has been a blatant polluter of our air, water and earth. Fining LANL does not seem to be effective, per their neglect of environmental stewardship. Denying the permit is one way to protect us. Wearing my personal and PA hats, I also support what Richard Moore	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding toxins in the Rio Grande, the Department is not aware that any wastes, including those bearing radionuclides, have ever been released to the environment at a RCRA permitted or interim status units. These units constitute the scope of the Renewal Permit. Legacy or past releases to the environment,	Yes

No.	Loc.	Comment	NMED Response	Δ
		said earlier today regarding environmental justice and the need for a physical repository. Poor people cannot afford to move out of toxic environments or buy expensive air and water filters. In fact, none of us should have to buy these filters. As a health care provider, I am very concerned about public health and the effect of these industrial chemicals on our health. As you may know, there is an epidemic of cancer and diseases such as asthma and other immune system disorders. Real prevention of disease involves not producing these toxic chemicals in the first place, however, if they do exist, they need to be safely and carefully contained. The precautionary principle should be applied.	including those that may have contributed to toxins in the Rio Grande, are being aggressively pursued by the Department through a different regulatory document, the March 2005 Compliance Order on Consent.	
8	Gen.	We, the undersigned, state: 1. All people, plants and animals are intricately tied to the health of our air. 2. Historic and on-going operations at Los Alamos National Laboratory (LANL) threaten our cultural, spiritual and ecological survival. 3. Our local, state and federal government agencies have a duty to protect the public health and welfare by setting and enforcing laws and regulations that protect our air. 4. Healthy communities and ecosystems require clean, innovative and life-affirming science and technology that will benefit the economy, the future and the health of all. 5. We recognize and respect that air does not seek or uphold political, social, cultural or economic boundaries. To ensure the good health of our air, we demand that in 2009 LANL stop all open burning of hazardous waste and install confined burn facilities that will limit hazardous air emissions.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
9	Gen.	As a resident of Santa Fe since 1982, I strongly oppose the open air burning of hazardous waste by LANL. There are other ways to dispose of this waste that will not	Comment noted. See the Department's response regarding	Yes

No.	Loc.	Comment	NMED Response	Δ
		affect our lungs and the groundwaters. We should have learned by now of the risks of contamination by air and by water to the population. Over the past 10 years, serious deficiencies in the DOE/LANL emergency planning and response division have been found by several government auditing agencies, including the DOE inspector general, the Government Accountability Office, and the defense nuclear facility safety board. The reports described serious problems with the LANL fire protection BEFORE the Cerro Grande Fire of 2000. How many more wake-up calls do we need? Please keep LANL from endangering more of the inhabitants of New Mexico.	open burning and emergency preparedness in the document titled General Response to Comments.	
10	Gen.	The Multiple Chemical Sensitivities (MCS) Task Force of NM is a statewide advocacy organization comprised of chemically sensitive New Mexicans and supporters. We are dedicated to increasing awareness of MCS and educating others about the hazards of high and low level chemical exposures. MCS is a serious and growing public health problem that affects people of all ages, races, and economic backgrounds. A random survey conducted by the NM Department of Health found that 16% of the state's respondents reported being unusually sensitive to chemicals, such as household cleaning products, paints, perfumes and insect sprays. Most people with chemical sensitivities also get sick, some severely so, from exposure to other air contaminants, especially smoke. Burning of contaminated materials creates particularly toxic smoke. In addition to those with chemical sensitivities, approximately 26% of the population is under the age of 18, 12% are over 65 years of age, 11 % of adults have asthma, and approximately 20% have cardiovascular disease. All of these groups are known to be at increased risk of harm from air pollutants. In order to better protect people with chemical sensitivities, asthma, children, the elderly and others who are disproportionately affected by poor air quality, we make the following recommendations: 1. Deny LANL's permit applications for open air burning of hazardous waste. 2. Require DOE/LANL to install confined burn facilities as an alternative to open	Comment noted. See the Department's response regarding open burning, public participation, emergency preparedness, and financial assurance in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		burning before any permit is finalized. The permit must include limits as to the type and amount of waste and the frequency of burns. 3. Include requirements for NMED and DOE/LANL to provide enhanced participation as required by EPA for *"early, often, continuous and meaningful contact with the public"* for any burning activities. 4. Require DOE/LANL to establish both a physical Information Repository in the Espanola Valley, as well as a virtual (electronic) Information Repository before a permit is finalized. 5. Require DOE/LANL to meet the emergency management, planning, preparedness and response requirements. 6. Require DOE/LANL to meet all of the financial assurance requirements for each of the 24 hazardous waste management units. It is essential that NMED exercise its authority and mandate to minimize air contamination in the state. Open air burning of hazardous waste by LANL should be prohibited. LANL should be required to use alternative methods of hazardous waste disposal, including, but not limited to, using confined burning facilities. In addition, burning of hazardous waste should not be exempt from state smoke regulations. LANL should not be allowed to shift costs to the public. Too often, government agencies use burning to achieve a goal because it is cheaper than alternatives. This can reduce costs to government but increase costs of those who get sick from the smoke and/or must evacuate the area in order to protect themselves from it. It is unfair to burden the public with medical bills and costs of transportation, alternative lodging, masks, air filters, lost work, and other expenses they may incur as a result of LANL's open burning. It is also unacceptable to put public health at risk for the lab's convenience.		
11	Gen.	I am a one-time career Marine Corps officer and a member of the Joan Duffy Chapter of Veterans for Peace in Santa Fe. I am here today to address specifically one of the rationales that Los Alamos National Laboratories offers in support of their application for the 10 year open burn permit, to wit:	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

No.	Loc.	Comment	NMED Response	Δ
		"Without open burning, the Lab's research on detecting explosives, defeating improvised bombs, and creating stronger armor would be jeopardized." Or, as expressed more emotionally by LANL employee John Gustafson, "The New Mexico Environment Department is considering an action that will put at greater risk the lives of our military personnel in Iraq and Afghanistan." As a former active duty Marine, I naturally resonate with proclaimed efforts to "protect our troops." However this resonance is greatly attenuated when I reflect on the fact that "protection of the troops" as a screen for less admirable motives has been associated with the work and products of our Defense Department in General and LANL in particular from 1945 onward. In the first instance, that claim was offered as the reason for the atomic bombing of Japan, even though there is ample evidence that the Japanese were earnestly seeking to surrender under terms essentially identical-to those ultimately accepted weeks before the bombing. More recently, between 1961 and 1971, American forces sprayed nearly 20 million gallons of Agent Orange and other herbicides on Vietnam "to protect the troops" who were assured by the government that that was the reason for supporting the open burn. I would suggest that the real reason is to avoid the tough political work that would be necessary to obtain the funding necessary to provide a safe means for disposing of this legacy waste. Safe proven means of waste disposal, notably confined burning, have been available for years and must be required of the Labs. The disposing of waste is a largely unrecognized cost of the Lab's programs. As long as we allow the Labs to externalize these costs, they will continue to be paid in a variety of painful ways by New Mexicans for generations to come. I urge the New Mexico Environment Department to live up to its responsibilities by denying the open burn permit.	Comments.	
12	Gen.	Thank you for the opportunity to offer my comments regarding open burning at the Los Alamos laboratory. As a resident of Santa Fe County, any airborne materials affect the overall welfare of my family and of my community, and that includes the entire population of Santa Fe County. Truly, I would rather the lab be involved in the science of humanity, or in innovative research that solve our problems confronting us today	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

No.	Loc.	Comment	NMED Response	Δ
		rather than in weapons related industry. That I should be concerned of the effects of possible contamination of our air, water and soil is unfortunate. Will you re-assure us that there is no need to worry? That misfortune and disaster is not a foregone conclusion? Or wil1 you take appropriate measures and every safety precaution to ensure that the health and safety of the labs own community, and communities that extend beyond the city limits of Los Alamos has been considered and valued? To lessen risk is reasonable considering the cost of disaster, so I hope NMED denies the permit for open burning. And further I hope NMED continues to be the advocate for the welfare of each and every citizen of this state.	Comments.	
13	Gen.	Several years ago, the accumulated dust in my home tested too high in Strontium 90. This could only have come from emissions from Los Alamos Lab. I live in Llano; approx. 40 miles directly downwind from the Lab. I live a healthy lifestyle, which involves growing a garden, working and walking outside, and hiking in our mountains. My yearling spiritual pilgrimage is to the top of Jicarita, much as others walk to the Santuario. Studies have shown even higher levels of radiation in the soil at or above 11,000 feet, obviously where the air comes directly over from LANL and then collects and settles into our valleys below. No longer can I hike in the mountains with the same sense of health and peace as I had before I knew the dangers. I have just been diagnosed with breast cancer and join the growing numbers of cancer cases among my friends and neighbors in the Penasco area. Surely the incidents are too high and while we may not be able to prove that they are caused by emissions from the Lab, we all know that this is a large contributing factor. Furans and dioxins are part of the emission from open air burning and are endocrine disrupters that interfere with our hormonal systems. Long-term low-level exposure impairs the immune system and accumulates in fatty tissues, particularly breast tissue in women. Like PCBs, they are complex chlorines. I came to Llano because it was beautiful, agricultural and rural. I did not at first know the invisible dangers of our west ward neighbors, so close as the crow flies. It is my home and I am not going to move. And while I have been here on 40 years, my neighbors and friends families have lived here for 400 and 4000 years. We are the	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding radionuclides, though the Department does have jurisdiction over the hazardous component of mixed wastes, the Department has no regulatory authority over the radioactive component or radionuclides in general. The Department is not aware that any wastes bearing radionuclides have ever been released to the environment at a RCRA permitted or interim status unit; particularly wastes treated at the RCRA regulated open burn units at TA-16.	Yes

No.	Loc.	Comment	NMED Response	Δ
		unwilling victims of a system that is dangerous and irresponsible. Open air burning should not be allowed to continue. Hazardous work and hazardous waste should not be allowed unless it can be contained on-site, which of course it cannot. We all share air and water, our more precious resources. If LANL and the government choose to emit toxins into the air and water, then they need to be responsible and willing (or required) to test the gardens, herbs, and fruit that we raise and use to support out health. And they need to give health insurance to all down winders within a 50 mile radius. In my treatment I filled in a risk assessment survey and one of the questions that added significant risk was living within 50 miles of a nuclear waste site. We have suffered contamination for way too long. I have requested comprehensive health studies form all the clinics and doctors to determine how high and widespread are breast cancers, thyroid problems, brain tumors, and other diseases that are the result of work at the Lab, touted as being for our national security. Instead of making us secure, the Lab has made the world as much more dangerous place. Our innocent farmlands are just part of the casualties. The oil spill in the gulf and other events should show us that our technologies are out of control and on the wrong path. If we have not figured out how to deal with the waste, accidents, etc., then we should not be creating it. In the case of oil, at least we are all partly responsible for our greed to use massive energy in our everyday lives, to drive and consume. If all the radioactive emissions at the lab were from work with nuclear medicine, it might be a risk that we should have to bare. It is unconscionable that we are being poisoned because of the development of weapons of mass destruction, something that at this point in history should be banned (and are internationally). The NMED is supposed to protect our environment, not work with the Labs to dilute safety standards and cover up laxity with technical jargon and bureaucratic red tape. We need to return to common sense and work for the common good of humanity before it is too late. It is time to listen to native elders and bring them to the table in decision making, to chart a course that may allow future generations to survive. LANL and other decision makers, including the government, are acting like petulant children, playing with toys with no regard to the consequences of their actions. If decision making was conducted with a circle of native elders and women involved	Regarding the Department's protection of the environment, the Department has done everything within its legal authority to ensure that protection. Furthermore, the	

No.	Loc.	Comment	NMED Response	Δ
		(much like families around the table – old style) we would look to long-term consequences and responsible action as part of the process. It is time we grow up! With regard to jobs, there are plenty of jobs needed at LANL doing sane, safe work.	Department has strived to explain this to the public to the best of its ability.	
14	Gen.	I was here 21 years ago, not in this room, in another room, at the LANL hearings, and I'm sorry to say I still have some of the same concerns as I had 21 years ago. I think a lot of that concern comes from my questioning decisions that are made unilaterally and not from a board, from a board that's comprised of people from the community, for example, Concerned Citizens for Nuclear Safety, someone from that organization to be a part of a board to help with the cleanup that we are having to consider at LANL. And I know it started, but I do feel that the public has some information that can be given that can be very helpful for all this and all of us concerned. I'm concerned about the air. I'm concerned about the air because of the burning of hazardous waste. Air isn't just there and moves, but it also doesn't just move in the air, it can move into the soil. It can move into the soil and affect our aquifers, and that's exactly what it is that's happening. There was a committee -- evidently, no one knew about this until six weeks ago, but there was a committee that was established to look at and recommend a lot of really excellent things for Los Alamos to consider, and those secret documents were not released until six weeks ago. 21 years ago, no one saw those documents. Those documents, I think, need to be looked at and scrutinized and used. I'm also concerned about this public hearing, because, to me, the thought that I could be cross-examined doesn't feel real friendly. It's hard enough to stand up here in front of a judge -- actually, I don't think I've ever stood up in front of a judge before. But it's hard enough to stand up here with all of these experts sitting and listening to these inferior comments, because they are only based on opinion, and what does she know. I do know some things as a teacher, as a science teacher, and I do know a lot of things about the earth, and I'm concerned that if I am cross-examined, or if anyone from the public is cross-examined, it would come out that we are not experts; and, indeed, we are not experts, but I don't feel that not being an expert should discount the information that	Comment noted. See the Department's response regarding open burning and contractor documents in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		we are giving to you and to this group. Indeed, at one point, voting required that you own land. We had to have stipulations. You know, if this is really a public hearing, should we have a stipulation that we have to be experts in order to stand up with the -- from the interrogation that might follow? That concerns me a lot. In fact, there are a lot of public people right now that would like to be standing right here in line behind me that aren't, and they aren't because they are intimidated. I would like this to be a public hearing. I don't want it to be an expert hearing. I would like the public a part of the decisions that are made, because they are affecting my life, they are affecting my health. I also feel that it's not -- as a voter, I would like to feel that people who are elected to office feel like they want to listen to my opinion, that want to listen to other people in the public. If there are, indeed, people who are in public office or are planning to go into public office that don't want to listen to our comments and our ideas, I really would like them to question whether they should go ahead with that direction in their lives.		
15	Gen.	I've worked with a nonprofit environmental organization, One Sky New Mexico, in the past, and I'm a resident of Santa Fe, and I also express the lady's concerns about the contaminants that are leaking into the ground and might possibly be burning in open pits in the air. So I figure it's really the public's right to know if it will be burned, which I think is environmentally irresponsible. What will be the chemicals that are being burned, since we all have to breathe it?	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
16	Gen.	I'm here to speak on behalf of the National Youth Network, called "Think Outside the Bomb." Think Outside the Bomb is the largest youth led network of nuclear abolitionists in the United States, and we are standing in alliance with community groups and leaders in Espanola, Chimayo, and across New Mexico, to demand an end to nuclear proliferation, excuse me, and the cleanup of the lab's toxic legacies. Los Alamos Laboratory's jobs of global destruction and death must be replaced with jobs that lead to an equitable, sustainable and truly secure future. We realize that our mission of transformation may not be achieved overnight and the that hazardous waste permit that you are considering today is an interim step towards a truly safe and secure environment in New Mexico. In that light, we offer these comments. We fully support the decision of the NMED to	Comment noted. See the Department's response regarding open burning, open detonation, and financial assurance in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		deny the continuance of the open burn permit. This denial is in the best interests of public health in the area and was reached with the public, not corporate, interests in mind. We don't believe the lab claims that open burning poses no risk to public health. We find arguments about the need to preserve these toxic practices to protect the troops overseas to be manipulative and unfounded. Please maintain your commitment to the public interests, as you are tasked to, and then deny the open burn permit. In addition to the existing burn units recommended for closure, Table J-1 lists three open detonation units. The draft permit is not clear as to whether it authorizes ongoing use of these units. We believe that the environmental and health consequences of open detonation are similar to open burning and recommend that those detonation facilities also be closed. The draft permit also lists more than 1,000 facilities in areas at the Los Alamos site that require corrective action because of waste contamination. Many of these sites are contaminated soils, storm drains, outfalls, and underground seepage pits. Nineteen of the sites are canyons that drain contaminated storm run-off beyond the facility boundaries. The hazardous waste permit must require cleanup of the existing contamination and assure New Mexico that future contamination will not occur. All off-site contamination from facility operations should be cleaned up before another hazardous waste permit is issued. New Mexican residents have already borne the health and environmental consequences of waste produced by the Los Alamos Laboratories. With that in mind, they should not be asked to bear the burden of waste from the states of Tennessee, Utah, Florida, Washington, and Texas. We request that the draft permit be amended to eliminate authorization to receive wastes from the facilities listed in Table L. We also respectfully challenge the stated mission of the reduction of global nuclear danger in Attachment B, Part A, page one. What are the direct linkages between the issuing of these permits and an increase in nuclear theft? In fact, the very practices that sustain the need to treat, burn, detonate, and store these materials are the practices that directly increase global nuclear danger. These practices, as a whole, are not sustainable and are detrimental to the public and natural resources of the area. Estimated closure costs for all of Los Alamos waste facilities is 26 million dollars. This cost estimate is too low, given the number of facilities and type of wastes handled at the	Regarding wastes received at LANL from these off-site facilities, Permit Section 2.2.1(1) limits waste from these facilities to only those wastes generated at LANL, sent off-site for treatment, and subsequently returned to LANL. The Department concurs that off-site waste acceptance at	

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		facility. The closure cost estimate should be increased to ensure that the cost of cleanup and closure is borne by the private operating contractor and not by US and New Mexican taxpayers. LANL has put the health of the communities surrounding the lab against their purported need to protect the nation against threats to our security. This is a lose/lose scenario they are asking you to support. If LANL were to focus on cleanup and innovation and responsible areas of energy production, that did not have the consequences of highly hazardous materials, we would not be faced with these choices. It's absurd to claim that it's safer to burn materials that are too unstable to transport as though those are the only two options. It is safer not to produce these materials. But since it's too late for that, it is certainly not necessary to burn them and expose the area to higher levels of toxic pollution. We expect that this Bureau will maintain the wisdom of their original decision and deny the issuance of the requested permit -- the open burn permit.	LANL is generally undesirable, but the waste receive under the above described circumstances is LANL's responsibility and the off-site treatment process makes the waste safer to manage because it has been stabilized. Furthermore, the Department understands that generally these off-site facilities must return the stabilized waste to LANL because it is mixed wastes, it may not have a disposal pathway, and LANL's Site Treatment Plan is the appropriate regulatory mechanism to address the wastes.	
17	Gen.	I'm the lead organizer for the Embudo Valley Environmental Monitoring Group. Our organization formed here after the Cerro Grande fire in order to provide independent monitoring of LANL emissions in communities downwind from the Los Alamos National Laboratory. We also work on public health and safety issues related to LANL emissions and have been involved in the hazardous waste permit negotiations for the 40 days of negotiations. I'm speaking as the lead organizer and have not provided any technical testimony. There are a couple of things I want to talk about, and I'd like to connect a few things. The first thing I wanted to acknowledge is the public's generosity over the years of putting up with open burning from the Los Alamos National Laboratory. In 2004 NMED banned open-barrel trash burning in the State of New Mexico because of the hazards of burning our backyard trash. So, subsequently, Los Alamos National Laboratory had been burning -- doing their open burning practices under open-barrel trash burn permits, and so they were forced into having to apply for a burn permit in a different way. Several organizations, Concerned Citizens for Nuclear Safety, Tewa Women United and	Comment noted. See the Department's response regarding open burning and the information repository in the document titled General Response to Comments.	Yes

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		the Embudo Valley Environmental Monitoring Group appealed the permit that was issued for open burning at the same areas, at the TA-16 facility. It went before the Environmental Improvement Board, and subsequently in 2006, Los Alamos National Laboratory withdrew their permit for open burning. These are the same open burning practices that they were denied a permit for -- or not denied a permit for, but they withdrew, saying that they no longer needed the permit in 2006. So here we are in 2010, and the Los Alamos National Laboratory wants to open burn -- to continue to open burn. I want to acknowledge, again, the generosity of the public. In the -- during the first round in the appeal to the Environmental Improvement Board, we collected hundreds of signatures opposing the open burning at Los Alamos National Laboratory. Again, we provided hundreds of signatures from people living in downwind communities opposing open burning at Los Alamos National Laboratory. We also have been quite generous, the nongovernmental organizations, in providing alternatives for Los Alamos National Laboratory to open burning. We've researched the alternatives ourselves, and we have collected the support of the public to support a confined burn facility. Now, with this confined burn facility, Los Alamos National Laboratory can continue to do their burn practices, to dispose of their hazardous waste, their high explosives, their objects contaminated with high explosives, that include rubbers and plastics, and we just -- we don't see the reason that LANL has to continue this practice. We do understand that Los Alamos has pulled out concern -- they've raised concern in the surrounding communities using national security as -- as a curtain. What we would like to suggest is we would like to take this into the remedy of homeland security, because our communities surrounding Los Alamos National Laboratory are land-based communities. The indigenous cultures, the Hispanic settlements, the back-to-the-land movement, are all people who live in -- live downwind of Los Alamos National Laboratory and are involved in the land base or land-based cultures. We depend on clean air, clean soil and clean water to sustain us. This is our security. I'd like to also support the information repository at Northern New Mexico College. One of the keys in this -- in this information repository is communication. What we really need is for Los Alamos to open the line of communication. You know, a lot of people have talked about the various reasons why it's important to have the information	Regarding Air Quality Permit No. 2195-J issued by the Department to LANL pursuant to the Air Quality Control Act, that Permit specifically authorized "non-RCRA open burning activities associated with the flash pad located at TA-16." The open burn practices in the Permittees' RCRA application are not the same open burn practices addressed in Permit 2195-J.	

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		repository; they've talked about the way people learn, which is really important. Not everybody can learn sitting in front of a computer, not everybody has access to the internet. In my community, in the Rio Embudo watershed, there are over 6,000 people that live within like a 35-mile by 35-mile area, and there are three public computers available for 6,000 people, and it's way down at the end of the valley, which we call the banana belt, because it's -- it's -- the climate is actually pretty nice there compared to 12 miles away, when you're at 7,500 feet and, you know, valleys and mountain roads and stuff. So, you know, there isn't a lot of access to the computers at the library, but a lot of people are now attending Northern New Mexico College. We would really like to see this information in an institute of higher learning, because it -- it's a resource to bring our communities together. I think that Los Alamos National Laboratory has had this shroud of secrecy around it. A lot of people work at the lab where I live and a lot of people don't even know what they do. They don't know how it connects to the nuclear weapons industry, they are there providing for their family. By providing a place where people can go, it's not just to review documents, it's to develop community, it's so that people can talk about what the stuff means. You know, I have been doing this for about seven years now, and I look at these documents, and I am still -- I'm still perplexed by it, by the way they are written, that you can say public access is putting something on the internet so someone can go read it, when this is not going to -- none of this information makes sense to anybody, unless they've been trained to read it. That's the value of having a physical information repository, is you bring community into the issues of the Los Alamos National Laboratory, the environmental issues, how are all affected by what Los Alamos is doing. They aren't just creating jobs, they're affecting our communities in -- in ways that are harming us, and people really need to understand that.		
18	Gen.	I live with my family in Chimayo, and I'm a business owner. I have a small construction company. My business is located in San Ildefonso adjacent to the labs. I have my business there with my family there in San Ildefonso. I'm very concerned about the potential of burning this hazardous waste, and I fully support the New Mexico Environmental Department doing what they are supposed to do in representing me in denying this permit. I use the water that comes from the snowmelt	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		to irrigate my land, to grow vegetables, and also to feed my animals, and we -- we use the milk from our animals and eggs and so on. The impacts from, you know, the burning of any hazardous waste that lands in our watershed will impact us many more times than you think, than any of the studies will ever take into account. The fact that my children play in the soil, they swim in the river, in the acequias, we use our land. It's -- we've become a part of this community in the last ten years, and it's in a way that I never knew before. When I was younger, you know, I grew up in a farming area, but we didn't have the traditions that I've learned to love and appreciate here. So it's vital to the survival of this community that we have these resources and that we are never afraid of using our water and letting our kids swim and play and catch the fish, you know. That's really important. The other thing, as a business owner, I work a lot in the tribal areas, we do a lot of renovations work, and, you know, we see the, you know, disenfranchisement of the community, but also I work building custom homes, and the last thing that we need, in our depressed economy up here in the custom home industry, is, you know, for people to see the real estate markets fall even further because there is hazardous materials being incinerated here and just thrown into our air. So that, you know, that part is a huge detriment to our business, you know. The other thing is being located in San Ildefonso with our business, we take pride in hiring local youth to work for us, and the -- the pride that I see in these young folks having meaningful work is one of the foundations of our business, and they would like to participate in the economic conversion of the labs. So part of that will be developing clean technologies, and incinerating waste on their sacred land is not something that brings a feeling of connection to their traditional places, you know. Those canyons belong to San Ildefonso. That land belongs to San Ildefonso, and from time immemorial, and the idea that it can be dumped on once, and then again used as incinerating sites, is a violation of a sacred trust that they have with their creator. I don't get to go in the kiva, I'm not pretending that I know anything about that religion and that spirituality, I'm just a little bit around it, and I have great reverence for it, and the idea that we have the right to, you know, disregard the creator's sacred trust, God's, you know, gift to people, by taking toxic materials and incinerating them is an offensive to		

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		me. I can't even imagine how it feels to the elders over there, you know. I know that part of my family would want to be here, but one of the family members is in the hospital and they couldn't make it from San Ildefonso, and so I just wanted to express a couple of words on their behalf that have dealt with the effects of living next to a facility like Los Alamos for a long, long time, and I'd hate to see it get worse. I really appreciate the opportunity to speak to you, Your Honor, and I hope that we can, you know, find better ways of handling this situation, because it has to be taken care of, you know. I personally work at the facility doing cleanup, as long as it's containment and protecting my daughter and my sons, you know. There is -- you know, also, the records need to be public and they need to be made accessible. On my little dirt road, at least four people work up there at the labs, and they are not here today because, you know, they don't know how to participate. So we need to make access to these events. I know the Department of Energy tries to fulfill the letter of the law, but, you know, I'll go around and talk to them and tell them, but, you know, they are at baseball practice, they are making dinner, they are over with a sick relative, you know, and it's hard to participate in this, and even though many of them make their livelihood from the labs, they are very concerned, you know. I don't know how many guys I work with tell me, "Yeah, my son has cancer, has leukemia and barely made it through," or "My uncle, he passed away from the effects over there." So even know we know it's affecting us, it's such a huge financial institution, it provides so much, you know, money for select individuals, they don't know how to participate in this without seeming like they are against something that provides their livelihood. So it's quite a dichotomy, because here you have one of the richest counties in America, Los Alamos, next to one of the poorest here, Rio Arriba. So we're suffering from the effects of the environment there, but to come out against what's going on there, it takes away what little income that is available. So I am in full support of at least making records more available to the community, and in any way we can create participation, even if it means going door to door and talking to folks, you know. I really love this community, my family, my daughter is Chimayosa, she's proud, and we want to continue these traditions here, and we need our water to be		

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		clean and our land to be clean.		
19	Gen.	I live in Santa Fe, I have severe asthma, and I'm chemically sensitive. And for 35 years I've been trying to avoid chemicals that trigger my symptoms, and for many years I've needed some very specialized medical care. My work for 20 of these past 35 years has been with young children at UC Berkeley. I'm very concerned about children developing asthma and having asthma attacks. In our program, we had a few episodes where a child had to be rushed to Children's Hospital for an asthma attack. It was horrible to see a child panicking as they struggled to breathe. Please stop open air burning.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
20	Gen.	Please deny the open burning of hazardous wastes at LANL. LANL has plenty of money to produce nuclear bomb death machines, but seems to have no money to protect the public from their deadly poisons. A for-profit weapons manufacturing facility should not be allowed to poison the public with our tax dollars.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
21	Gen.	I applaud the New Mexico Environment Department for taking responsibility for trying to regulate this monster on the hill that has been poisoning New Mexicans ever since the early '40s, about the time I was born. I don't believe that any argument for national security has any sway in this defense that LANL has that they want to do open pit burning for national security. It just seems ridiculous to me that they would make that argument. This is an industry that has been poisoning Americans downwind in just about every facility all over the country. It has been injecting people experimentally with plutonium. It has been forcing military people to be in close proximity to nuclear tests in specific. And it probably has been responsible for the deaths of more Americans than ever was killed in any terrorist attack. I want to encourage the New Mexico Environment to stick by its guns and to regulate open pit burning. It is not justifiable to continue to poison the environment in the -- in the spurious name of national security.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
22	Gen.	I'm a one-time career Marine Corps officer and a member of the Joan Duffy Chapter for Veterans for Peace in Santa Fe. I'm here today to address specifically one of the rationales that Los Alamos National Laboratories offers in support of their application	Comment noted. See the Department's response regarding open burning in the document	Yes

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		for the ten-year open burn permit, to wit: "Without open burning, the lab's research on detecting explosives, defeating improvised bombs, and creating stronger armor would be jeopardized." Or as expressed more emotionally by LANL employee John Gustafson, "The New Mexico Environment Department is considering an action that will put at greater risk the lives of our military personnel in Iraq and Afghanistan." As a former active duty Marine, I naturally resonate with proclaimed efforts to protect our troops. However, this resonance is greatly attenuated when I reflect on the fact that protection of the troops as a screen for less admirable motives has been associated with the work and products of our Defense Department, in general, and LANL, in particular, from 1945 onward. In the first instance, that claim was offered as the reason for the atomic bombing of Japan, even though there is ample evidence that the Japanese were earnestly seeking to surrender weeks before the bombing. More recently, between 1961 and 1971, American forces sprayed nearly 20 million gallons of Agent Orange and other herbicides on Vietnam to protect the troops, who were assured by the government that there was no risk -- excuse me, that the substance posed no human health risks, to quote the terms used by LANL about open burning on their website. By the close of the century, more than 300,000 troops had filed for disability as a result of their exposure to Agent Orange. One of the victims among those troops was John Duffy, in whose honor our chapter for Veterans of Peace has been named. Just a few days ago, I returned from Vietnam as a member of a delegation of veterans who spent ten days traveling throughout the countryside to document the continuing impact of Agent Orange; or, more specifically, the dioxin contamination on the land and people of that country. It's estimated by prominent researchers in the United States academic community that as many as three million Vietnamese are suffering the effects of the dioxin that we have left there. The impact includes astronomical incidence levels of prenatal and neonatal anomalies, now into the third generation. Lest one argument that the Agent Orange is not relevant here, I hasten to point that dioxin contamination is among the legacy wastes subject to the proposed open burning. To bring the argument closer to home in both temporal and geographical terms, the use of depleted uranium in contemporary armaments is also argued on the basis of protecting the troops. There is mounting evidence that depleted uranium used in the	titled General Response to Comments.	

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		Gulf Wars and the Balkans has caused more casualties among US troops that their use could possibly have saved, not to mention the continuing massive impact on the civilian populations in the areas served. From this history, as well as direct personal experience and witness, I am skeptical of the claim that the open burn poses no risk to human health. But beyond this, I believe that as a scientific enterprise, LANL has an obligation to embrace strongly the precautionary principle that if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is not harmful falls on those who advocate taking the action. I return to LANL employee John Gustafson's argument that "The greatest risk currently to our armed forces in these areas is from improvised explosive devices, or IEDs, and that cancelling this permit would have a tremendous impact on the ability of LANL researchers to respond quickly and effectively when new threats come into play." My late father always told me that there are two reasons for everything: the good reason and the real reason, and you usually are only told the good reason. Protecting the troops is a good reason for supporting the open burn. I would suggest that the real reason is to avoid the tough political work that would be necessary to obtain the funding necessary to provide a safe means for disposing of this legacy waste. Safe, proven means of waste disposal, notably confined burning, have been available for years and must be required of the labs. The disposing of waste is a largely unrecognized cost of the lab's programs. As long as we allow the labs to externalize these costs, they will continue to be paid in a variety of painful ways by New Mexicans for generations to come. I urge the New Mexico Environment Department to live up to its responsibility by denying the open burn permit.		
23	Gen.	I live here in the valley, and to give you a bit of background, I'm board certified in family medicine and occupational medicine. I've been -- I don't actively practice clinical medicine currently, but I am an advocate and authorized representative for many LANL workers under the federal compensation program. In addition, I'm the founder of New Mexico Alliance of Nuclear Worker Advocates. I've worked with LANL folks on various levels, from top administration down to and including workers and community	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

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		members in several counties over the last five years, and on issues such as open burning of toxic wastes at the lab. I'd like to make some informal comments regarding this process. I have experience with assisting folks who have become ill with cancers, lung diseases, and other illnesses that were a direct result of burning of toxic wastes, chemicals, heavy metals, and radioactive materials at the lab. In addition, I've done a lot of research on the Cerro Grande fire of 2000, of which we're all familiar. Some nearly 70,000 acres burned and 14 buildings on Los Alamos National Lab grounds burned, as well as hundreds of homes. There were firemen and others who assisted in that calamity, a cost equaling one million dollars back in 2000. I've seen some of the fallout of that in terms of illnesses. In addition, it was commonly -- it is commonly done, where various weapons testing called shots are fired, and many times results in fires on lab grounds, which have to be controlled urgently by the county fire department members and others. As a result of some of these open burns, there have been direct documented and proven illnesses as a result of that type of exposure, and I've seen that firsthand and have assisted in trying to help some of these folks via compensation through the federal government. So I feel I have some knowledge of the open burning process, and I understand that was discussed earlier. So I'd like my comments to go on record that I believe that it is important to consider a closed burn system for the lab, in order to reduce the incidence of toxic exposure not only to the workers but to the communities.	Comments.	
24	Gen.	I'm the lead organizer for the Embudo Valley Environmental Monitoring Group. One of the things I want to point out is the over 1,400 signatures that were collected about open burning at Los Alamos, and the petition is called "The Petition for Confined Burning at Los Alamos National Laboratory." It reads like this, We, the undersigned, state: 1. All people, plants and animals are intrinsically tied to the health of our air. 2. Historic and ongoing operations at Los Alamos National Laboratory threaten our cultural, spiritual, and ecological survival.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		3. Our local, state and federal government agencies have a duty to protect the public health and welfare by setting and enforcing laws and regulation that protect our air. 4. Healthy communities and ecosystems require clean, innovative and life-affirming science and technology that will benefit the economy, the future, and the health of all. 5. We recognize and respect that air does not seek or uphold political, social, cultural, or economic boundaries. To ensure the good health of our air, we demand that in 2009, Los Alamos National Laboratory stop all open burning of hazardous waste and install confined burn facilities that will limit hazardous air emissions. We're not saying to transport materials off site. We're not asking Los Alamos National Laboratory to curtail any of the operations that they are doing. We're asking that a confined burn facility be installed at Los Alamos National Laboratory. We've been requesting this since 2005. Our nongovernmental organizations have done our own research and have come up with viable alternatives with international companies that can help Los Alamos National Laboratory confine burning to an area where it's not harming anything. I think we forget that we live in a network. I mean, we, as humans -- just because it only affects an earthworm or a deer mouse, it doesn't mean that it doesn't affect everything else around. We live in a network of biology, and any time one thing is affected, there is a ripple-out effect that affects everything. Everyone here is affected by the operations at Los Alamos National Laboratory. We're seeking to protect everyone here, our environment, and to protect our environment is to protect our future. I want to talk a little bit about -- or tell you a little bit about the process of collecting the signatures, because I think that that's something that everyone can really benefit by hearing about. You know, I said that we've collected over 1,400 signatures, and that's through the collective. Our organization has probably collected maybe 200, 250 signatures, and every one of those signatures goes with a story, and that's why we probably haven't collected as many signatures, but what we do is we go -- we sit in front of our local co-op in Dixon, which we have a local co-op for the afternoon, and we maybe collect five		

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		or ten signatures, but every single person wants to understand the impacts to them personally, because every single one of those people, either their family or their friends or somebody works at the lab, and, you know, we are 32 miles downwind, but, you know, we -- so many people work at the lab, and they are very concerned about their health. People -- people want to understand the relationship between their health and what's going on at the lab. And in talking with them, it really gives an opportunity for people to have a more intimate understanding and to see how much they are really affected by this work at the lab. And so far, I think after talking to many people, I don't -- I can't remember anybody who would not sign the petition to support a confined burn facility, and that's after talking to the people and explaining to them, you know, what it means to them, what it means to the environment. The people where I live are land based. You know, before they went to work at the lab, 65 years ago, everybody was farmers, and, you know, that goes back generations and generations and generations. And if you look at Los Alamos, it's like – it was all ranching and farming up here, and there were indigenous people living up here, and they depended on the land. And so I think 65 years is a relatively short time in history that people have been diverted from -- from their own cultural activities, but in those 65 years, operations at the lab have had really severe impacts on people, and what we're really trying to do is limit the impacts to the people and to the land that they love.		
25	Gen.	I wanted to make three quick points. First of all, I wanted to take this opportunity to thank Representative Jeanette Wallace for supporting HB-45 -- or it was a memorial that we passed in 2009 asking our congressional leaders to support stimulus money for cleanup at Los Alamos, and we're grateful to you for that. Second of all, I want to clarify why the New Mexico Conference of Churches, which represents Protestants and Roman Catholics across the state, supports the NMED's decision to deny a permit for the open air burning. It is motivated by concern about LANL's track record on safety and health violations and the impact on surrounding communities. We do not support transporting the hazardous waste. We support contained burning. And then sort of off of that, I would like to congratulate our watchdog groups that are here today for obviously changing the minds of many people in this room who at one	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		time supported the transportation of hazardous waste, which CCNS and others opposed. We are hopeful that if we have changed your mind about transporting hazardous waste, we still have hope that we will change your mind about the dangers of open burning.		
26	Gen.	And I'm a Franciscan sister, and I work on concerns of water and climate change in -- in the State of New Mexico. And I'm very concerned about the health of the people of the state and of the earth. And that combined with -- my concern combined with the moral perspective that I carry, I'm very concerned about the future. And around this proposed permit, I think that responsible stewardship must include a variety of points. And I have a longer written piece that I'm going to give to you. But in regard to the hazardous waste permit for Los Alamos National Lab, I'm just going to speak particularly about the concern for the air. And I support the NMED's denial of LANL's permit application for open air burning of hazardous wastes. And I think that we live in an enlightened time, when we realize that there is no out there, and there is no -- you know, everything that we do affects everything else within our biological system, within our system of creation and also every other person. And so we are all connected, and air is one of those elements that connects us very intimately. We can't even be standing here or sitting here without air. We need that to -- to breathe. And I think that indigenous peoples, children, women and mystics have known all along the interconnectedness and the importance of ruah, or wind, the air. And St. Francis of Assisi says in his Canticle of Creation -- he has one comment about Brother Wind, and the air that is cloudy and serene in every kind of weather through which the wind gives sustenance to creatures. Now, I believe that if our air is polluted and there's hazardous wastes in the air, that there's no way that it's going to be giving sustenance. Instead it's causing more and more health problems. So that's my concern. So intentionally polluting and tainting the air does not offer sustenance, but rather increases the already existing health hazards of the people of New Mexico. LANL has been on notice for more than 21 years that the public does not want them to use our air for the disposal of hazardous wastes. And if DOE and LANL need to continue to burn hazardous wastes, there are alternatives, including confined burn facilities that are designed to capture those emissions. And so I believe that any permit that there might be would be for that and that that confined burn facilities needs to be	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		made possible before the permit is finalized, that that would be part of it, as an alternative to open -- open burning. And there must be limits as to the type and the amount of waste and the frequency of those burns in regard to that.		
27	Gen.	One of the things that really grabbed me is the fact that LANL is saying that the Department of Defense really wants LANL to have this open burning. I have a nephew that is in a supply line and driving trucks in Afghanistan. So I assure you I am very, very concerned about his safety and the safety of all our young men and women and older men and women serving our country. But the study of improvised explosive devices, the IEDs, should not be at the expense of contaminating our air and contaminating our water. I am very concerned about open burning. We might get rid of some waste by the burning process, but we have contaminants. And I'm concerned about the forever contaminants that are coming into our lifeblood of the Rio Grande and contaminating our regional aquifers. If you don't think that's national security, what is? If we do not have clean water, drinkable water and clean air, that is national security, and, therefore, I am against the open burning because of the contaminants, and I ask that you really look very seriously at all the ramifications of all the toxic, radioactive, et cetera, waste at LANL. Before we go any further, get the stuff cleaned up. Then come back and see if we'll expand a permit.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
28	Gen.	I'm a co-coordinator for Citizens for Alternatives to Radioactive Dumping, as well as a member of the organizations Protect Our Air and Water and Agua es Vida Action Team. Plus, my family has a farm downwind from Los Alamos, and that's where my oldest son, his wife, his three-year-old daughter live. My daughter-in-law's also pregnant, and they'll have another baby in September. I have a lot of concerns in regard to Los Alamos, but I'd like to speak especially to open burning. We all, I believe, accept -- the groups, independent community groups who work on Los Alamos, Los Alamos itself and the New Mexico Environment accept the fact that those who are downwind from Los Alamos have been contaminated, both with toxins and radionuclides. Just as an example of that, I was at this little meeting in Ojo Sarco a few years ago, after the Cerro Grande fire, with the New Mexico Environment Department and Los Alamos representatives and some citizens from Ojo Sarco. We were all in this	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		tiny, little, old building. I guess it's a community building. And the wind was howling outside. I remember it was night. And they -- I remember Los Alamos saying, "Yes, there is americium in this broccoli here in Ojo Sarco, but it's below regulatory concern, because as we look at Americans, they only eat this much broccoli per week, and so they are only exposed this much and so on and so forth. And the people from Ojo Sarco were just amazed, because this -- this study doesn't take into account that when you live in the country, you eat whatever is ripe in your garden. So you don't eat like a 1.525 or whatever it is cups of broccoli per week. You eat broccoli and eggs in the morning and broccoli cheese pie in the evening and so on and so forth. So that's just a small example of how people in these rural areas do get contaminated, and there's really very little regulatory help for them. I mean, we found cobalt in the plumes in Dixon, and the next valley over there is radionuclides in the fuzz of the peaches and the apricots after the Los Alamos fire. And there's a lot of cesium at the borders of the Trampas Lake, which is the headwaters of the Embudo Valley, where my family lives, which is one of the breadbaskets of New Mexico. Lots of farms there, including a lot of organic farms. So we know that the people in the Embudo Valley, Penasco, Ojo Sarco, Picuris Pueblo, et cetera, Chimayo, are downwind from Los Alamos and that they've been contaminated in the past. And we know that when the prevailing wind blows, that they get whatever is coming off of the open burns at Los Alamos, also. Recently, I and my mother and my husband went to Mexico, and we were x-rayed, we were searched. And we have a boat so we were searched on the way in twice, and we were searched on the way out twice. But we accept that, because we understand it's a matter of national security, and we accept the inconvenience of it. But when it comes to sacrificing the health of my granddaughter, I will not accept that as a matter of national security. And I'd like you to know that I will fight this tooth and nail the rest of my life, as long as I live. To say that the government has a right to pollute a certain segment of the population due to national security is very backwards from my point of view, very backwards. So I just want to say that I'm very opposed to open burning at LANL, and I think that if LANL took the wise course, they would realize that this is really a PR nightmare for them, because we are teaching our children now about what is happening to them and		

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		what is happening at Los Alamos. So it isn't just going to be us speaking. These voices have -- are going to have a long run here. And I would ask Los Alamos to withdraw their intention to open -- continue open burning at Los Alamos.		
29	Gen.	I'm the coordinator of Agua es Vida Action Team, and I represent about 300 members of my group. And my comment is to support the New Mexico Environment Department in their intent to deny a permit for LANL to continue burning hazardous waste in the open air. And I'm very concerned about our groundwater, our surface water and our air. And I'd like to be on record to support the NMED. I'm wearing three hats today, one as a citizen, one as coordinator of Agua es Vida Action Team, or AVAT. It's a citizen watchdog group concerned regarding emerging contaminants in Albuquerque's tap water since our tap is now coming from the Rio Grande. And one hat as a physician assistant, PA. I've practiced medicine since 1974. As the coordinator of Agua es Vida Action Team, I have lab reports from the Albuquerque/Bernalillo water utility authority showing that in our tap water now we have plutonium, americium, radium, tritium and -- among other radionuclides and chemicals. The water authority believes that these toxins in the river are -- coming from Los Alamos, are in our tap. Since I live downriver and I'm environmentally sensitive and I'm -- and I've been concerned about public health issues, I'm very concerned about these chemicals in our tap. I'd like to see NMED be more timely and diligent and deny LANL the permit to continue burning hazardous waste in the open air. This is because LANL has been a blatant polluter of our air, water and earth. Fining LANL does not seem to be effective for their neglect of environmental stewardship. Denying the permit is one way to protect us. Wearing my personal and physician's assistant hats, I also support what Richard Moore said earlier today regarding environmental justice and the physical repository. Poor people cannot afford to move out of toxic environments or buy expensive air and water filters. In fact, none of us should have to buy these filters. As a health care provider, I am very concerned about public health. As you may know, there is an epidemic of cancer and diseases such as asthma and other immune system disorders. Real prevention of disease involves not producing these toxic chemicals in	Comment noted. See the Department's response regarding open burning, environmental justice, and the information repository in the document titled General Response to Comments.	Yes

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		the first place. If they do exist, they need to be safely and carefully contained. The precautionary principle should be applied.		
30	Gen.	And I would like to just speak from my heart for Albuquerque. It's a beautiful place. I thought I was coming back to this wonderful place where my ancestors have been from. I've been away from Albuquerque. Right now I'm very close to the center of the town, close to the Big I. And I've just been horrified at the facts I see about all of the hazardous materials in Albuquerque itself, and in the aquifers, what has been coming down to us. And, of course, our aquifers were supposed to take care of Albuquerque forever, but we know that they are already polluted. And we're -- it's a very sad thing to hear that the laws are not being followed in carefully monitoring that. I want to tell you of an experience I had coming back from Denver. I was going through the Jemez Mountains with a group of people, and I saw this huge, huge, huge, red glow in the mountain, over the mountain. And that was the open burning, which is very terrifying. So I ask you please to observe the laws, to monitor carefully, and not let up on the monitoring of the purity of our water and of our airs.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
31	Gen.	I'm going to speak from my heart about what I'm concerned about as a school psychologist. I perhaps serve some of your children or grandchildren. And I'm concerned for their health. I know some of my colleagues have talked to me about increases in asthma, and certainly I work with children who have autism, and I do believe that LANL's waste that we receive here, that goes all over our state contributes to that. And I'm concerned about it. And I ask you to uphold and support the New Mexico Environment Department's intent to deny a permit to LANL unless they -- for the continued burning of hazardous waste. You know, there's lots of money in this country. I've worked for the government before. I've worked overseas and been close to the military. And I want to see some of that money here at home, taking care of our own. Make LANL purchase and install the equipment to protect our people, the people you represent, please.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding the suggestion that LANL's waste is causing an increase in the incidence of asthma, the Department has no evidence of this and if it did the Department would respond appropriately.	Yes
32	Gen.	I arrived in New Mexico in 1974, a Nixon administration refugee from Washington, DC. I fell in love with the beauty of the people and the land here in New Mexico, but much too soon learned the dark side of the nuclear and military contempt for both. I was	Comment noted. See the Department's response regarding open burning, environmental	Yes

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		just in time to begin again antinuclear work against, this time, WIPP and participated in several organizations at that time. I can only say that the damage to land, water and to health of the people became clearer and has, in my, I think, informed opinion, worsened the already bad air in Albuquerque, has become more toxic with time, and, of course, the burning, the open burning, and things we don't even know about. But you're knowledgeable about all of that. I was very saddened to learn in a recent hearing how the New Mexico Environment Department does not really know because the military doesn't have to tell what is burned and what is detonated. That was quite shocking. And I think as a "don't ask, don't tell" policy, that's one that's very important to get repealed. For the sake of the future generations, because it -- the possible contaminants are affecting certainly children. We know that from the statistics here in Albuquerque. And they're also affecting the fetuses, of course, right now, today. So it's our future. Many important points have already been covered, and with great clarity and, I think, eloquence, especially the environmental justice facts and concerns. And I certainly support the repository, because it's very hard for the citizens to track down the information, get access to what might be out there for us to find. I think that would be a great assistance. I lived and worked for 12 years on the Eastern Dine land, Eastern Agency Dine land, and was very moved by the legacy of uranium mining and coal processing. Birth defects and respiratory ailments were devastating, as well as the loss of the clean water. It's very hard to even conceive of the devastation to those families. I believe we deserve to do better, to take action against the accumulating effects to the soil, to the groundwater, and to the very life of New Mexico. The population perhaps can recover health very slowly if we stop. But the land and the water -- and I'm from a farming background -- that doesn't recover quickly, and may never. We know that there's no remediation for radionuclides in the water, at least that I know of that might make it useful again for using for food growing. And we're going to need our food. The many hearings demanded by an aware public are costing the taxpayers dollars. Lawsuits cost taxpayers dollars. Taxpayers cover most if not all the costs of the health effects of nuclear contamination in New Mexico. The salaries of the New Mexico	justice, the information repository, and groundwater in the document titled General Response to Comments. Regarding the Department not knowing what is burned and detonated, New Mexico's hazardous waste regulations require a permit applicant to describe in detail the chemical composition of wastes burned and detonated. Furthermore, the Department has on numerous occasions inspected LANL to ensure that the wastes burned and detonated are consistent with the Permittees application. Regarding the accumulating effects of multiple sources of contamination, the Department's risk evaluation process strives to protect both humans and the environment from the cumulative effect of multiple contaminates	

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		Environment Department are taxpayer money. And the resources and the time that goes into citizens trying to find out the truth and do something about it is really a great drain on time and our resources, also. Would New Mexico be getting more and more nuclear-related installations if regulations were really being enforced and compliance demanded? If compliance is not demanded or demonstrated in a timely and competent way, then the public is put increasingly at risk, including -- excuse me -- including, as I said, future generations. And I know that everybody in this room knows how much more nuclear has come in, and is coming, is on its way. So we need our Environment Department to really protect us. And that will keep some of this, I think, from rolling in here. I know it's a political decision. I know all of that stuff. But we have to really stand up. I also think the precautionary principles should be in place. I'm sure all of you are familiar with this public policy, because it's been used for many years in many countries. I have repeatedly heard today that the New Mexico Environment Department has no confidence in the direction of the groundwater flow or that there is no data to assure accurate statements that monitoring wells -- I think maybe the labs have perfected the art of placing monitor wells -- monitoring wells where they don't get the right data. I can't think anything else at this point. But this is not a facetious thing, because if we get a permit -- and I strongly resent -- I strongly suggest denying the permit, but if we should get a permit that would be granted after meaningless delay and that -- and a lot more damage, and then if that permit turns out to be much less than what we really need, then we're really in a bad shape. And that's what I'm concerned about. We need to protect the public from, you know, what is in that open burning. And let's stop that. If we don't know what's in it, let's stop it. If we don't know about what's in those detonations, well, stop them. Make something else happen. And for the -- they have to be held responsible for the accuracy of what's in landfills and what's in dumps. And -- I don't know. I think more courageous action must be taken. Deny the permits, let the public know. And I have certainly -- I know that careers and pensions and all of that sometimes get in the way. Having been in a bureaucracy in Washington for a few years, I know some things about how those things work. But the public, I think, is really ready to stand behind decisions that help us protect us	associated with both waste management and remedial actions. Regarding new industries coming to New Mexico, particularly nuclear-related installation, the subject is beyond the scope of the Renewal Permit. However, it is important to note that the Department has a competent enforcement program enforcing the State's environmental regulations and permits.	

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		and take back our future. So that's my statement for today. And I know this kind of a statement isn't considered proper public comment, and usually doesn't get included as such, because it's very personal, it's not full of the facts and figures, but I think there's been a very adequate job done today of presenting that.		
33	Gen.	What I want to do today is read into the record the receipts for signatures that we've collected so that we make sure that they get into the administrative record for this hearing. But the first thing I want to do is, with great pleasure, I want to show you, these are 400 – or 749 signature cards that we collected in 2005. [This illustrates] that this is not the first time we have come before NMED and LANL asking that they research alternatives to open burning, because our communities are tired of being exposed to the contamination coming into our downwind communities, and I just really -- I want everybody to know that we've been working on this for half a decade, there are millions of dollars of resources probably that have gone into the opposition for a confined burn facility, and I really want this in the record that we have 1,400 signatures that we collected in the fall, we have 750 that we collected in 2005, and we have an additional 200 that we're adding today to the record that are – that are asking for a confined burn facility and requesting a public information repository.	Comment noted. See the Department's response regarding open burning and the information repository in the document titled General Response to Comments.	Yes
34	Gen.	I also represent La Comunidad, a group of -- of other residents from Penasco who couldn't be here, but I'm speaking for them, as well. Several years ago, the accumulated dust in my home tested too high in strontium-90. This could only have come from emissions from Los Alamos Lab. I live in Llano, approximately 40 miles directly downwind from the lab. I live a healthy lifestyle, which involves growing a garden, working and walking outside and hiking in the mountains. My yearly spiritual pilgrimage is to the top of Jicarita, much as others walk to the santuario. Studies have shown even higher levels of radiation in the soil at about 11,000 feet, obviously, where the air comes directly over from LANL and then collects and settles into our valleys below. No longer can I hike in the mountains with the same sense of health and peace as I had before I knew the dangers. I have been -- I have just been diagnosed with breast cancer, and I join the growing number of cancer cases among my friends and neighbors in the Penasco area. Surely, the incidents are too high, and while we may not be able to prove that they are caused by	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding high strontium-90 levels measured in dust in communities surrounding LANL, the Department has no regulatory authority over radionuclides. Furthermore, the Department has no evidence that radionuclides	Yes

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		emissions from the lab, we all know that this is a large contributing factor. Furans and dioxins are part of the emissions from the open air burning and are endocrine disruptors that interfere with our hormonal systems. Long-term low-level exposure impairs the immune system and accumulates in the fatty tissues, particularly breast tissues in women. Like PCBs, they are complex chlorines. I came to Llano because it was beautiful, agricultural and rural. I did not at first know the invisible dangers of our westward neighbor, so close as the crows fly. It is my home, and I am not going to move. And while I have been there only 40 years, my neighbors and friends' families have lived there for 400 or 4,000 years. We are unwilling victims of a system that is dangerous and irresponsible. Open air burning should not be allowed to continue. Hazardous work and hazardous waste should not be allowed unless it can be contained onsite, which, of course, it can't. We all share air and water, our most precious resource. If LANL and the government choose to emit toxins into the air and water, then they need to be responsible and willing or required to test the gardens, herbs and fruits that we raise and use to support our health. And they need to give health insurance to all downwinders within a 50-mile radius. In my treatment, I just filled in a risk assessment survey, and one of the questions that added significant risk was living within 50 miles of a nuclear waste site. We have suffered contamination for way too long. I have requested comprehensive health studies from all the clinics and doctors to determine how high and widespread are breast cancers, thyroid problems, brain tumors and other diseases that are the result of work at the lab, touted as being for our national security. Instead of making us secure, the lab has made the world a much more dangerous place. Our innocent farmlands are just part of the casualties. The oil spill in the Gulf and other current events should show us that our technologies are out of control and on the wrong path. If we have not figured out how to deal with the waste, accidents, et cetera, then we should not be creating it. In the case of oil, at least we are partly responsible for our greed to use massive energy in our everyday lives, to drive and consume. If all the radioactive emissions at the lab were from work with nuclear medicine, it might be a risk that we should have to bear. It is unconscionable that we are being	exist in the hazardous wastes that in the past have undergone open burning. Regarding comprehensive health studies, the comment is noted however such studies are beyond the scope of the Renewal Permit.	

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		poisoned because of the development of weapons of mass destruction, something that at this point in history should be banned, and, I believe, are internationally. The NMED is supposed to protect our environment, not work with the labs to dilute safety standards and cover up laxity with technical jargon and bureaucratic red tape. We need to return to common sense and work for the common good of humanity before it is too late. It is time to listen to native elders and bring them to the table in decision making, to chart a course that may allow future generations to survive. LANL and the government and all the decision-makers, you included, are acting like petulant children, playing with toys with no regard to the consequences of its actions. If decision-making was conducted with a circle of native elders and women involved, much like families used to do around the dinner table, we would look to long-term consequences and responsible action as part of the process. It is time that we grow up.	Regarding diluted safety standards and a cover up using technical jargon and bureaucratic red tape, the Department is unaware of any safety standards that have been ignored and has striven to communicate clearly and comprehensively with the public.	
35	Gen.	First, I went to your website to see what was there. It seems like an intentional obfuscation of information, or at least that is the impact. I'm guessing that most visitors to the site would be the feel overwhelmed by sheer volume and possibly give up providing any opinion or response. So I'm just going to tell you my lay person's opinion without referring to all that overwhelming data online: 1. Proposed hazardous waste facility for LANL: a. I would only be in favor of this if there were safe storage and/or disposal of hazardous waste. Not the way it is now; not in shallow unlined pits and not in deep shafts. b. If burning is allowed, only in an incinerator with a filter to keep particles out of the air. c. Transuranic waste should be taken to a more secure site. Intent to deny permit for open burn units – Yes, I agree. No permit for open burn. Closure plans for open burn units – Yes, close the open burn units now operating illegally.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding the Bureau's web site, the Bureau places documents on the site considering the relevance of those documents and public requests. Furthermore, the site contains only a small fraction of the approximately 20,000 documents in the Bureau's LANL Administrative Record.	Yes
36	Gen.	James K. Baird, Jr. - I wish to speak out in opposition to awarding Los Alamos National	Comment noted. See the	Yes

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		Labs a waste permit for the open air burning of dangerous wastes and the continued systematic spoilage of our land, water, and air in this ancient and beautiful land. For 17 years I worked with the Ghost Ranch National Conference Center. From 2000 through 2009 I served as the Director of Program and was charged with planning and staffing more than 300 educational programs each year. Before Ghost Ranch was given to the church it was owned by Arthur and Phoebe Pack. Arthur was an environmentalist who helped repopulate the high desert with several species of animals and who worked tirelessly for clean air and water. During the early 1940s, families would arrive from the "mountain" (Los Alamos) to stay at the dude ranch, and it was only after the war that Arthur discovered that during that time the Lab was conducting dangerous tests on what would later be called the atom bomb. Therefore, when Arthur Pack made a gift of his beloved Ranch, he also gave a mission: this land must be a land of peace and justice, not war and destruction. This land is God's creation and we must be its stewards not its destroyers. That was the mission under which I made programming decisions. It was my privilege to work with our neighbors including TEWA Women United. Through this dedicated group of native women, I discovered the extent of the tragic history of waste from the "mountain"; the contamination of the waters that has killed the fish, created unsafe drinking water; spoiled the canyons, and made inaccessible the ancient, sacred places. As I learned more about the Los Alamos legacy, I discovered that Arthur Pack was only beginning to see that legacy. He witnessed the immediate destruction caused by the powerful bombs that destroyed Hiroshima and Nagasaki. He did not live long enough to see the long term destruction, every bit as powerful and destructive as the ball of fire over a city - the slow and insidious destruction by contamination of our land, water, and air. Approximately 21,000,000 cubic feet of hazardous, mixed hazardous, and radioactive waste generated from nuclear weapons production has been buried at LANL legacy waste dumps all across the Los Alamos mesas. Now a permit is being sought to continue open burning that has been proven to release dioxins into the air. Although New Mexico citizens continued to call for LANL to cease using our air and our water to dispose of these dangerous chemicals, their voices have gone unheeded by an agency that continues to act with impunity and privilege. The time to stop this	Department's response regarding open burning in the document titled General Response to Comments.	

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		process is now. As an organization representing more than 600,000 Citizen Christians in this State, it is often called upon to voice the concerns and the needs of the voiceless. In this case many voices (beginning with those of our Native American sisters and brothers) have been raised eloquently through the years. What is missing is the will to act -- to step forward as a State and not permit these activities to continue. I urge you to deny LANL's permit applications, and to strongly monitor their future activities.		
37	Gen.	Please approve the requested permit for open burning of wastes from the ongoing national security research program. Los Alamos National Lab has been tasked to do the mission related with EIDs and it is time-critical. Please do not cause delays in the research by denying the permit.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
38	Gen.	Thank you for the opportunity to comment on the NMED notice of intent to deny a portion of the LANL open burning permit application. As a United States citizen and New Mexico resident, I fully support the scientific and technical programs, which the Los Alamos National Laboratory performs for the *NNSA/DOE* in support of our mutual national safety and security. I further applaud those efforts undertaken jointly by NNSA/DOE, NMED, and LANL to ensure continued program activities in a manner that protects New Mexico residents and our beautiful environment. I object to the proposed denial of the open burning portion of the LANL permit and encourage NMED to continue its important efforts with NNSAIDOE/LANL to clarify the uncertainty associated with the ecological risk estimate. NMED should do this in the short term by renewing the LANL interim permit status in concert and in cooperation with NNSA/DOE/LANL technical efforts to improve the effectiveness of the open burning process, as well as by managing and reducing, where possible, the applicable waste streams. In the long term, each party in the permitting process shares responsibility for outcomes that are mutually beneficial to all New Mexicans and service to the nation. There is one item of interest for which I was unable to find an answer. The nature of the LANL open burn process is controlled with respect to parameters such as operating temperature, visible plume, treatment of residual ash, process knowledge of open bum	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding other agencies in New Mexico performing activities using significant quantities of	Yes

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		waste constituents, site monitoring, and its relatively isolated location. Other agencies in New Mexico, both federal and state, perform activities using significant quantities of energetic materials under far less controlled conditions. Question: Given the level of concern for open burn risk assessment and permitting, why does LANL appear to be the only agency posted on the NMED permitting website? With respect to the Notice: The Department conclusions are not supported by the facts presented in the Notice. Given the contents of the Notice, a decision to deny open burning of non-radioactive wastes is unnecessarily restrictive to LANL non-nuclear programs. Among other impacts, such a decision will disrupt or deny the ability to provide crucial technical skills to members of the Armed Forces engaged in operations to detect, interdict, and disarm roadside bombs and improvised explosive devices (IEDs). These devices are responsible for a significant fraction of American service member casualties and devastating injuries in Iraq and Afghanistan. Further, such technical skills are also desirable for U.S. law enforcement and emergency response agencies. A decision to deny open burning also stands to increase certain occupational risks associated with transportation as well as public proximity to the vehicles needed to perform those activities. The Notice states in part that the "Department has determined that it is required to deny the permit applied for as to Open Burning (OB) treatment operations at TA-16." However, the subsequent narrative fails to clarify the nature of the *requirement* underlying the basis for denial. The Department should make fully clear to all New Mexicans the regulatory foundation that supports such decision-making processes. The NMED evaluation of the LANL risk assessment documents lacks clarity with respect to the "potential for actual risk" and "what level of risk is deemed acceptable." Like the regulatory foundation discussed above, these items should be fully clarified in order to ensure that all of our citizens are fully informed open government participants. I offer comments with respect to the three items, which appear to constitute the basis for the Department's conclusions to deny: Uncertainty. The Department clearly agrees with the LANL risk assessment regarding human risk. As a result, the residual issue appears to center largely on *uncertainty* of	energetic materials under far less controlled conditions, the Department's duty in association with the Renewal Permit it to address the open burning of hazardous waste and the LANL sites are the only sites in New Mexico performing this process. The other activities referenced by the commenter are subject to municipalities' or New Mexico's environmental regulations, principally New Mexico's Air Quality Regulations.	

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		the LANL risk estimate to the deer mouse at the same time that the Notice characterizes the risk estimate as "elevated risk (low) to the deer mouse based on the use of NOAEL based TRVs " .. " The deer mouse carries the sin nombre virus (hantavirus), which is responsible each year for illness and death to residents of New Mexico and the Four Corners area in general. NMED is encouraged to continue working with the Permittees to ensure that the risk to this population is acceptable with respect to the benefit of continued LANL programmatic activities. Public Opposition. The Notice also acknowledges public opposition to LANL open burning operations, and echoes concerns regarding "the health risks to wildlife, public health, and the environment" as well as being " ... particularly objectionable to persons with allergies or other sensitivities to airborne pollutants." The role of public opposition in the Department's intent to deny is puzzling given the NMED evaluation that" ... additional analysis of human health risk was not required." NMED is encouraged to ensure that all New Mexicans are fully informed not only of their right to participate in the permitting process, but the extent to which the weight of that input affects the outcome of the agency decision. Alternatives. Finally, the Department states its "belief that there may be preferable and viable alternatives to burning the HE waste." This statement carries a great deal of uncertainty itself, and is not substantiated by the contents of the Notice. Under the circumstances, and considering the long timeframe in which this interim permit process has taken place, it is rational to proceed with disposal processes that work reasonably well, reduce risk to humans, and for which the nature of the risk estimate disagreement is at the extreme end of the scientific evaluation process.		
39	Gen.	I would like to make my voice heard regarding the hazardous waste permit that is being threatened. I believe in the open burning policy regarding hazardous waste. I feel that burning this waste that would otherwise be transported and stored in drums is the best and most efficient way of getting rid of the waste. Not only does burning this waste have no human health risk, I would rather it be completely wasted (by burning it) than stored in drums across New Mexico. There is more risk in transporting the waste across New Mexico than burning it. By burning it, there is no evidence that it existed and therefore does not pose a risk to society. Also, burning it is less risk than burning a fire in a stove in our household. I would rather the burning of the waste take place in a	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		controlled environment that is meant to do just that thing-burn hazardous wastes.		
40	Gen.	I support the Los Alamos National Laboratory hazardous waste permit application. LANL's work with US Service men and woman providing training in improvised explosive device detection and recognition is saving lives today. In addition, work with the Department of Homeland Security is critical to the defense of the nation. LANL must be able to dispose of high explosive waste in the safest and most environmentally friendly way. This is gas fired open burning of explosive residue. Furthermore, transporting these waste or excess materials through my neighborhood and on the public roads raises other hazards that can easily be handled on the LANL property. I support the LANL Hazardous Waste Facility Permit application for disposal of explosive waste and residue! I vote and will exercise my right and obligation.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
41	Gen.	I just read that NMED will probably deny permission for LANL to use open burning to dispose of high explosives waste or items containing residue from that waste. Since DOT forbids moving that waste on public roads, what is the alternative to open burning?	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
42	Gen.	Please reconsider renewing the hazardous waste permit so New Mexicans do not have to deal with it later at taxpayer's expense. Open burning in remote Lab locations has been proven a safe way to destroy it in the past and nothing has changed. Important national security work now conducted at LANL may be sacrificed and in this time of terrorism threats, that would be a mistake. The Lab provides unique training and other services to our fighting armed forces that should not be jeopardized by limiting its ability to conduct such work because of waste reduction procedures that will end up having the waste transported to other locations on our public highways.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
43	Gen.	I am writing as a citizen of New Mexico and a resident of Los Alamos to express my opposition to the draft Los Alamos National Laboratory (LANL) Hazardous Waste Permit Renewal released earlier this month by the New Mexico Environment Department (NMED) that will prevent LANL from open burning of high explosive (HE) waste that do NOT come from nuclear weapons manufacturing. This decision by the NMED must be reversed because: 1) Burning HE and HE-	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		containing items in a controlled, remote part of LANL is far safer than requiring additional handling and shipping of these materials to another site. In fact, it creates a new more dangerous problem: the transport of potentially unstable explosive waste on public roads which is prohibited by the U.S. Department of Transportation regulations. 2) Obviously a small amount of air pollution and combustion residues are created, but these are insignificant in my opinion and should poses no significant danger to the public, LANL workers, or the environment. 3) This decision would prevent or curtail most important defense and national security missions involving HE, such as research into weapons and munitions, counter-terrorism, explosives detection, and improvised explosive device counter-measures. 4) This method of waste disposal is not new and has been safely used for many years in accordance with applicable regulatory requirements. I am currently an employee of LANL and I have many years of experience researching the mechanical properties high explosives; however I am expressing my own views and I am NOT representing the Laboratory. In summary, explosive residues are too dangerous to transport and are far safer to burn onsite. A simple consideration of environmental risks compared to the benefits to national security is clear in this approach.		
44	Gen.	I am very concerned about the unintended consequences of denying the Los Alamos National Laboratory (LANL) the permit to dispose of explosives by open burning. This decision will do *no* significant good for New Mexico but *will* do significant harm to this Nation. LANL has been protecting the Nation from potential harm for more than 60 years. The potential harm originally came from the external forces of the German Third Reich and the Japanese military but now our Nation is threatened by terrorist elements both overseas and at home. The Laboratory employs some of the finest minds in the world to do cutting edge research to defeat those terrorist threats. It is no exaggeration to say that the denial of an open burning permit will bring that *vital* research to a halt. This will be a serious loss for our Nation and it will put our Nation at risk. As an example, part of the LANL research is to acquire or replicate dangerous and	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		unstable terrorist explosives. (Yes, all explosives are potentially dangerous, but explosives made by NATO forces for example are safe to ship and handle until correctly initiated.) These terrorist explosives are tested to determine how dangerous they are and how they may be rendered harmless. In other words, the Laboratory determines how to protect our troops in the field from these explosives. The problem is that after these explosives have been tested they may not have detonated and must be *safely* disposed of. The *only* safe way to dispose of unstable explosives is to use the open burning process. The laboratory cannot and should not ship them out. This is because: shipment requires a permit from the Federal Department of Transportation (DOT), as these explosives are unsafe and unstable the DOT will rightly not grant permission to ship them on public roads to other sites; the explosives are unsafe to handle, packaging them for shipment puts LANL workers at risk. If the Laboratory cannot safely dispose of these explosives then the only responsible recourse is to stop performing research on them. It is not well known by the public that explosive emissions from open burning are relatively harmless and their volume is a tiny fraction compared to other sources. Explosives are CHNO molecules, in other words hydrocarbons, much the same as gasoline. In fact, pound for pound there is more energy and waste in gasoline than there is an explosive. I take good care of my car and I am pleased to say it gets 33 miles to the gallon. As I drive 25,000 miles a year I consume 758 gallons or over 2 tons of gasoline a year. *So, my car probably produces more waste then that produced by all the open explosive burning done each year* at LANL. Of course, there are hundreds of thousands of vehicles in the state of New Mexico producing comparable or more waste than mine. Clearly, if you took one of those vehicles off the road you would not notice the difference in pollution. No one New Mexico can possibly notice the improvement to the environment if the permit for open burn of explosives is denied. *The whole Nation will* notice *if the Laboratory cannot protect it!* I strongly urge the New Mexico Environment Department to reconsider the denial of a permit to dispose of explosives by open burning and let the Los Alamos National Laboratory do s job.		

No.	Loc.	Comment	NMED Response	Δ
45	Gen.	It has come to my attention that NMED has denied LANL's permit to treat experimental High Explosives on laboratory property and has opted instead to require that LANL ship these wastes untreated over the New Mexico public highways to off-site disposal facilities. If this is true, can I ask why? It seems unreasonable when LANL engineering personnel have been burning the waste on-site, rendering it inert in a remote area of New Mexico under controlled conditions with documented air monitoring that shows no ill effect to the environment or community of Los Alamos county. What is the rationale for deciding now to put unstable, experimental explosives on the public highways where they are at risk of being involved in traffic accidents or spills?	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
46	Gen.	I ask that your team please reconsider your proposed ban on burning high-explosive residues associated with LANL counter-terrorism work. To the best of my knowledge, the real risk that this poses is insignificant, while getting in the way of anti-terrorism work is clearly not in the state's or the nation's best interests. The real risks associated with transporting HE ... well, now you're talking real dangers! Your comments or, better, your concurrence would be most appreciated.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
47	Gen.	I am I favor of keeping the open burn permit at the Los Alamos National Laboratory. Existence of the open burn ground facilities allow us to provide critical, cost effective, and timely support to the nation in reducing injuries to our servicemen through the understanding of the homemade explosives encountered. Existence of the open burn ground facilities also allows us to provide critical and cost effective support the war on terror. Please reconsider the intent to deny the open burn t at Los Alamos.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
48	Gen.	I write to you today as a citizen of Los Alamos County. I am employed at the Los Alamos National Laboratory; however, my main interest in this communication is as a nearby resident of LANL. I understand that the NMED desires under the current renewal of LANL's hazardous waste permit for the storage and treatment of waste to exclude the burning of high explosive waste on site. As you know, with LANL being a weapons laboratory the ability to handle high explosives, before and after testing, is integral to its operation.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		The high explosive wastes currently generated cannot be shipped off site per U.S. Dept. of Transportation regulations, by my understanding. This would leave LANL in a position to either store these wastes long term, awaiting a solution, or to stop testing activities that generate high explosive wastes. Neither alternative is beneficial to the immediate community, or the United States. LANL, like any other large industrial installation, has had its share of environmental problems to deal with. I, as a citizen in a nearby community, have enough confidence in LANL and NNSA officials to maintain an environmental program that is reasonably safe for the general public. If I did not believe that sincerely, I would not have my family living approximately two miles, straight aerial distance, from LANL's TA-54 site. LANL needs to maintain its ability to treat on site its high explosive wastes.		
49	Gen.	I disagrees with the decision to remove open burning from the Los Alamos National Laboratory (LANL) draft hazardous waste renewal permit. Burning in LANL's secure, controlled, remote setting is far safer than transporting the material on public roadways to another facility. In fact, the U. S. Department of Transportation prohibits the transport of potentially unstable explosive waste on public roads. Without open burning, this "orphaned" waste remains dangerous with no proper disposition path. Years of publicly available, air monitoring data show that LANL's burning poses no risk to human health. Open burning is primarily done with high temperature propane burners, which produce no visible or harmful plume of smoke. Please consider changing this proposed policy.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
50	Gen.	Support LANL Waste Permit at Explosives Site. Much better to burn in place than to transport through neighborhoods! Stop the foolishness, grant the permit.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
51	Gen.	Los Alamos National Laboratory's work for the nation's security generates waste materials and items that must be disposed safely. These include high explosives (HE) or	Comment noted. See the Department's response regarding	Yes

No.	Loc.	Comment	NMED Response	Δ
		items containing HE residue. For years they have been safely treated by open burning in remote laboratory locations in accordance with applicable regulatory requirements. Some 75 percent of this waste currently comes from research in counterterrorism, explosives detection, and improvised explosive device countermeasures. The remainder comes from stockpile research or from the decommissioning and demolition of buildings where explosive residues are too dangerous to transport. None of the HE waste treated by open burning at Los Alamos comes from the manufacture of nuclear weapons. Burning in the Laboratory's secure, controlled, remote setting is far safer than transporting the material on public roadways to another facility. In fact, the U.S. Department of Transportation prohibits the transport of potentially unstable explosive waste on public roads. Without open burning, this "orphaned" waste would remain dangerous and have no proper disposition path. Years of publicly available air monitoring data show that the Laboratory's burning poses no risk to human health. Open burning is primarily done with high-temperature propane burners, which produce no visible or harmful plume of smoke. I respectfully disagree with the decision to remove open burning from the draft hazardous waste renewal permit. Vital national security work would be sacrificed with no appreciable benefits to human health or the environment.	open burning in the document titled General Response to Comments.	
52	Gen.	As a citizen of New Mexico I am appalled at your department's decision not to permit open burning of hazardous materials at Los Alamos National Laboratory. Our government (including the state government) has the responsibility of keeping their citizens safe from acts of terrorism and maintaining our national security. By your failure to permit burning hazardous materials you have put Los Alamos National Laboratories ability to help maintain our national security at risk. You, like all the other liberals in this nation, are destroying our society. I strongly oppose your action and will do everything I can to see that you are removed as department head.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
53	Gen.	As a private citizen of Los Alamos County, I am writing in support of a Burn Permit for Open Burning at the Los Alamos National Laboratory for the following reasons: • Burning is safer than transporting the unstable material on public roads for	Comment noted. See the Department's response regarding open burning in the document	Yes

No.	Loc.	Comment	NMED Response	Δ
		treatment elsewhere, • Without a proper disposal path, the counter-terrorism and national security research (i.e. improved explosive device (IED) countermeasures, explosives detection, methods to defeat buried mines or other explosives), cannot continue, • None of this waste comes from manufacture of nuclear weapons, and • Years of publicly available data show that the burning poses no human health risk and emits no harmful plume and is rarely even visible. While I respect that some citizens are concerned about risk to the public and environment, the above information serves as a reminder to all of us that this hazardous waste permit not only protects the people and the environment, it also supports the national security missions for our great State and Nation.	titled General Response to Comments.	
54	Gen.	I've become aware that the state intends to deny the open-burn portion of LANL's RCRA permit. As a citizen (Santa Fe County resident) and taxpayer, this is difficult to understand, since: • disposal of explosives wastes is necessary to continue important homeland security research on explosives detection and strategies, such as IED countermeasures, that can help protect US troops; • the state acknowledges that open burning poses no public health hazard; • on-site burning presents minimal hazard to the trained personnel responsible for it; • transport of waste on public roads to an offsite disposal location is more hazardous than burning at LANL; and • the explosives wastes in question are not related to nuclear weapons programs. It's disappointing that the state appears to be motivated by political rather than technical factors in this case. Please reconsider.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
55	Gen.	I was dismayed to hear that the current draft of the NMED hazardous waste permit seeks to exclude open burning of LANL's energetic materials. As you are aware, LANL burns explosive debris or residue at only a few remote Laboratory locations. Years of data	Comment noted. See the Department's response regarding open burning in the document	Yes

No.	Loc.	Comment	NMED Response	Δ
		collected during the burning has consistently shown that the activity poses no human health risks and emits no hazardous waste. The plume itself is rarely visible. The other alternative to disposing of explosives debris is transporting the material on public roads for disposal elsewhere. This seems fundamentally wrong to me for three reasons. First, it exposes the public unnecessarily to detonation or contamination hazards in the event of a crash. The statistical likelihood of an event happening on this country's congested roads would seem to be far greater than the potential to endanger the public through the current method of disposal. Second, the risk for explosive material being diverted into the wrong hands increases whenever it is shipped for treatment off-site rather than being maintained and treated within the Lab's secure boundaries. And third, shifting the burden of disposal to another site only transfers the arguments against open burning at LANL to another physical space whose citizens may hold similar beliefs. In other words, the "problem" doesn't go away; it just becomes someone else's "problem". Los Alamos National Laboratory has always played a critical role in this nation's national security and, in recent years, in counter-terrorism which may now be our biggest threat. Much of the research done at LANL requires the use of explosive material to understand and defeat explosive threats. If the Laboratory cannot continue to burn its explosive residue, mission-critical capabilities could be lost. It seems to me that the people who support the removal of the open burn permit do not have a comprehensive understanding of exactly what they are supporting. As is often the case, people take this opportunity of voice their opinion against LANL without truly understanding the ramification of their decisions. Please allow the Laboratory to continue open burning of explosive material.	titled General Response to Comments.	
56	Gen.	I understand that you are objecting to LANL's use of the time-honored technique of open burning to dispose of explosives. What better way is there? If you heap them in a pile and detonate them, you get only partial removal as bits are blown away without being burned or detonated. Your logic would also require you to ban fireworks, firearms, ordnance disposal, and strip mining.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		I do not represent LANL, I am only a taxpayer that is disgusted with the petty way the NM Environment Department treats LANL on every issue. This again smacks of "the revenge of the C student" mentality so often displayed by your department.		
57	Gen.	It is my understanding that a series of hearings is scheduled starting April 5 to discuss the hazardous waste permit for Los Alamos National Laboratory and that are gathering public comments prior to those hearing. It is also my understanding that a portion of that permit pertaining to "Open Burn" is quite contentious. While I don't claim to be an environmental specialist, I do know about the Lab's work that is dependent upon that permit and believe there is a misconception about that work. I believe many oppose the Open Burn permit because they believe it is a way to oppose nuclear weapons. Actually, loss of the Open Burn permit would not impact the nuclear weapons program at Los Alamos. The impact would be to shut down work done to understand improvised explosives devices-both the kinds used against troops in Iraq and Afghanistan and the kinds used to bring down commercial airliners. If that work is stopped at the Lab it could likely cost the lives of American and allied troops and may even result in terrorists successfully bringing down an aircraft and killing the passengers. I realize that the NMED has a vital responsibility to protect the environment of this state. But I also believe it is important that NMED fully understand the implications of preventing LANL from evaluating the types of explosives that terrorists are trying to use against our military and our population here in the U.S. I hope you'll find a way to allow the Lab to continue this vital work, partly because of the importance to our country, but also partly because I fly commercially a few times per month.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
58	Gen.	I am writing in support of retention of open burn as a part of the LANL hazardous waste permit. It is difficult to overstate the importance to national security the research conducted by LANL on explosives and propellants. These efforts have direct and important impacts on homeland security, aviation security, terrorism prevention and response, military effectiveness and safety, and nuclear weapons policy. Such work has been a core competency of the laboratory's mission since its inception. This research simply could not take place without a means to dispose of scrap and excess materials. Open burn procedures are by far the safest, most environmentally	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		responsible method to dispose of this waste. Weighing the enormous benefits against any risk, real or perceived, it would be a serious mistake to discontinue this operation by removing open burn operations from the new hazardous waste permit.		
59	Gen.	I'm writing in regards to the Los Alamos National Laboratory RCRA permit, specifically the NMED's proposal to disallow open burning. The main reason according to the fact sheet on your website is due to eco-risk modeling that showed elevated risk to earthworms and deer mice. There are Mexican spotted owls that are federally protected nearby, and they are not at risk, but you're prepared to stop millions of dollars of money coming into New Mexico and cause the loss of possibly hundreds of well paid positions over two species that have no legal protections? The deer mouse and the earthworm are ubiquitous across the landscape from coast to coast here in the USA. Hundreds, possibly thousands of deer mice are routinely trapped annually by LANL pest control in buildings around the site. The deer mouse is also the primary carrier of the "sin nombre" virus which causes hantavirus in humans, a lethal zoonotic disease. Why would you choose to disallow this permit for protecting a non-listed species that is certainly not in trouble? I am a strong environmentalist and I work in the field of ecology and I think the NMED is picking the wrong fight. You are hurting the New Mexico economy for the wrong reason. I am asking that you allow the open burning to continue and choose more important fights. If you are looking for a bigger bang for your buck with protecting New Mexico, why don't you travel along the Rio Grande in Espanola and look at all of the businesses with various waste streams right into the river itself or into its floodplain where there are various federally protected species being impacted, not to mention the water supply for our citizens. Or better yet, why don't you drive around southeastern New Mexico and see how many of the thousands of oil wells are leaking and not up to standards? I have been there and the numbers are staggering. Have you ever been to Loco Hills NM? I suggest that you check it out. Los Alamos National Laboratory is an industrial site and the open burning is well within industrial site standards.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding the protection of a non-listed species, the Department's 2008 *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening Level Ecological Risk Assessments* suggests similar protection of listed and non-listed species though an area supporting listed species and listed species are to be identified for consideration in "risk management decisions."	Yes

No.	Loc.	Comment	NMED Response	Δ
60	Gen.	As it seems NMED permitting policy is tied strongly to public opinion, I would like to add my voice to the many that should be protesting the notice of intent issued by the NMED to deny LANL's permit for open burning. We have been informed that the "overwhelming majority" of 1400 comments submitted for the hearing scheduled for April 5th, 2010 express opposition to the renewal of this burn capability for the laboratory. I find it difficult to believe that this permitting decision, which would have far reaching effects on both national security and the economic stability of New Mexico, is being driven by the unsubstantiated opinions of such a quixotic, overzealous minority. If this issue is not strongly tied to public opinion, then I would propose that the decision to renew the permit or not be based on more than uncertainty in the conclusions of the ecological risk assessment. I quote two statements issued by the laboratory: "Years of publicly-available data show that the burning poses no human health risk and emits no harmful plume and is rarely even visible." "A denial of open burning would harm national security, with no appreciable benefit to people or the environment." Please consider carefully the fact of the technical, economical, and security-related impacts associated with this permit decision. If this permit is denied to LANL because of uncertainties and negative bias, then must they not also be denied everyone else ... SNL, Emertech, drivers of automobiles in New Mexico, etc.?	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
61	Gen.	It has come to my attention that the New Mexico Environmental Dept. (NMED) has denied a portion of the Resource Conservation and Recovery Act (RCRA) permit for Los Alamos National Laboratory (LANL). The denied portion is associated with 'open burns' of waste material associated with research and development (R&D) aimed at defeating improvised explosive devices (IEDs), explosive detection, and methods to defeat mines. Burning of these conventional materials has been deemed safer than clean-up and transport to a waste repository. Publicly available data collected over the years indicates that this burning activity poses minimum if any human health threat. This activity has been previously permitted by NMED and has been going on for years but now NMED wishes to withdraw this permit. If the permit is withdrawn, the R&D will have to be stopped.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding the statement "this activity has been previously permitted by NMED," the activity has not previously been permitted	Yes

No.	Loc.	Comment	NMED Response	Δ
		A few years ago, the party then in power experienced scathing rebukes in the press for having sent our troops into harms way without the best equipment possible (though it initially was not available) to protect them from IEDs. Now NMED is considering shutting down R&D that will ultimately protect our troops, who are our children and our neighbors' children, from these insidious devices. Our enemies recognize the psychological and physical effectiveness of IEDs. It was just reported that Iran is training the Afghan Taliban in the use of roadside bombs against our military - particularly sequenced IEDs. Initially a single device detonates and after a short period of time a second one detonates to kill and maim the rescuers. As a veteran, I find it grossly irresponsible that NMED would consider jeopardizing this important work, particularly when the work is undertaken with minimal risk to the public. Now consider the impact on New Mexico. LANL is the economic powerhouse of Northern New Mexico. There is no other significant industry in that portion of our state. In addition to employing 9,000 people, a large percentage of the lab's procurements are placed locally. The trickle-down effect is immense. Also, with the decision to give the LANL contract to a Limited Liability Corp., around $60 million of gross receipts taxes flow into county and state coffers. We are in a recession! If NMED doesn't recognize the importance of this work, the Dept. of Energy (DOE) does. Deny the permit and DOE will move the activity to another state. This means lost jobs for our citizens in Northern New Mexico. Additionally, if one looks at the recent activities of the NMED and its associate, the Environmental Improvement Board, one sees the implementation of the most draconian pit rules in the nation, one sees attempts to put into place egregious carbon-emission regulations, despite recent revelations of a conspiracy of deception by environmental scientists. Ultimately, in New Mexico one sees nothing but a hostile attitude towards any business except that relating to the service industry. Does the NMED want the people of New Mexico to be subservient to everyone else? A wise manager at DOE will eventually see the handwriting on the wall and start to look at what else might be targeted by NMED and give serious thought to moving those activities to other states. I know that I would. This means lost jobs and revenue for New Mexico! It can't happen in New Mexico? Let's look at some consequences of over-regulation. Why are so many men out of work today (check the recently issued Dept. of Labor statistics)? Why do we produce 50% of our electricity with coal? It is because of over-	by the Department and has instead been occurring under what RCRA terms "interim status." Interim status means that the operations were ongoing when RCRA came into effect, LANL appropriately submitted its permit applications, and the Department has not issued a permit for the activity. The rules governing interim status can be found at 40 CFR Part 265.	

No.	Loc.	Comment	NMED Response	Δ
		regulation! A vast number of men were employed by heavy industry. Environmental over-regulation and a not in my back yard attitude drove the cost of doing business up so much that the industries were moved overseas or just shut down, resulting in an horrendous loss of jobs. Just look at Detroit and the remainder of the rust belt today! With respect to Nuclear Power, over-regulation drove the cost of building a nuclear power plant up 400% and the cost of operations and maintenance up 80%. No nuclear plant, a plant that produces minimal if any carbon emissions, has been completed since the early '80s because of this cost impact. Instead, coal plants, carbon emitters that so concerns the NMED and the EIB, were built, which contribute significantly to the global-warming crisis (if it is a crisis and not a fraud). These are the consequences of environmental over-regulation and zealotry. It can happen here! Summarizing, the NMED proposal to withdraw LANL's RCRA permit pertaining to open burns: • Will not lead to any significant reduction of risk to human health, one of RCRA's stated goals • Will inhibit our nation from introducing countermeasures to the tactics advanced by our enemies, thus putting our troops in more danger than necessary • Will lead to a loss of jobs and revenue in Northern New Mexico. While fact-base regulation may be reasonable, over-regulation with little real evidence is not only grossly irresponsible, it is criminal. Issue the RCRA permit to allow responsible open burns at LANL!		
62	Gen.	As a citizen of Los Alamos County, I was extremely disappointed to learn about the New Mexico Environmental Department denying a portion of the hazardous waste permit for the Los Alamos National Laboratory. Environmental stewardship is at an all time high and it is evident that the Los Alamos National Laboratory is ready and willing to participate in this important endeavor. The burn permit will allow the Los Alamos National Laboratory to dispose of waste in a manner that is safer than transporting the material from state to state. Burning is also proven to have no impact on the environment and human health. This decision most assuredly will have negative effects on the environment, human	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		health, and national security. If there is no way to properly dispose of the waste, it will sit idle awaiting a path forward for its destruction which will affect the environment as it degrades, it will put human health in danger as it is a safety risk to have stored long-term waste, and it will put national security at risk as it will be nearly impossible to conduct counter-terrorism and explosive detection experiments. I respectfully ask that the New Mexico Environmental Department re-evaluate their decision regarding the hazardous waste permit for the Los Alamos National Laboratory.		
63	Gen.	We would like to encourage you to approve the open burning of HE materials at LANL for a couple of reasons: 1) It is far safer to burn these materials on site: a remote, safe place where they have experience in dealing with these materials. We do not want these dangerous materials on a roadway where we may be driving with our kids. 2) The work the materials support is extremely important to national security, primarily counter-terrorism. If there is no reasonable path forward for the waste, the potential for the mission to be accomplished is comprised, and could result in job losses in a field which the nation needs LANL's expertise to lead for the safety of our country and that of our allies. It would be reckless endangerment of our neighbors, children, and the environment if the state dictated that the waste be shipped elsewhere for treatment. The safest path forward, and the best path forward for our state and country is to permit the open burning of HE at LANL. Please keep the materials on site where they can be safely treated!	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
64	Gen.	I am writing to support the open burn/open detonation permit the Los Alamos National Lab has through the New Mexico Environmental Department. The loss of this permit will have long term negative impacts on our state and the Nation. Below, I list the just a few of them: Economic: Loss of the permit will cause loss of R&D work at the lab and lead to loss of hundreds of jobs for the state. The remaining R&D will increase costs to customers because of increased disposal cost, thus worsening the impact to jobs in New Mexico. We can not afford to loose more jobs in these difficult economic times.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		National Security Impacts: LANL R&D has broad impacts on our nation's security. The elimination of the permit will have a direct impact on LANL to respond to national security threats in many areas including domestic and international terrorist threats with explosives, nuclear materials smuggling and proliferation. Additionally LANL missions contribute to the security of our troops in Iraq and Afghanistan. The loss of the permit would certainly have a negative effect on the nation to respond to national security emergencies and in additional will be detrimental to our nation's ability to be proactive when addressing global security threats.		
65	Gen.	I am writing in support of the New Mexico Environment Department approving Los Alamos National Laboratory's open burn permit. My understanding is that revoking this permit could require transport of hazardous materials over public roads or result in loss of employment for Laboratory workers. Denying this permit would also hinder activities at the Laboratory that support our national security and safety including critical programs for the Department of Homeland Security. Additionally, my personal impression is that the quantity of emissions (which are primarily water vapor, carbon dioxide, and soot) from LANL's open burn activities are negligible relative to the amount of pollution emitted by fireplaces and internal combustion engines in this state. A responsible decision by your department would quantitatively study this issue.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
66	Gen.	I am writing in support of NMED permitting Los Alamos National Laboratory (LANL) to continue to conduct Open Burn activities. Specifically, this capability allows for LANL to support a number of energetic materials testing requirements in support of a wide range of Global Security mission requirements. In particular, I wish to highlight the support provided to the war fighter, e.g. through homemade explosives (HME) training courses that are conducted at LANL. Through this course work, our military colleagues are provided with training that helps them detect, and understand the characteristics and behaviors of different types of energetic materials, whether the hazard or concern occurs on foreign soil, or domestically. Without the burn capabilities, LANL is at potential risk for losing these vital energetic material test capabilities in support of our colleagues and Global Security mission needs. Additionally, other missions could be placed at risk, as many of these	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		capabilities are interlinked with other training capabilities; provided as a 1-stop shop for our colleagues training needs. With these capabilities, LANL is continuing to playa key role in the success of these critically important mission areas in service to our Nation and our Nation's personnel.		
67	Gen.	I want to oppose the Environment Department's decision to ban open burning at the Lab. I've lived in this town for fifteen years and have never been bothered by the burns, in fact, haven't even known about them until now. I trust the lab scientists to worry about environmental safety. It seems foolish to stop a procedure that enables the lab to conduct research vital to our national security. I hope the department will rethink this decision.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
68	Gen.	I am writing to express my support for issuing LANL a Hazardous Waste Permit. I and my family live and work near the laboratory, and I am confident that the Laboratory conducts its national security work in a safe manner that protects the NM environment and citizens, while simultaneously enhancing our national security. Please don't let irrational fear and emotion rule the day when not issuing the permit has far reaching and negative consequences for our state and our nation.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
69	Gen.	I strongly support the inclusion of the "Open Burn" capability for Los Alamos National Laboratory in the current NMED hazardous waste permit under discussion. LANL has world-class expertise in understanding and defeating explosive threats that place our nation at risk. An open burn permit is essential in order to carry out critical national security and counter-terrorism missions. These missions at risk include defeating IEDs that are killing our soldiers in the Middle East. The Nation has placed major national laboratories in our state and it is our turn to step up to our responsibility to support the nation. I am strongly in favor of approving "open burn" and urge you to decide in favor of it.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
70	Gen.	I am writing to express my sincere personal support for the awarding of an open burn permit to Los Alamos National Laboratory. Granting this permit will not harm the environment, and is critical to the Lab's work to protect our soldiers and safeguard our nation. Please do what is right for New Mexico, the Lab, and our nation and grant this permit. You work every day to protect the environment of New Mexico. This is your	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		chance to also protect our uniformed personnel in harms' way.		
71	Gen.	I am writing to express my concern about the possible denial of an open-burn permit for Los Alamos National Laboratory. The open-burn procedure is essential for disposing of explosives, which, in turn, are essential for research on how to defeat improvised explosive devices. Of course, IEDs are responsible for most of the troop fatalities in Iraq and Afghanistan. Explosives research is also important for several other critical national-security problems. Please consider granting this permit.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
72		I strongly support the inclusion of the "Open Burn" capability for the Los Alamos National Laboratory in the current NMED hazardous waste permit under discussion. LANL has world-class expertise in understanding and defeating explosive threats that place our nation at risk. An open burn permit is essential in order to carry out critical national security and counter-terrorism missions. These missions at risk include: - Developing countermeasures against improvised explosive devices (IEDs) that are killing our soldiers on almost a daily basis in Iraq and Afghanistan, - Explosives detection to help prevent situations like the Christmas bomber where explosives are hidden under clothing - Methods to defeat buried mines and other explosives that kill military and civilians alike. - In addition, explosives and energetic materials provide the initial energy that powers United States' nuclear deterrence and also non-nuclear strike capabilities. I have been a strong environmentalist for the past 40 years and feel very strongly about protecting the environment for future generations. However I also believe that national security is critically important and that the two must be balanced. The work being done at Los Alamos is helping our soldiers survive and in the longer term will help ensure that some day we won't have IEDs being detonated along I-25 or in our US cities. I also want to be confident that my children, now in their twenties, can travel abroad without the risk of their plane being brought down by a terrorist who could have been stopped if only we had "done our homework" as a nation and here in New Mexico. This choice to permit "open burn" should be a no-brainer. I strongly support "open	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		burn" and urge you to decide in favor of it.		
73	Gen.	I am writing in support of the New Mexico Environment Department approving Los Alamos National Laboratory's open bum permit. My understanding is that revoking this permit could require transport of hazardous materials over public roads or result in loss of employment for Laboratory workers. Denying this permit would also hinder activities at the Laboratory that support our national security and safety including critical programs for the Department of Homeland Security. Additionally, I feel that the emissions (which are primarily water vapor, carbon dioxide, and soot) from such a site are negligible relative to the amount of pollution emitted by fireplaces and internal combustion engines in this state. The comments that you have received against issuing the open burn permit do not seem to consider this point. A responsible decision by your department would quantitatively study this issue.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
74	Gen.	As a private citizen living in Eldorado south of Santa Fe, I would like to express my opinion regarding the intended denial of the permit for Open Burn Units TA 16-388 and TA 16-399 as well as the intent to approve closure plans for said units. I know that Los Alamos National Laboratory is extensively involved in US counter-terrorism and national security missions whose continuation depends on a proper explosives disposal path. Burning of explosives wastes at the Open Burn Units on LANL property is far safer than transporting unsafe material on public roads for treatment elsewhere. None of the waste originates from manufacture of nuclear weapons, but rather from experiments on improvised explosive device countermeasures and explosives detection enhancements for aviation security and battlefield application, both of which are necessary to keep both aviation passengers and soldiers safe from terrorists and insurgents. Experiments are also to develop methods to defeat buried mines or other explosives (e.g., roadside bombs). As a private citizen who appreciates the efforts of Los Alamos scientists to help provide our soldiers in theater with the ability to find and render safe IEDs intended to kill or maim them, or to provide DHS and TSA with enhanced capabilities to allow air passengers safe and secure passage from home to destination and back, I would appreciate your reconsideration of the need for the open burn units. They are not an environmental hazard to the citizens of northern New Mexico, but rather provide a	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		service critical for the continuation of such vital national security missions. I would hate to blame the next soldier's death or the next airplane bombing on a misguided New Mexico effort to close the open burn units at Los Alamos, but that would be the ultimate effect.		
75		I understand that NMED has indicated an initial desire to deny the long-standing burn permit capabilities at Los Alamos National Laboratory. As a private citizen of the State of New Mexico, I'd like to submit a public comment on this proposed action. First, let me state that I've lived and worked in New Mexico for more than 40 years. I am very familiar with both the activities, the work involved, the benefits obtained for our Nation, and the scientific merit of work with explosives. I also have some professional background having served in Iraq in the search for WMD, studied at the New Mexico Institute of Mining and technology in explosive's engineering, and having worked as a scientific staff member in several of LANL's explosive testing groups since 1986. The benefits of explosives work is widely underestimated by the general public and may not be apparent to regulators and State agencies. Even as our Nation struggles through two armed conflicts replete with IEDs and terrorist attacks where explosives are commonly used, it is easy to disregard the subtle nature of these chemicals and the fact that they are increasingly common. Even conceptually simple tasks, like explosive detection at airports, are replete with subtle details and scientific and technological challenges. Nonetheless, for commercial air-traffic to continue, we must remain one step ahead of our enemies or accept the unacceptable consequences in lives lost. Los Alamos scientists have genuinely world-class talents in the areas of explosive development, characterization, detection, and diagnostics. Many of these individuals have devoted their lives to understanding this complex phenomenon for the benefit of our society. Nonetheless, the nature of their work entails some element of risk, some waste streams and some political compromises with Government agents such as you. In the area of burning high-explosive waste, the cost is small and the direct benefit is large. Furthermore, these same scientists are fully aware of the environment we share and the consequences of mismanagement of environmental issues. I myself have participated in the remediation and cleanup of several firing sites. The Los Alamos scientific community is constantly searching for ways to make explosive tests smaller, with less	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		impact on the environment. Significant advances have been made in the diagnosis of such tests where more information is gathered on a given test thereby reducing the number of tests required. Other advances have been made in the use of containment vessels and blast-proof structures to prevent or mitigate the spread of debris. Recently, Los Alamos scientists developed "green" primary explosives dramatically reducing the amount of lead and mercury used in things like bullet primers. In short we are doing a good job at managing the risks associated with our work while returning enormous benefits to society. Those who will claim otherwise simply have not done their homework. I urge you to carefully consider both the costs and the benefits before changing the NMED burn permit.		
76	Gen.	I'm writing in support of Los Alamos National Laboratory obtaining and maintaining a hazardous waste disposal permit for open burning. After hearing of the possible decision to not allowing LANL to obtain a disposal permit for open burning, I investigated the ecological risk assessment for the decision. As a wildlife toxicologist I understand the technical aspects and complexities of ecological risk assessment. However, I have not come across denial of permits for open burning based impacts to deer mice and earthworms. While they are commonly used as surrogate species to extrapolate to humans, it appears that in this case they are the ecological endpoint of concern. In this case, I think that the environmentally responsible thing is to allow the open burning for the diverse and important work that is being done for the Nation. The carbon footprint alone for transporting and managing the waste elsewhere is large. Deer mice and earthworms are neither threatened nor endangered. The environmentally responsible reduction in this waste would not impact large populations. I hope that the New Mexico Environment: Department will reconsider the disposal permit for open burning.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
77	Gen.	The New Mexico Environmental Department has waged a campaign of open burn permit denial to LANL for the past 15 years. The expense to taxpayers has been incredible and their reasons empty. Those that support the NMED's denial make a lot of illogical noise using faulty data and arguments while their home fire places produce	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

No.	Loc.	Comment	NMED Response	Δ
		more environmental damage in one night than the burn ground at LANL would produce in a number of years. Some groups have only one purpose, to close LANL. They actually pay people to attend hearings to oppose any progress on the assumption that anything LANL does has a nuclear component. LANL is not burning radioactive materials. To what end do they deny a permit? The concise answer to this question is unknown, but maybe their game is ..... - Cave into a few paranoid conspiracy theory supporters in an effort to close LANL and cause economic devastation on Northern New Mexico. - Invite civilian casualties along an egress route transporting energetic materials to another site that allows burning. (To justify this NMED sights inappropriate burn models with inappropriate waste. The dioxins and furan they keep referring to don't exist at the temperature used at the LANL burn ground. Also, the chlorine content of the waste being burned that is necessary to produce a measurable amount of either compound is too low.) - Save a Hantavirus ridden mouse using data on soils that was contaminated 40 years ago saying the burn techniques presently used caused it. (Actually, populations of the deer mice in the canyons immediately adjacent to the bum ground are perfectly healthy.) - Block efforts to provide security for military personnel overseas and homeland security by limiting or eliminating research into terrorist explosives. NMED has kept moving the target on LANL so that each time they comply with NMED's requests; NMED comes up with another task. It appears that they are either trying to cave to the irrational whims of the opposition to the permit or they hope that they can come up with a test that will show LANL is producing air, soil, or water contaminants greater than some arbitrary level they make up. When LANL has done tests that fall within reasonable environmental standards, NMED changes the tolerances. This is not, nor has it ever been, the case using the burn protocols presently used. At one point NMED told LANL to use an incinerator. Problem is they won't permit one. LANL was instructed another time to put the HE in a wooden box during incineration. This would be extremely dangerous and indicates a lack of understanding of the	Comments. Regarding the assertion that the Department has "waged a campaign of open burn permit denial to LANL for the past 15 years," the Department does not understand the assertion nor has it seen any basis for the assertion. The Department has for many years been working constructively with the Permittees to obtain all necessary permit application information and to draft an appropriate permit.	

No.	Loc.	Comment	NMED Response	Δ
		materials being burned. As a citizen who lives downwind from LANL, I support their efforts and believe a permit should be granted, post haste without further waste of time or money.		
78	Gen.	I am submitting comments to the Hearing Administrator for the Los Alamos National Laboratory (LANL) Hazardous Waste Permit Hearing beginning April 5th. I am writing as a private citizen, a resident of Los Alamos, a career environmental scientist, and a nearly 25-year employee of Los Alamos National Laboratory (LANL). First, let me say that, in my experience, the vast majority of employees at Los Alamos National Laboratory share a commitment to protect human health and the environment from our operations. The nature of the LANL national security and science missions necessitates work with virtually every substance in the periodic table, including some of the most persistent toxic substances known to man. It is critical that the Laboratory and the New Mexico Environment Department implement a hazardous waste operating permit for operations that simultaneously enables important national security and science missions while achieving protection of human health and the environment. In my opinion, the current draft permit is overly restrictive of Laboratory operations while adding no new value in protecting the environment. Further, the increasingly restrictive and prescriptive conditions of the draft permit fail to recognize the progress that the Laboratory has made over the past decade in improving environmental performance. NMED and I have very different views of the Laboratory. I see hundreds of Lab employees working very hard to clean up the legacy of World War II and Cold War operations that did contaminate the environment. However, this legacy contamination does not accurately reflect the current commitment of the Laboratory to operate safely and compliantly. I also see an institutional commitment to continuously improve environmental performance. In 2005, the Laboratory committed to developing and implementing an ISO 1400 I-compliant Environmental Management System (EMS). Rather than implementing an EMS on paper, the development team reached out to workers across the institution and asked them to develop help a system that would work at the local level and create honest, measurable improvements. The LANL EMS was certified by an independent third-party registrar in April of 2006 and has been subject to over 80 days	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		of independent assessment since then. Local projects have completed over a thousand environmental improvement activities and all IS LANL Directorates have just finished developing a new set of Environmental Action Plans for 2010-20 II. Senior management has set institutional objectives and targets for improved compliance, excess materials and equipment disposition, energy and fuel conservation, eliminating liquid industrial waste outfalls, and implementing strong preventive measures for operations. I see tremendous returns from these efforts. Waste volumes are a fraction of what was generated when our current operating permit was last issued. LANL has closed over 125 NPDES outfalls and is working on the final 15. NMED hazardous waste management inspections indicate vastly improved RCRA performance. EPA inspections of construction storm water and air quality programs indicate strong protective systems are in place and are being continuously improved. At LANL, I see the strongest commitment to pollution prevention of any of the DOE National Laboratories. Over the past five years, LANL has received more DOE and NNSA pollution prevention awards than any other facility. LANL management has continued a commitment to pollution prevention projects with funding that dwarfs that of any other national Lab. Taxes on waste volumes both discourage waste generation and fund projects that improve upstream safety and compliance by eliminating waste sources. Such projects are proposed and executed by the scientists and workers that actually own the work processes. Nowhere in the Lab have I seen a greater commitment to continuously improving environmental protection than in our high explosives (HE) programs. Deployed environmental staff have worked closely with scientists, programs and waste managers to steadily reduce waste volumes, improve upstream processes and effectively treat highly sensitive HE residues. Thus, I view with great irony the intent to deny the open burn portion of LANL's permit application. The willingness of the NMED to sacrifice a mission activity critical to the safety of U.S. troops at war and civilians at home in return for no appreciable human health or environmental benefit cannot be rationally defended. While I fully appreciate the opposition of anti-nuclear activist groups to Los Alamos national security missions, such political opposition should not be the deciding factor in setting safe operating conditions for these operations. My over-riding point is that LANL needs an operating permit that is based on sound		

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		science, empirical evidence and fair oversight. I urge the Hearing Administrator to assure that this is the case.		
79	Gen.	The purpose of LANL requesting a permit for these units was to provide the flexibility to destroy reactive HE wastes that could not be sent safely off-site for treatment. LANL is currently sending more and more waste off site for treatment as can be seen by its records. The issue at hand is that LANL knows that there are waste streams that are being or will be generated that it will not have the ability to send off site for treatment. Another issue is that the only off site treatment site may cease its operations. This would leave LANL without a path forward for HE waste treatment. LANL is a R&D facility. As such it has the potential to work with new and unique HE materials and energetics. It must have the ability to treat the waste residues if there is no commercial capacity available. The removal by NMED of the Open Burning portion of the permit (Chapter 6 and its related attachment) was based on sampling data, and the modeling conducted by both NMED and LANL. The modeling was done first and utilized a waste dictated by NMED that is not burned by LANL (ammonia perchlorate). This substance is a know generator of furans when burned. LANL does not have a perchlorate waste stream that goes to the bum ground. The site is currently a "brown field". It is an old industrial site where a myriad of activities have been carried out over its life span (~50-60 years). There is little doubt that activities prior to being regulated by RCRA generated furans. Those activities are reflected in the soil samples that were taken as a result of the modeling done on the perchlorate waste stream. If this operation had been proposed as a new operation on a "virgin" mesa top at the laboratory the permit would have likely been granted and more of the environment would have been utilized for industrial purposes. Industrial activities over its life span have, without doubt, contributed to any contamination that is present at this site currently. Additionally, operating temperatures at the bum tray reach -1,800 to 2,000 degrees F within 10 seconds of commencement of a waste bum. Dioxins and furans are formed in the 400 to 800 degree F range as products of incomplete combustion. Therefore, it is not logical to assume that the presence of furans in the nearby soil was generated by this operation. This site is part of the facility's corrective action plan for the future. Once activities are	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding there being "little doubt that activities prior to being regulated by RCRA generated furans," this has not been demonstrated to the Department. Regarding the assertion that the site could "clean close" as it is,	Yes

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		completed at this location, RCRA closure will be implemented then the entire site will undergo corrective action. As it stands today, this site would pass the test of being clean to residential standards. This would allow LANL to clean close it as is. No impact to human health or the environment is present. The concern over the potential impact to small mammals is exaggerated. LANL is planning on doing population studies on the deer mouse and other small mammals to show that they are not impacted. No Threatened and Endangered Species are present on the mesa and the current residents enjoy a full and productive life across the laboratory. LANL was surprised when it was announced that these units would be denied their permit. The site has taken many positive steps to improve the operations at TA-16. There has been a huge reduction in the volume and type of wastes that are sent there for burning. Safety is the biggest concern. Each waste stream is reviewed and considered for treatment there or shipment elsewhere for treatment. If the material is safe and meets DOT requirements for transportation, that waste will go off site. If not it must be treated at LANL or stored until some other option becomes available. The treatment units are designed so that they burn hot and clean. A recent video clip provided by LANL clearly shows that during a waste burn there are no visible emissions other than heat waves. Open Burning is clearly recognized as a viable option for the treatment of reactive wastes. NMED has adopted the EPA regulations dealing with open burning and should therefore utilize them to permit this unit. The previous drafts of the permit contained a provision for soil sampling so that any added contamination by the burn units could be trended and the permit withdrawn if the trend was upward. I believe that the permit should be issued for the Open Bum activities at LANL with this provision included to ensure that the unit functions without posing a threat to the environment or the public.	the Department would not allow a clean closure of the site for the same ecological risk concerns causing the Department to deny the permit. In fact, when the associated investigations and risk assessments are completed, if the ecological risk calculations remain the same the Department will be requiring a remedial action.	
80	Gen.	As a private citizen living and farming downwind of LANL near Velarde, New Mexico, I'd like to submit my opinion regarding the intended denial of the permit for Open Burn Units at Technical Area 16 at LANL. I have several concerns on this decision that involve both our country and our community. I am intimately familiar with the work performed at the Open Burn Units at TA-16. I have managed them for the past five years. In that time, my team has received 3 Pollution Prevention Awards that are all related to the minimization of explosive waste	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		generation and treatment. We treat no waste that is radioactive or any waste that is generated from the production of nuclear weapons. Over 80% of the waste we treat is from the manufacture of high explosive components used in research and development experiments. These experiments are performed to learn more about the behavior of our explosives and those used by terrorists, how to detect explosives, how to disable weapons with explosives, how materials react to rapid deformation, and several other purposes that are not weapons-related. We are constantly looking for better ways in which to manage our explosive wastes. We have considered shipping such wastes offsite. Much of our explosive-contaminated waste already is shipped offsite. I have costed this option for other waste that can be transported on public roads and it would save us a considerable amount of money. The reason we haven't is that it goes against the basic principal of explosives safety: expose the minimum number of people to the minimum amount of explosives for the minimum amount of time. This cardinal rule would be violated by shipping our waste hundreds of miles on public roads through densely- populated areas to a facility that knows much less than we do about how to handle it. In my mind it would be irresponsible. It also does not solve the problem of waste streams that cannot be shipped on public roads. I believe this list will be ever-growing as terrorist activities become more sophisticated. The explosives we work with are some of the most powerful explosives in the world. They must be placarded when transported so emergency response personnel can intelligently act in case of an emergency. This placard tells the world that that vehicle is carrying explosives, an easy target for any terrorist. We also had an incinerator installed some years back, but had to remove it because the State would not permit it. It also does not solve the problem of decontaminating large pieces of equipment and other debris from decommissioned buildings. Being unable to treat such waste will cause buildings that have been deemed "cold and dark" to just sit there with explosive residue sitting in rotting pipes and drains indefinitely. As far as my community, closure of these Open Burn Units could result in LANL losing valuable programs in global security, as we cannot produce waste that does not have a disposition pathway established. I heard one member of LANL state at a		

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		Chamber of Commerce meeting that this could result in the loss of tens or possibly hundreds of millions of dollars to LANL. Approximately half of LANL's budget is spent on employee wages. LANL does a wonderful job in placing personnel in other positions when programs are lost, but an impact of this size could not be absorbed. I believe it would mean the lay-off of hundreds of employees. Some of these people would be scientists and engineers that only exist here in northern New Mexico. These folks would likely follow the work, where ever it may go. Loss of programs also means closing of buildings and capabilities. This loss would most significantly affect maintenance personnel, custodial workers, facility personnel, administrative personnel, laboratory technicians, and other support staff, all of whom live in northern New Mexico. As a farmer I am intimately aware of our environment and the consequences of mismanaging our resources. I would never live where I do if I thought that my family's health was in any danger from what was "on the hill." It is true that past practices caused contamination at LANL. These practices were allowed to be performed because of ignorance of the consequences, different national priorities, changes in regulations and LANL policy, and an inability to predict the future. All of the area where these Open Burn Units are located has been used to burn high explosives and contaminated waste since at least 1951. We are learning the extent of that contamination from soil samples that we have recently taken. Part of the area has been cleaned. We are continuing our operations in the safest, most environmentally responsible manner that we believe possible, and would welcome constructive guidance from NMED on improving these practices. I urge you to carefully consider the consequences of denying this open burn permit.		
81	Gen.	I am writing to support continuation of the NMED permit to allow open burning of explosives waste at Los Alamos National Laboratory. It is clear from the technical evidence made available that burning is a safe option for treatment of this material. The proposed limited operation causes no risk to humans and has negligible impact on the environment. The concern of ecological risk seems based on exaggerated factors, such as the assumption of 100% bioavailability of dioxins and furans, and is based on historical rather than current proposed operations. The area affected by historical use is extremely limited and could be cleaned or capped to make it	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		less available to deer mice, earthworms, and shrews (if their health remains an issue). Concerns of any impact to allergy-sufferers in Santa Fe seem highly implausible. LANL (along with Sandia National Laboratories) has been commissioned by the US government to develop methods to detect, identify, and defeat explosives threats. The research and training is essential for national security and for the safety of military personnel, civilian EOD teams, and all citizens. This work unavoidably produces wastes that must be disposed. Much of this work would become prohibitively expensive, or even impossible, if on-site burning of explosives is disallowed. If burning is disallowed, then environmental cleanup of legacy wastes would also become much more expensive, and may require shipment of uncertain explosives on public roadways, which is a greater risk. I encourage NMED to make a decision that is based on the technical merits and conscious of the important role New Mexico laboratories play in making the world a safer place. Good practices such as waste reduction should be encouraged; however, please allow the burning operations to continue as needed. The benefits greatly outweigh the risks.		
82	Gen.	Recently the New Mexico Environment Department denied a portion of a Los Alamos National Laboratory hazardous waste permit (EPA ID No. NM0890010515). The Rio Arriba County Commission disagrees with the partial denial of the permit and urges the Secretary of the New Mexico Environment Department to grant the complete hazardous waste permit for a full10-year extension. At issue is the necessity of open burning of residues from non-nuclear counterterrorism and national security research. Without this capability, the impact to the security and safety of our armed forces and nation in general will be felt. The Laboratory must be able to continue its research on detecting explosives, defeating improvised bombs, and creating stronger armor. These unique research capabilities exist only at Los Alamos and thus should be protected for the good of the nation. The Commission finds no reasonable rationale base on health, safety, or environmental concern has been presented by the New Mexico Environment Department or any other party for denial of the Los Alamos permit for open burning. As a close neighbor of the Laboratory, we feel that open burning is safer than transporting unstable, explosive	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		wastes through our communities. Protecting the public's health and safety is best assured by approving the referenced permit that includes open burning permission.		
83	Gen.	I would like to provide my input, as a citizen of New Mexico, regarding the potential denial of the LANL Open Burn permit. While there have been numerous environmental issues associated with LANL waste activities in the first 30-40 years of the Laboratory's existence, in my judgment, the current Laboratory approach towards environmental compliance is remarkably improved. The ability to burn explosive residues on site vs. having to transport them offsite (which in the case of some materials is not permitted), is programmatically important to the United States and I fully support it. The current open relationship between NMED and the Laboratory will permit an appropriate level of oversight to ensure minimal impact on the environment.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
84	Gen.	In support of efforts similar to the movie ""The Hurt Locker", I am writing as a concerned citizen to request a 10-year extension to the existing hazardous waste permit issued to the Los Alamos National Laboratory. It is my belief that he laboratory has made significant strides in supporting environmental issues since the end of the cold war and the associated national priorities. I am convinced that the laboratory is both knowledgeable and will perform with all due diligence in the handling and disposal of those traditional or exotic explosives associated with those programs supporting our national interest, especially those dealing with explosives detection and armor improvement. In the absence of such an approval, I am particularly concerned about the alternative, that is moving such activities to another state. This is analogous to the citizen being in favor of building more prisons but being against locations anywhere near their neighborhood. The laboratory has the people, technology, space and history to safely support such activities. The fact that your department is actively involved in monitoring the laboratory's activities provides further assurance to me that all such activities will be performed in a	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		safe and environmental friendly manner to the extent practical.		
85	Gen.	I am writing to support the LANL request to approve open burning of a very limited amount of high explosive residue from non-nuclear national security programs. Certainly the environmental impact of this open burning is miniscule compared to non-LANL open burning all over New Mexico, or even the incineration of medical wastes. The real issue here is whether a relatively small group of local anti-LANL activists should be allowed to negatively impact valuable national security programs. Most of these activists are absolutely not interested in environmental impact or any pertinent data for this open burning. They routinely seize any possible issue with expressed intent to damage LANL. It should be evident that these programs, and the unrelated nuclear weapons mission as well, have been supported by Congress and a long line of US presidents as important to our country. There are very limited alternatives for disposal of these unconventional explosives from antiterrorist work and for decomposing explosives contamination on/in processing equipment. All are very expensive, would likely create much more realistically hazardous waste such as contaminated solvents or acids and might create personnel safety problems. Shipping these materials out-of-state on public highways is not an option for a host of reasons. When NMED forces absurd and costly measures on LANL, it must surely deteriorate relations with NNSA. Since NNSA is a major player in these issues, including LANL funding, it would seem that a sensible, cooperative relationship would benefit all. I very much favor application of common sense! Certainly most of these programs could be transferred elsewhere, Pantex in Amarillo, TX for instance. Such a transfer would sacrifice the facilities and expertise existing at LANL, increase the cost to the government and reduce LANL funding resulting in fewer jobs in northern NM. However, the people of Amarillo are firm supports of national security programs including the nuclear mission of the Pantex Plant.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
86	Gen.	I am writing to support the retention of open burning as part of the LANL hazardous waste permit. Removal of the Open Burning Part 6 is not justified. Open burning is important for our national security, military effectiveness, safety and protection of human health and the environment. There seems to be confusion that open burning is	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

No.	Loc.	Comment	NMED Response	Δ
		part of the nuclear weapons program. Open burning is related to explosives research. The permit for the open burn units was requested to destroy reactive high explosives from research activities. That research is related to homeland security, terrorism prevention, etc. Due to the nature of these materials, it is often not safe to transport them. Waste sent to these sites is reviewed and sent off site if possible. In other words, the waste treated by open burning is minimized as much as possible. Previous drafts of the permit contained provisions for soil sampling with a caveat that the permit could be withdrawn if soil samples indicated an increase in contaminants. Additionally, these sites will be subject to RCRA closure requirements. In summary, LANL should be permitted for these operations for national security and safety with the caveat for RCRA closure with the cessation of operations.	Comments.	
87	Gen.	I am submitting these comments about the intent to deny the permit for the open burn units TA-16-388 and TA-16-399 at Los Alamos National Laboratory. I oppose denying the open burn permit for LANL. The open burn units serve a unique and irreplaceable function in ensuring the safe disposal of high explosives residues. These residues are an integral part of the national defense mission of LANL, and closing this waste disposal path would either stop completely or greatly increase the taxpayer cost of both important training and research operations and of decontamination, decommissioning, and demolition of old and unsafe structures at LANL. In my opinion, NMED's justification for closing the units is inadequate and not defensible. Even the US Environmental Protection Agency, in their permit comments, only recommended suspension of the open burning units if the soils around the units were grossly contaminated. NMED's own analysis shows NO risk to public or worker safety from the continued operation of these units, and no gross contamination of the soil. LANL has made extensive and ongoing efforts to reduce the quantity of waste that needs to be treated. The models and screening levels used for ecological risk estimation have not been validated in any real-world situation. There is no evidence presented by NMED of any actual harm to wildlife populations or individual animals. The area impacted by the open burn units is very small. Unless further evidence is presented that the open burn units are actually harming animals, further monitoring, and not closure of the units, is the appropriate response.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
88	Gen.	I am writing to express my support for inclusion of open burning in the renewal of the LANL Hazardous Waste Permit.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
89	Gen.	I am submitting comments to the Hearing Administrator for the Los Alamos National Laboratory (LANL) Hazardous Waste Permit Hearing, specifically the NMED Hazardous Waste Bureaus intent to deny a hazardous waste facility permit for the open burning units at Technical Area (TA) 16. I am writing as a private citizen, a twenty-three year resident of Los Alamos, who is an environmentalist and an environmental scientist. I am in support of a hazardous waste facility permit for the open burning units at TA-16. While finalizing LANL's hazardous waste facility permit is a positive measure, it is questionable why after allowing the TA-16 open burn (OB) units to operate under interim status since 1980, and following LANL's implementation of numerous Best Management Practices, waste reduction and minimization measures and engineering improvements to the TA-16 OB unit operation, that the NMED-HWB would, at this late date, determine that the TA-16 OB units pose an ecological risk and thereby deny the hazardous waste facility permit application. Perhaps NMED's concerns with this operation were appeased by the monitoring results provided to them and the public in the annual Environmental Surveillance Reports, annual Toxic Chemical Release Inventory Reports, annual Emission Inventory reports and the Title V Semi-Annual Monitoring reports required by NMED Air Quality Bureau or the waste treatment data provide in the Biennial Hazardous Waste Reports. I am in agreement with NMED HWB's determination that based upon the risk assessment conducted by LANL; the TA-16 OB units pose no human health risk, but disagree with NMED-HWB's determination that the operation poses an ecological risk. NMED-HWB has based their intent to deny the permit upon their interpretation of an ecological risk assessment performed by LANL, according to NMED-HWB the risk assessment identified a slightly elevated hazard (1.9) for the deer mouse but acceptable hazard for the Montane shrew. Yet LANL's ecological risk assessment concluded; The ecological risk screening assessment found that no COPECs are retained for this area.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Therefore, no potential unacceptable risks to human and ecological receptors are present. LANL prepared a subsequent risk assessment which further concluded, The ecological risk screening assessment found that no COPECs are retained for this area. The HIs calculated based on literature derived ESLs are conservative and overestimate the potential risk to receptors. Field observations and published studies indicate that the slightly elevated HIs do not reflect actual adverse ecological impacts to receptors at the site. Therefore, no potential unacceptable risks to human and ecological receptors are present. Perhaps NMED-HWB should have followed the recommendation the EPA provided in their comments on the permit: Section 6, Treatment by Open Burning: EPA recommends a condition be placed in the permit stating that if the baseline soil sampling report for the open burning units indicates grossly contaminated soils, then operation of the units may be suspended or modified as required. There was no determination made whether the slightly elevated soil detections were due to historic operations or present TA-16 OB operations. LANL performed extensive air modeling of the TA-16 OB operations using actual operating scenarios with an EPA approved application and. LANL's air modeling report found no emission above screening limits, the report provided and presented to NMED. NMED-HWB's intent to deny the permit was made prematurely and without full consideration of the scientific data available. The small area that could potentially be adversely impacted by the TA-16 OB units needs to be put in perspective in comparison to air emissions for other local sources such as the Four Corners Power Plant, one of the largest coal-fired generating stations in the United States, and the adverse environmental impacts caused by uncontrolled releases from various small shops and operations along the Rio Grande Corridor. From an environmental compliance stand point, LANL is the most heavily scrutinized and monitored facility in the state. It should also be noted that empirical evidence provides minimal evidence of adverse ecological impacts by the TA-16 OB units. The canyons adjacent to the treatment units provide habitat to a healthy and growing population of Mexican Spotted Owls and other raptors that prey on deer mice. LANL's high explosive mission has evolved as the state of the world has changed, the importance of LANL's ability to rapidly development solutions to explosive threats has significantly increased in the past decade, and the necessity of high explosive research is		

No.	Loc.	Comment	NMED Response	Δ
		not going away. The research performed by LANL's high explosive researchers that depend upon the TA-16 OB units has reduced adverse environmental impacts of high explosives, improved high explosive safety and significantly decreased the publics and military personnel's risk due to improvised explosive devices. Ironically, individuals opposing the hazardous waste permit for the TA-16 OB units are benefactors of LANL's research every time they or a loved one board an airplane, possibly enter a subway, or attend a large heavily populated event. The TA-16 OB units provide a safe and environmentally responsible method for the treatment of waste high explosive material in a controlled, sparsely populated location. Transporting waste high explosives to another location for treatment only relocates the perceived environmental risk while significantly increasing the risk to human populations due to increased handling and transportation through populated areas.		
90	Gen.	I support LANL's ability to conduct open burning for their explosives testing purposes. It is vital to protecting our troops overseas and has minimal impact on the environment.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
91	Gen.	I am submitting comments to the Hearing Administrator for the Los Alamos National Laboratory (LANL) Hazardous Waste Permit Hearing beginning April 5th. I am writing as a private citizen residing in Santa Fe County who is employed as an Environmental Professional at Los Alamos National Laboratory. Being involved in the protection of human health, and environment is of utmost importance to me, especially being a father of a young daughter. It is critical that the Laboratory and the New Mexico Environment Department implement a Hazardous Waste Operating Permit for operations that simultaneously enables important national security and science missions while achieving protection of human health and the environment. These missions are crucial for a safer world for our children and their children in which terrorism is a constant threat. These terrorist continue to devise cleaver ways to impose fear and harm worldwide to whoever is not in the same mind set as them. I feel that the New Mexico Environment Department's denial of LANL's ability to treat waste from such research as explosives detection, armor improvement and open burn activities would be very, very detrimental to our country's counterterrorism efforts that LANL plays an invaluable role	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		in. If the New Mexico Environmental Department denies this portion of the operating permit, it will be of no added value to the protection of human health or the environment especially without any "concrete scientific" evidence that these activities are harmful to human health or the environment. These activities are closely monitored both by New Mexico Environment Department and LANL personnel and are actually safer to continue this research at LANL. Additional reasons for keeping this vital research at LANL is, burning is safer than transportation on public highways, none of these wastes come from nuclear research, without open burn capabilities "orphan/unknown waste" will have limited paths forward and most importantly, we owe it to our men and women in our military to have the best cutting edge technology to protect them around the world. As an employee in the environmental area at LANL, I have seen great strides with the Labs new management team with respect to all environmental aspects. RCRA wastes have been significantly reduced, findings and fines are very, very low, pollution prevention is in full gear, and our Environmental Management System is working towards continuous improvements. I respectfully ask that the hearing committee consider my opinion in that LANL needs an operating permit that is based on sound science, empirical evidence and fair oversight with respect to research that deals with explosives detection and armor and is not omitted from LANL's Hazardous Waste Operating Permit. I urge the Hearing Administrator to assure that this is the case.		
92	Gen.	I am writing as a concerned private citizen, conservationist, and degreed Environmental Scientist. While the vast majority of the Draft RCRA permit allows LANL to complete operations and research that protect our country, there is a significant percentage that is overly restrictive and appears to bow to the ill-informed views of extreme activist groups. The focus of my comments, however, is open burning at LANL. Per NMED's fact sheet on open burning: "The adjusted hazard quotients indicated acceptable risk for all receptors with the exception of the deer mouse, Montane Shrew, plant, and earthworm, which had hazards indicative of low to moderate risk." Understanding New Mexico's target levels for cancer risk and hazard (lE-5 and 1.0, respectively) this assertion does not provide justification for disallowing open burning	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		on the premise of a limited risk to non-protected species. Furthermore, NMED would be doing this country a huge disservice by stopping open burning; there is no just cause in jeopardizing the security of our troops and the stability of largest employer in Northern New Mexico. The effects of disallowing open burning at LANL would be far reaching and hard felt. On a personal note, my brother-in-law has served tours in Iraq and Afghanistan. He is scheduled to be deployed for a third tour in 2010. Having heard first-hand stories of friends lost to Improvised Explosive Devices (IEDs) and having seen photographs of the destruction they cause underlies the importance of the research completed at Los Alamos and enabled by open burning. A RCRA permit that regulates an institution like LANL needs to be based on sound science. Science that has already demonstrated that open burning and its residuals pose no significant threat to human life and the environment. From my experience, nowhere in this country is there an institution with a more comprehensive network of environmental surveillance, remediation, compliance, and dedicated professionals than at LANL. Despite having Environmental Programs that rival any in the world and serve to protect the people and environment of New Mexico, LANL is continually vilified in papers, on the news, and on radio for its perceived environmental shortcomings. Without allowing research institutions like LANL to operate, we risk the protections and freedoms we often take for granted. The time has come to tune out propaganda and fear-mongers and support science that protects America.		
93	Gen.	I am contacting you regarding renewal of the Los Alamos National Laboratory Hazardous Waste Permit. I am particularly concerned about open burn units TA-16-388 and TA-16-399. I am unaware of any health, safety, or environmental information from the Environmental Department or other parties that indicates there exists a credible threat to the public or to the ecological system from activities at these two units. However, transporting the hazardous wastes of concern to other locations on public highways would threaten health, safety, and the ecological system because of the undeniable possibility of breakdown of or accidental damage to the transporting vehicles along the route. LANL is recognized worldwide for its expertise in dealing with high explosives and has	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		been applying such expertise in national security areas such as IUD countermeasures, explosives detection, and location and defeat of buried mines. Denial of the open burn units would curtail or prevent continuation of such nationally important research but would have negligible effect on health, safety, or the ecological system. While it is important for you to listen to all parties regarding the LANL permit, I urge you to consider whether those addressing you are recognized technical experts in the areas of concern or are more emotional activists with limited applicable experience in the areas of concern. I urge you to retain the open burn units in the LANL Hazardous Waste Permit.		
94	Gen.	The following are my personal comments on the issues currently under public comment/review regarding LANL's application for renewal of its hazardous waste operating permit. I am an employee of LANL but my comments are my own and represent my personal opinions of the issues listed on NMED's website at the following address: (http://www.nmenv.state.nm.us/hwb/lanlperm.html). I've read the NMED fact sheets and some of the comments associated with open burning at TA16 and I believe I understand both the political and technical nature of your role in regulating this and other operations at LANL. Regarding the political nature of NMED's position, LANL is a resource for our nation for a variety of defense related subjects which results in a high degree of interest from parties that do not support the nation's defense posture. The disagreements range from US involvement in Iraq and Afghanistan to nuclear weapons research. The use of NMED's permitting authority as means to a political end is inappropriate and an abuse of you and your staff's technical expertise. Political discussions belong in a political arena and should be directed to elected officials. I encourage you and the NMED to focus only on the technical aspects of the benefits and risks posed by LANL operations. However, if political concerns are to be included in the decision making process, then I believe the benefits and risks discussion must also be expanded to include a larger set of issues. The impacts associated with the loss of work at LANL as funding moves to other facilities to perform these operations must be considered as it relates to personnel who have invested their careers here in Northern New Mexico. Additionally, the ripple effects of funding losses across the myriad of businesses that work for LANL must be included. I encourage you and the NMED to remain outside the political fray and focus	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		on information that relates solely to the environmental and legal impacts of LANL's operations the Pajarito Plateau. The ecological risk assessment and NMED's position regarding open burning of HE wastes and equipment contained in the fact sheets indicates there is little to no risk to any organisms other than earthworms and deer mice. I did not see any mention of the areal extent expected as a result of these impacts. Because I work at LANL I know the area associated with open burning is relatively small. LANL covers approximately 43 square miles of area and the buffer zones created to protect both the public from our operations and our security needs provide local wildlife large areas of undisturbed habitat with little to no interference. As a resident of an area adjacent to TA-16, I can assure you the bear, elk, deer, bobcat, mountain lion, coyote, bird and other wildlife populations enjoy an environment free from molestation. Additionally, there are certain times of the year that specific types of operations are not allowed because the spotted owl (a T&E species) is breeding. Please consider the larger benefit afforded the environment and wildlife that comes with LANL's need to maintain large buffer areas for our operations. A small area of low potential impact to non-threatened species such as the open burning area at TA-16 should be compared with the large areas of habitat protected from poaching, illegal wood cutting, unauthorized off-road vehicle access, etc. Essentially, LANL provides security to 43 square miles of premium habitat. While these considerations do not relate to contaminant levels or other numeric standards, they should be considered as part of the risk assessments that ultimately determine whether an operation or activity poses an acceptable risk. Risk assessments for humans discussed in the fact sheets indicate there are acceptable levels of risk posed by the chemicals that may result from open air burning. Alternative options such as offsite shipment and treatment are discussed to address the low levels of risk to wildlife. As a worker familiar with explosives, their use, and hazards I encourage consideration of the added hazards that will be experienced with the options discussed. High explosives are a necessary component of many research activities at LANL. A great deal of time and effort is expended to insure their use here is safe for the public and the work force. The current practice of eliminating residual explosive hazards by burning is by the far the safest method of treatment available to LANL. To state that additional handling, packaging, and shipping may be viable options to the		

No.	Loc.	Comment	NMED Response	Δ
		open burning completely ignores the added hazards that workers will face if open burning operations are replaced by these alternatives. I believe a comparison of options that result in a reduction of risk from low to no risk for a relatively small group of organisms when compared to options that increase risk to workers is not a reasonable course of action. It is easy to lose focus on the larger environmental risks and benefits when focusing either on small scale comparisons or when political considerations fog the decision making process. I encourage you and your organization to look at the big picture and help LANL continue to provide safe and compliant operations to New Mexico and the nation.		
95	Gen.	After reading the article in the Albuquerque Journal North and then finding out that the state may ban the open firing of explosives at Los Alamos National Laboratory, I do not feel the ban is determined in the proper perspective. The area affected is one that is small and animals affected are deer mice and earth worms. I have a son who served two tours in Iraq and if we as a country have to sacrifice deer mice and earth worms in the immediate vicinity of open burning, I am willing to live with that if it could save the life of one of our military. I do not want the ban imposed on the open fire of explosives at the Los Alamos National Laboratory. Please continue the hazardous permit that allows use of open firing of explosives.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
96	Gen.	I am a lifelong resident of Los Alamos and would like to submit my comments as a concerned citizen of Los Alamos. As a citizen of Los Alamos, I not only care about the environment of Los Alamos, I consider environmental stewardship to be one of my responsibilities. I enjoy the hiking and biking trails in Los Alamos County, in the canyons, on the mesas, and in the mountains. I have enjoyed these trails and the associated wildlife for the past 40 years. This is home, and I would hate to see the environment I grew up with disappear. I appreciate the job the New Mexico Environment Department (NMED) has done in requiring LANL to adhere to environmental laws and regulations. This is crucial in assuring that future generations get to appreciate the same beautiful and hazard free environment that I took for granted most of my younger life.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		I also appreciate the job of the Los Alamos National Laboratory. It is because of their successes that we, as Americans, get to enjoy our freedom like no other Country on Earth. The Laboratory's success is also crucial in assuring that future generations get to appreciate this same freedom. In the first few decades of its existence, and like so many organizations of that era, the Laboratory unknowingly committed many harmful acts against the environment. They are paying for that dearly now. They have to spend millions of dollars annually remediating sites, implementing environmental laws and regulations (e.g. the Resource Conservation and Recovery Act (RCRA)). Today's Laboratory is far more responsible and self aware. They cannot, and do not perform science in the same manner. I live with many of these scientists, I grew up with many of them, and I socialize with many of them on a daily basis. Every day I hear about the many successes of performing environmentally responsible science in Los Alamos. Scientists now look for waste minimization opportunities before starting their operations, they look for recycling opportunities, and they look for opportunities to substitute non-hazardous chemicals for hazardous chemicals. It has become a way of life at LANL. By choosing to live in Los Alamos, it stands to reason that I trust the Laboratory and its staff with my life, and with the lives of my family. LANL is not perfect, but I assure you they make an extremely honest effort to do the right thing. To do the right thing by their stakeholders, the American tax payers. As a tax payer, and as a resident of Los Alamos, it appears to me, that the current draft Hazardous Waste Permit is unjustly restrictive to LANL, and the American tax payer. The NMED intends to deny the open burn unit of LANL's permit application. Here are the pros and cons of this unit: Cons: 1. There might be a slightly elevated risk to earthworms and deer mice, but no threat to their population in Los Alamos County. Pros: 1. This unit supports programs that provide life-saving tools to our U.S. Troops. 2. This unit brings hundreds of thousands of dollars t the economy of New Mexico.		

No.	Loc.	Comment	NMED Response	Δ
		3. Absolutely no risk to human health. 4. This unit guarantees hundreds of jobs in New Mexico. 5. Open burning is safer than transporting the explosive waste on New Mexico public roads. I do understand that environmental decisions should not be based solely on economic factors or impact to human populations (i.e., that the impact to other populations must be considered), however, it seems apparent that the advantages of operating LANL's open burn unit far exceed the possible risk. By operating this unit, we have the potential to save countless lives, strengthen our economy, and minimize risks associated with the transportation of explosive wastes with absolutely no risk to human health. Please approve LANL's Hazardous Waste Permit including the open burn unit.		
97	Gen.	I am writing in support of the open burn open detonation permit at LANL TA-16. I am expressing my views as a private citizen, a long time resident of New Mexico (35+ years), and an individual dedicated to the environment of our beautiful state. I am familiar with these activities at LANL. They represent very little risk to the environment. The materials burn so fast, and at such high temperature, that there is virtually no contamination of the environment. You are aware of the recent studies, endorsed by NMED, that support this conclusion. Further more, there is little or no risk to the public from these activities. They take place under strict controls, with very conservative standards for operation, regarding wind and potential fire conditions. The transportation of these surplus high explosives across New Mexico roadways carries a much higher potential for adverse impact to the public. The training and research done under these permits directly affects the lives and limbs of the members of our armed services stationed in Iraq and Afghanistan. By simulating IEDs, and demonstrating the proper methods for handling and disposing of these lethal weapons which are directed at our service men and women on a daily basis. In conclusion, the facts support that there is little risk to the environment from these activities and they directly contribute to the safety and well being of Americans who are in harm's way serving our country.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Please support the permit to allow these activities to take place at the laboratory.		
98	Gen.	I find one part of the proposed LANL permit not to be acceptable as proposed. Banning open burning in ecological grounds must be allowed to continue. It is a safe way to dispose of the waste that cannot be shipped over the highways. As pointed out in the New Mexican this week, this testing helps National Security and must continue. Even NMED knows this is the best way to dispose of the waste and wanting LANL to continue clean-up all over the lab this is a bad idea. By not allowing safe cleanup of this waste it may stop this testing in New Mexico and could costs jobs. It is not NMED role to cause the potential loss of jobs and revenues to the state when the state has a large shortfall in tax revenues. This is a bad part of the permit and must be changed to allow the safe burning to continue.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
99	Gen.	I am a LANS employee and conduct work for our counter-terrorism work and supervise the work of others in the area as well. I am aware of your current plans to deny important permits that are essential to our national security work. I am saddened that you have found no technical reasons to do so, but are responding to pressure from a narrow set of individuals that is not concerned with the facts of the matter, but is motivated by political factors. I am a resident of New Mexico, just like those making the complaints. However, unlike the majority of the complainants, I live in White Rock, which is much closer than Taos, or Santa Fe or many other places from which the complaints arise. I raised my four children here, beginning with kindergarten. I have a great deal of experience with the materials that need to be both detonated and burned. Just like your own studies and conclusions have stated, there is no technical reason to deny the permit, but doing so will irreparably harm our mission and the nation's security. Please do not bow to unwarranted public pressure from an extremist minority of NM residents.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
100	Gen.	I strongly support the Los Alamos National Laboratory (LANL) hazardous waste permit application. LANL's work with US service men, women, as well as allied troops in providing training on recognizing homemade explosive threats and developing tools for detecting and defeating IED threats is saving lives. LANL's work with the Department	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

No.	Loc.	Comment	NMED Response	Δ
		of Homeland Security is critical to the defense of the nation. LANL must be able to dispose of explosive waste in the safest and most environmentally friendly way, which is open burning of explosive residues. Because of the sensitivity of these materials, transporting these materials over public roads raises other hazards for the public which can be easily addressed on LANL property. I strongly support the LANL hazardous waste permit application for disposal of explosives waste and residue.	Comments.	
101	Gen.	I am writing as a private citizen with regards to the LANL RCRA Hazardous Waste Permit. I am in support of the Open Burning (OB) operation in which NMED has issued a Notice of Intent to Deny. After reading numerous articles regarding OB operations, I am confident that the current operations at the LANL OB units do not impact human health and the environment. The risk assessment showed that that there is negligible effect to all species except a low hazard to deer mice and earthworms. Since dioxins and furans (the major point of contention) are bioaccumulation toxins, you would think that the endangered species of the Mexican Spotted Owl would have seen major impacts. This is not so, in fact within the last 5 years, there is a new nesting pair of Mexican Spotted Owls on LANL property. If the OB operations have not affected a federally protected species, why would NMED have concern for a deer mouse that spreads the hantavirus disease that sickens far more individuals than the OB operations have shown through the risk assessment to cause harm? The OB operations that are conducted at LANL have major impacts on our troops currently fighting in the Iraq and Afghanistan wars. I personally have family that are and have fought in both wars. The stories they tell regarding improvised explosive devices (IEDs) and how they have killed hundreds of their comrades is heartbreaking and has scarred their hearts and minds. The research and training at LANL that is being conducted in support of homeland security and counterterrorism is vital to the protection of our troops. More than half of the New Mexicans killed in the Iraq and Afghanistan wars have been casualties of IEDs. Why would NMED deny the OB research that has and is saving lives for the sake of a deer mouse? I am sure if you asked the families of our fallen soldiers which they would choose, the saving of a "potential low hazard" effect to deer mice, or research that is safe, compliant and could have positive impacts	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		regarding IEDs and terrorism, they would choose to implore you to keep the OB technology. LANL treatment processes at the OB units use clean burning propane as fuel. The temperature generated by the propane is more than sufficient to destroy the dioxins and furans that can be generated as a result of the presence of chlorine compounds that are present in some of the explosive wastes. The state of California, which has the strictest environmental Laws in the nation, has recently issued an OB permit to China Lake Naval Air Weapons Station. The amount of waste they are allowed to treat by OB is 5,475,000 pounds. LANL has significantly reduced their request for the amount they are allowed to treat and have conducted significant waste minimization activities regarding the missions that generate wastes in support of homeland security and counterterrorism. LANL is not asking to treat million of pounds of reactive wastes by OB, but thousands of pounds. I am attaching a copy of the Fact Sheet for China Lake for your perusal. NMED cites that LANL can ship off-site all wastes generated in support of the homeland security and counter terrorism programs to be treated elsewhere. This is not true. The wastes that can be treated off-site are shipped safely and compliantly to other facilities for treatment while protecting human health and the environment. DOT regulations specifically prohibit the shipping of certain explosives (reactive wastes) on public roadways. Those are the wastes that LANL safely and compliantly treats prior to further characterization and disposal. Although I know NMED takes public participation into account for issues regarding human health and the environment, 1400 signatures mostly in a form letter format does not seem to warrant as much attention as perhaps 1400 petition signatures individually written and submitted by each commenter. I ask that NMED rethink their decision to deny the OB permit for LANL. I am sure the families of our fallen soldiers, if made aware of this issue, would gather and support the LANL mission to research ways to protect our troops in time of war so no other families have to go through the heartache of losing a son or daughter because the mission at LANL was shut down due to concerns over saving a deer mouse.		
102	Gen.	Why is it OK for the ABQ TV stations weather report to claim "Its OK to Bum" on their	Comment noted. See the	Yes

No.	Loc.	Comment	NMED Response	Δ
		nightly reports? Limiting LANL testing will cost the state budget tax dollars big bucks if the state eliminates the laboratories work. Don't be stupid in your actions. Remember; use some COMMON sense in making decisions.	Department's response regarding open burning in the document titled General Response to Comments.	
103	Gen.	Please be advised that the City of Espanola is in full support of Los Alamos National Laboratory and its effort to obtain hazardous waste permit (EP ID No NM089001 0515) from your department. It is our understanding that a partial denial of the permit was based on the question of need for open burning of residue generated by the Laboratory's counterterrorism and national security research. The City of Espanola believes that issuance of a permit that allows for open burning of non-nuclear waste is essential to protecting our military and the nation's welfare. We trust that this method of disposal is preferable to other alternatives such as transporting through our city. Furthermore, arguments presented thus far do not convince the City of any significant negative impacts to the health and safety of our residents and to the environment in general of northern New Mexico. Please call me if you have any questions regarding this matter. Again, the City of Espanola is in full support of Los Alamos National Laboratory obtaining a permit from the New Mexico Environment Department for management of hazardous waste that includes open burning authorization.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
104	Gen.	I am writing this letter to express my concern over the fact that the current draft of the NMED hazardous waste permit seeks to exclude open burning of LANL's energetic materials. As I hope that you are aware, LANL burns its excess explosive debris and residue at only a few remote Laboratory locations. Years of data, which has been collected and reviewed by your organization and other experts, has consistently shown this activity poses no human health risk and emits absolutely no hazardous waste. The proposed alternative to disposing of this explosive debris on-site is transporting to another location for disposal. This seems fundamentally wrong to me for multiple reasons. First, any off-site transportation of energetic materials would expose the general public to either contamination or explosion due to a traffic accident. The potential threat of accidental exposure seems to be much higher than any unproven harm using the current disposal sites. Secondly, the risk for a potential adversary to obtain	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		these energetic materials is greatly increased during in transportation. It would be very simple for a "bad guy" to observe shipments and merely intercept them on the roads, thus allowing the wrong people access to explosive materials. Disposal within the secure boundaries of LANL eliminates this concern. Lastly, by shifting the disposal of these materials to another site only transfer the problem and does not solve it. If you truly believe, against all scientific evidence, that the disposal process is somehow harmful, then why allow it to be done at another location? Los Alamos National Laboratory has always played a critical role in the national defense of this country. In recent years, the threats to this nation have evolved from Russia and a global superpower, to third world rogue states and the terrorist organizations they support. LANL has evolved with this changing threat and still continues to be a vital player in our nation's defense. The disposal of energetic materials is a critical support function for this mission. It also involves the jobs of many New Mexicans. The people who are pushing so hard for this decision against LANL are just that, against LANL. They are misinformed of the real scientific facts and do not consider the overall ramifications of their actions. I urge you to allow LANL to continue to conduct its national mission.		
105	Gen.	I live in Los Alamos and have worked as a scientist at Los Alamos National Laboratory (LANL) since 1986. I am not a spokesman for the Lab; this is a statement of my own personal knowledge and opinion. The work done for our national security at LANL over the past 65 years has resulted in undeniable damage to the environment of Los Alamos and surrounding areas, and this damage must be repaired. As a citizen of New Mexico and a candidate for New Mexico House of Representatives, District 43, I strongly support the New Mexico Environment Department's (NMED) responsibility to regulate the cleanup of past environmental damage, and to regulate present operations at LANL involving hazardous waste. As a citizen of the United States and a scientist at Los Alamos National Laboratory, I also support the work done there for our national security. Some of this work involves research into how to deal with emergency situations involving high explosives and high explosive residues, which can be extremely hazardous. Experts at LANL provide training to military personnel and first responders who have to deal with such situations.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		The safest way to dispose of the hazardous material produced in this research and training is to move it as little as possible and then burn it in the open with high temperature burners. NMED and LANL agree that this procedure produces almost no air pollution or additional health risk to humans, and little other environmental impact. The work at LANL that requires open burning can save the lives of people who are asked to deal with hazardous situations. One of my duties is emergency response involving high explosives. It would be irresponsible for NMED to place me and my fellow responders, military and civilian, at greater risk by denying the Lab permission to dispose of such waste in the safest and cleanest possible way. LANL personnel, such as myself, are ready and willing to do this work. The state of New Mexico should not tell the nation to find another place to perform this important mission. I urge the NMED to allow continued controlled open burning of the wastes produced in this work at LANL. The Lab has agreed to appropriate monitoring of any potential environmental impacts.		
106	Gen.	Your Fact Sheet, dated February 2, 2010, Intent to Deny a Hazardous Waste Facility Permit for the Open Burning Of Hazardous Waste At TA16 Under the New Mexico Hazardous Waste Act Los Alamos National Laboratory (LANL), Los Alamos County, New Mexico, states: > The July 6, 2009 Revised Draft Permit included a prohibition on treating wastes capable of generating dioxins and furans. This prohibition was based upon the Department's air modeling, subsequent soil sampling conducted by the Applicants, and an associated screening level risk assessment that identified furan concentrations in excess of Ecological Screening Limits (ESLs). You concluded: > Because the Applicants have not provided sufficient demonstration that continued operation of the burning units would not result in adverse risk to the environment, the extensive public opposition to open burning, and the Department's belief that there may be preferable and viable alternatives to burning the HE waste, the Department intends to deny a permit to the Applicants to open burn wastes at LANL's TA-16. > The results of the ecological risk assessment indicated elevated risk (low) to the	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		deer mouse based on the use of NOAEL-based TRVs, but as a more refined analysis using a LOAEL was not provided by the Applicants, the assessment is considered incomplete, resulting in uncertainty. Improvised Explosive Devices (IEDs) in Iraq and Afghanistan: Effects and Countermeasures" (Order Code RS22330, Updated August 28,2007), prepared for the Congressional Research Service, states: Improvised explosive devices, also known as IEDs, roadside bombs, and suicide car bombs, have caused over 60% of all American combat casualties in Iraq and 50% of combat casualties in Afghanistan, both killed and wounded. There have been a total of 1.8 M troops deployed for Operations Enduring Freedom or Iraqi Freedom (OEF/OIF). So the fatality rate for IEDs is 1.37 X 10E-3. When this is compared to a deer mouse fatality rate of 1 OE-05 from exposure to dioxin/furans and we assume there are 500,000 Deer Mice in the surrounding area (a grossly exaggerated estimate), that would mean the continuing LANL operations might lead to 5 dead Deer Mice. So which is more important, saving 5 Deer Mice (that you would be hard pressed to find.), or trying to reduce the number of real casualties in the "War on Terrorism?" Better figures could be generated with better data, but you get the idea. DOD has established the Joint IED Defeat Organization (JIEDDO) to investigate countermeasures along with various national laboratories (LANL included), the Department of Energy, contractors, and academia. I strongly urge you NOT to deny in whole or part a hazardous waste permit (Permit) applied for by the U.S. Department of Energy and the operators (Los Alamos National Security, L.L.C., or LANS) of Los Alamos National Laboratory to treat hazardous waste. This will allow all LANL researchers and staff involved to continue to perform research and experiments that contribute to the saving of the lives of our service members in Iraq and Iran. Let's focus on saving GIs, not mice. Your continued insistence on cancellation of the burning units would not result in adverse risk to the environment that outweighs the importance of the lives of those who serve.		

No.	Loc.	Comment	NMED Response	Δ
107	Gen.	I am concerned about the possibility that NMED may deny LANL's open burning permit. I am a resident of Los Alamos county. In reading about the environmental impact potentially caused by open burning, it appears very minor. Denial of the open burn permit will significantly impact LANL's ability to train soldiers to defend themselves against improvised explosive devices in other countries. A coworker of mine has a son serving in Afghanistan. He is concerned that his son be given the best tools and training to defend against the forces fighting against the U.S. We are at war against these forces. I ask that you make the right decision for the country and approve the open bum permit. This will allow LANL to continue with this training which supports our national security.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
108	Gen.	As a resident of NM, I am disappointed with your agency's issuance of a notice of intent to deny a hazardous waste treatment permit to LANL for burning off explosive scraps and residue that are generated as part of the Lab's important national security work. This is an especially surprising action for our NMED especially in light of the technical facts around the issue. Not only is the burning of explosive residues a much safer action for lab workers, but the alternative, if the laboratory can in fact continue its work, would require these hazardous and unstable wastes to be transported over miles of public roadway, putting many more citizens of NM and neighboring states at potential risk. There does not seem to be a technically-based thought process behind the NMED notice. Perhaps the most grievous effect of the denial of this permit, especially if lab programs were cancelled, would be the irreparable harm to the lab's emerging and successful support to our nation in the area of counterterrorism, nuclear nonproliferation, support to our war fighters in Iraq and especially Afghanistan, and in the demolition and clean-up of old, Cold War buildings. One little known program which could be negatively affected is a Home Made Explosives class that Los Alamos provides for soldiers being deployed to Iraq and Afghanistan. Deployed soldiers who have taken this course have stated to the US Military that these courses have and continue to save US lives, by providing unique classroom and practical training in IED identification, use, and defeat. This course would be one of many in jeopardy if the permit is not issued. It is technically well understood that burning off these small quantities of explosive waste is far safer than transporting these materials on public roads, and the burning of	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		these materials poses no health or ecological danger. Yet, your agency, in contradiction of these facts, has filed intent to act not only to obstruct important national security work, but without any real technical justification. It is not too late for your agency to drop this ill-advised action. The residents of the State of NM need ethical and technically sound service from its Environmental Department. We need your support.		
109	Gen.	I am writing to express my support for issuing LANL a Hazardous Waste Permit. I believe the laboratory can conduct its national security work and protect the NM environment and citizens, and that it is vital that it be allowed to do so.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
110	Gen.	I support the New Mexico Environment Department approving the Los Alamos National Laboratory open burning permit. Denying this permit would seriously stop important work at LANL. The amount of material burned at LANL is a very small fraction of combustion products from other sources. Revoking the permit would cause damage to Los Alamos and its residents by removing work opportunities in the city. I am a retiree from LANL, and have no interest in LANL other than its effects on the city.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
111	Gen.	Just a note, as a citizen of the state, to request you favorably act upon LANL's permit relative to open burning. The controls, volume, and long-term effects of this are minor compared to many other activities in this state, and it would support a critical defense mission of the US. Your approval of continued open burning is encouraged	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
112	Gen.	There has been a fair amount of information put forth on the open burning permit Los Alamos National Laboratory has been pursuing with the State recently. As a local county citizen, I feel the need to write and encourage you to ALLOW the permit to go through. I have studied much of the public information and believe some has been false and blown out of proportion. This work is vital to the nation's interests, and is not a danger to the environment to the degree some would like you to believe. I support this permit, and so should you.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
113	Gen.	As a concerned citizen supporting the National Laboratories in New Mexico, I have heard something very disturbing. It is my understanding that NMED wants to prohibit	Comment noted. See the Department's response regarding	Yes

No.	Loc.	Comment	NMED Response	Δ
		open burning at Los Alamos National Laboratory. This is intolerable. Los Alamos does critical national security work that requires this ability to help protect our country. Please stand up for Los Alamos so it does not fall into the same crippled position as Sandia National Lab. The information provided in the NMENV website appears terribly erroneous. It also appears that the exact same letter has been submitted repeatedly by different individuals.	open burning in the document titled General Response to Comments.	
114	Gen.	I am a PhD Organic chemist who worked for many years in the area of high explosives. High explosives are by there very design "oxygen balanced." This means that they contain both fuel and an oxidizer (oxygen source) in nearly balanced proportions. In practical terms, this means they burn very (very) cleanly. Much more cleanly, for instance, than the natural gas we use to heat our homes, or the gasoline we put in our cars. With nearly 11,000 people commuting to LANL daily, the output of hazardous gases to the environment from high explosives is simply insignificant in comparison to the output from the cars used to commute to LANL every day. Stating that the reason for denying an open-burn permit to LANL for high explosives pertains to "protecting the environment" is either disingenuous, or ignorant. Further, LANL's work in high explosive science, which requires an avenue for disposing of associated waste, is essential to national security. LANL's work in this area contributes not only towards maintaining a nuclear deterrent, but also towards battling the proliferation of improvised nuclear explosives and supporting the war fighter by understanding the threat form improvised explosive devices encountered every day in Iraq, Afghanistan, and around the globe (including metros and airliners). The work done at LANL in the high explosive science arena keeps us all safer and must be facilitated. In closing, I strongly urge you to support renewal of LANL's open-burn permit for high explosives and high explosive waste. To do otherwise is not based on any sound technical or environmental concern, but rather on a misinformed anti-LANL agenda	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
115	Gen.	I am writing to input our support for allowing LANL to continue treating its explosive wastes by open burning. These wastes are an unavoidable result of the Lab's support of the Nation's security and defense requirements. This important work must continue. Open burning is far safer and less expensive than any alternative. Please allow this	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

No.	Loc.	Comment	NMED Response	Δ
		activity to continue.	Comments.	
116	Gen.	From all that I can read/judge, it is essential that LANL be granted its open burn permit (renewal) for high explosive waste. The granting of this permit is essential to the research being done at the lab, and the end results will benefit an entire society.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
117	Gen.	It has been brought to my attention that you are in the process of arbitrating the issue of open burning of the high explosive waste at the lab. Having worked with experts in the field I strongly support the open burning. By the nature of the materials they burn very, very cleanly, much more cleanly than automobile combustion. Open burning is the safest, cleanest and most cost-effective way to dispose of the waste. It does not pose an environmental hazard. It is understandable how some individuals who may not understand the science may be legitimately concerned about how the burning of anything might impact the environment. But their concerns are misplaced in this circumstance. It is also understandable how some who may have anti-military stances might react to the materials. But this is a vital part of our national defense and needs to be managed in the best possible way. I do not live in New Mexico but I greatly enjoy visiting the state. And I hope that you do not mind my "butting" into local issues. I am just a concerned citizen of the USA and hope that you will find this information useful to your deliberations.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
118	Gen.	Open burning is a necessary process at LANL to operate. People are spreading misinformation about what this really is and the consequences. The environmental effects are minimal. LANL must have the capability to test and destroy high explosives. Otherwise the work must be sent out of state.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
119	Gen.	I beseech you to support the renewal of the open-burn for high explosive waste permit at Los Alamos National Laboratory. I know you have received correspondence detailing the value, and safety, of this	Comment noted. See the Department's response regarding open burning in the document	Yes

No.	Loc.	Comment	NMED Response	Δ
		process. Please take this information to heart, and allow the people there to continue their good work.	titled General Response to Comments.	
120	Gen.	The cries to deny open burning at LANL are a misguided case of "Not in My Backyard" mentality. If we do not allow the open burning permit, we will need to ship the waste out to somewhere else - to be burned!! Sending the waste elsewhere consequently hampers research at LANL, causes undue expense which would be better used expended on research, heightens the possibility for accidents (a safety risk), and does nothing to protect the environment (it only shifts the handling of the waste elsewhere, and leaves a carbon footprint in the process of shipping it!). Please move to approve the LANL Open Burning permit.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
121	Gen.	Presented scientific report as evidence that shows no conclusive adverse effects on living organic tissue and no conclusive effects on ecosystems, may they be biotic or abiotic in nature. Environmental Health Perspectives, Volume 59, pp. 121-128, 1985, Mechanisms of Action of "Toxic" Halogenated Aromatics, Biometry and Risk Assessment Program, National Institute of Environmental Health Sciences - National Institute of Health, Allison E.M. Vickers, Tracy C. Sloop, George W. Lucier US Environmental Protection Agency, Health Effects Research Laboratory, N Carolina, The Mechanism of Dioxin Toxicity: Relationship to Risk Assessment, Linda S. Birnbaum On mechanisms of action of TCDD, and related congeners, as possible unimportance in tissue toxicity and influence on cellular equilibrium and negative function in living tissues of organisms. Also the enzymatic induction of Dioxin metabolism and secretion points to the innate function of cellular of tissue. And on the use of TEF and TEQ as referencing questionable toxicity levels. In vivo studies, TCDD is considered 3-MC type inducer. It induces or activates cytocrome PI-450 and AHH activity; the two Pl-450 and AHH are involved in metabolism and excretion of Dioxin, whether it is considered naturally occurring or not all living tissue. The study further states that these little known but innate abilities of tissue (living cells) are activated with higher concentrations of Dioxin like compounds	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		and other compounds as well. These bio-transformational processes (Dioxin metabolism) seem to be inherent function in cellular structures. In addition, the additive measurements and approaches for toxicity might not apply as are defined in logical systematic approaches that TEF and TEQ systems are based on. Also the notion of toxicity might also be in question for Dioxin due to Dioxin being an important compound in the ecological and biological processes of ecosystems and living tissues. The role of Ah and Ah receptor as being significant is incorrect in the process of cellular wall transmission of TCDD into the cytoplasm of the cell. Although there are many nuclear and non-nuclear receptors inherent to the cellular structure and many might be participatory in various metabolic, synergetic and energetic processes native to living tissues, it's misleading to come to any conclusive interpretation that supports the toxic role of Dioxin and like compounds on having negative or detrimental effects on cellular function or on having or being responsible for disequilibrium in cellular function when referring to Dioxin and radiation. Evidence of a fully biased stance by the New Mexico State Environment Department which is based on opinions and not validity of scientific proof. Also, NMED inability and choice not to fully understand and correctly interpret federal and state regulations to fully support this permit for LANL. Also the inability of the NMED to fully comply with their own local policies and regulatory duties in all of their oversight locally in public and private sector. In addition, NMED has historically abused their own policies and procedures for their own benefit as it comes to dealing with public (civic) regulatory requirements in areas of public, personal, private waste regulation, disposal monitoring. Evidence of non-compliance by the public and private sectors with environmental regulations and laws in their daily lives and the unwillingness of NMED to inspect and inform the public of their responsibility to comply with laws of environmental standard as they apply to the public and private sectors. Proof listed below is the non-compliance of regulatory oversight by NMED to contain the biggest source and cause of pollution of the environment and public health which is caused by the public and small businesses. 1. NMED has been summoned to a hearing on April 13th, 2010 to take their responsibility for inability and unwillingness to monitor and secure NM Large Scale Dairy Facilities CAFOs, private farmers, from contaminating ground		

No.	Loc.	Comment	NMED Response	Δ
		water aquifers and the environment in this state. 2. Recent case in Taos, New Mexico - Improper management and monitoring of Public Landfill in New Mexico and unwillingness to direct and monitor the publics' and private use of Public Landfills, Taos, New Mexico. Case of needed regulation of oil and gas drilling and storing by NMED for New Mexico and out of state private companies, working in conjunction with Native Tribes on tribal lands to exploit the environment for mining operation granted by tribal governance in New Mexico, for tribal profiteering in mining here in New Mexico. Due to their toxic nature of these Chlorides producing mining processes used in mining, for extruding natural resources from earth for public use many tribal leader freely allow mining operations to take place disregarding the environment on their own accord on their lands for the sole purpose of profiteering and profit.		
122	Gen.	In the Thursday, April 1, 2010, Journal Santa Fe, there was an article about Los Alamos National Laboratory. This article described the important work that LANL is doing to educate our soldiers on explosively formed projectiles. I fully support this work and congratulate the lab on expanding its mission beyond nuclear weapons. The article stated that this work is in jeopardy because NMED wants to deny LANL a permit to burn the explosive residue. The article also stated that one reason that NMED wanted to deny the permit is that public comment has been against allowing the permit. The article in the paper was the first time that I had heard of the issue. Obviously, someone has mounted a campaign against the lab and you will now hear other opinions. The information presented indicates that there is no risk to humans and small or insignificant risk to wildlife. I believe NMED should grant the permit to LANL to continue the existing process of burning explosive residue. The article also states that certain members of NMED believe that the lab should consider alternatives. I believe that transporting explosive residue is more a danger that burning. I also disagree with trying to make the issue "someone else's problem." Transporting and disposing of waste is also an expensive alternative, which would take money away from the training program itself.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
123	Gen.	It is my understanding that LANL's Open Air Burn Permit for energetic materials is due to expire and that there is some thought being given to terminating this permit. I	Comment noted. See the Department's response regarding	Yes

No.	Loc.	Comment	NMED Response	Δ
		worked at LANL for 25 years and was the Explosives Review Committee Chairman for a few years during that time. Explosive safety was a big part of my professional life at the Laboratory. Among the operations we authorized were the disposal operations of excess energetic materials, of course, within the limits of our permits. As I am certain you are aware, explosives are generally fuels and oxidizers mixed on molecular levels although some are just physical mixtures such as black powder and ANFO. Generally, nitrogen atoms play the role of the "gas can" if you will separate the fuel - carbon and hydrogen - from the oxidizer oxygen - thus the term CHNO explosive. As you can imagine, when the gas can gets that small, it becomes possible to get very rapid decomposition of the material since the fuels and oxidizers are so intimately mixed - only a nitrogen atom or two away on average. The reason these materials are so useful to civilization (99.8% of all explosives are used to reshape the planet for roads, damns, buildings, mining, etc.) is that they all carry their own fuel and oxidizer on each molecule, great energy density. As a direct consequence of this physical nicety, these materials also burn in open air cleaner than any other organic materials, period. I am, thus, somewhat concerned about the possibility that LANL's Open Air Burn Permit is in question. I have been informed that public input is running somewhat opposed to the renewal but I think that you are a science based enterprise are you not? I hope that it is your job to take correct actions environmentally and scientifically despite public outcry to the contrary. If not, then simply putting these matters to a public vote would be sufficient and the state would not need the NMED. Los Alamos does a great deal of work in energetic materials that positively impacts our military success and the maintenance of our technological lead in military and nuclear technology. The opinions of a few thousand antinuclear protestors may not be as helpful in controlling worldwide terrorism as facilitating LANL's mission will be. Prosperity in peace and success in war; may we have an abundance of the former and be well prepared for the latter.	open burning in the document titled General Response to Comments.	
124	Gen.	The Los Alamos National Laboratory ("LANL") is seeking an open burn permit to continue to allow for the open burning of various products generated at LANL, including live ordnance that has been fired but which did not detonate upon impact. The Incorporated County of Los Alamos ("County") does not oppose the LANL Open Burning Permit at Technical Area-16 based upon the information provided to the	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		County from LANL and the New Mexico Environment Department ("NMED"). However, the County does not support any plan that would result in unexploded ordnance being transported onto local roads. According to the February 2, 2010 notice of intent to deny the requested open burning permit at TA-16 to LANL, the NMED opined that open burning posed a risk of generating furans and dioxins. According to this notice, the results of the human health risk assessment demonstrated that additional analysis is not required and evaluation of soil data indicates that there are no adverse impacts from exposure to either residential or industrial receptors. The notice also indicates that air modeling demonstrates that risk above target levels to human receptors is not likely. The basis for permit denial appears to be focused on two factors: public opposition and the uncertainty of ecological risk to the deer mouse. The County is not part of the public opposition to open burning. However, the County is opposed to one of the alternatives set forth in the NMED notice of intent to deny - transporting the unexploded ordnance for disposal. The County does not support any plan that would result in unexploded ordnance, some containing High Explosives, being transported beyond the boundaries of LANL onto County and State roads. Shipping the applicable waste off-site is not a viable alternative to open burning due to the inherent human health and safety risks associated with such shipments. Such ordnance has the potential of being unstable and its transport on public roads introduces an unnecessary and unacceptable hazard into the community. NMED identifies in its letter that the ecological risk of furans and dioxin is characterized as low to moderate, with only a slightly elevated hazard to the deer mouse (which is neither an endangered or threatened species) and is in fact a rodent that is regularly used for laboratory tests. Further, the proposed permit denial does not address the risk to human health posed by the deer mouse. The deer mouse has been identified as a carrier of Hantavirus, a deadly virus which is present in Los Alamos County. See: http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/physIvirology.htm and http://www.bernco.gov/upload/images/eh 1st-Hanyta2005.pdf. Under these circumstances, it would be appropriate to consider the risk of the deer mouse to human health compared to the risk of transporting unexploded ordnance through the community. Comparing the relatively low risk (which seems to be currently		

No.	Loc.	Comment	NMED Response	Δ
		unknown) to the deer mouse from on-site open burning, with the risk to humans associated with transporting live, potentially unstable ordnance outside of the Laboratory, on-site disposal appears to be appropriate. Further, such a balance of risk considerations would be expected to alter at least some of the opposition to the permit that influenced NMED's position.		
125	Gen.	There has been no documented significant risk or inconvenience caused by this safe way of disposing of energetic hydrocarbons. On the contrary, there has been documented harm from fireplace smoke, forest service and national park needless "controlled?" burns. If you do not approve LANL's permit, I believe that you are shameless politicians if you continue to permit thousands of smoky fireplaces, spring irrigation ditch weed burning (that recently got of control in San Juan) and allow the forest service or national park service to create frequent days-long-smoldering burns that certainly pose a significant risk to the health of nearby residents.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
126	Gen.	I would like to be counted in support of the Open-Burn Permit for Explosives at Los Alamos National Laboratory (LANL). I know from experience working with the Defense Threat Reduction Agency (DTRA) during testing at the White Sands Missile Range (WSMR), that it is nearly impossible to acquire the exact amount of explosives necessary for a given series of tests. We typically ended up with some excess, and the fastest, easiest, cheapest, and safest means of disposal was open air burning. It was also the cleanest because the chemical makeup of the explosives yields very few contaminants that will damage or pollute the environment. Most people will react negatively when you mention "Open Air Burning" of anything, particularly explosives, with no knowledge of the pros and cons of the application. I think that the advantages of open air burning as a means of disposal of excess explosives at LANL has been demonstrated over a period of several years, and the permit should remain in effect.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
127	Gen.	Please permit open burning at LANL! Allow them to continue operating under their current permit. Open burning is a necessary process at LANL to operate. People are spreading misinformation about what this really is and the consequences. The environmental	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

No.	Loc.	Comment	NMED Response	Δ
		effects are minimal. LANL must have the capability to test and destroy high explosives. Otherwise the work must be sent out of state.	Comments.	
128	Gen.	I am in support of approval of renewing Los Alamos National Laboratory's permit for open burning of high explosive waste. LANL's work in high explosive science is essential to national security, and contributes towards maintaining a nuclear deterrent as well as battling proliferation of improvised nuclear explosives. We need this! I understand there is a campaign by a group claiming to want to "protect the environment", though these burns at LANL are much cleaner and are insignificant compared to the use of gas furnaces in homes or gasoline in cars used daily in the area. And why should such ignorant claims from uninformed local groups be considered in the operation of a National laboratory? I trust you will support continuing open burning permit.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
129	Gen.	I am writing to let you know that as a New Mexico resident and a U.S. citizen that I am in favor of LANL's NMED open burn permit. I believe that relative to other sources of atmospheric pollutants, the amount of material produced by LANL is miniscule. Compared to auto emissions, forest fires, prescribed burns, and other industry outputs, the relative amount of material entering our atmosphere directly from LANL open burning can probably scarcely be measured and therefore is not the most direct culprit to loss of air or health concerns. Additionally, by hampering on-going operations or making them more costly the loss of the permit reduces income through the lab to New Mexico and ultimately endangers lives of those that serve us in combat theaters or responding to our federal governments needs in time so of crisis. Please extend and renew the LANL open burn permit.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
130	Gen.	I am writing to support open burning of high-explosives at Los Alamos National Laboratory. I believe that the form letters/emails against open burning contain factual	Comment noted. See the Department's response regarding	Yes

No.	Loc.	Comment	NMED Response	Δ
		errors and indicate a lack of understanding of the hazards of transporting high-explosives as an alternative.	open burning in the document titled General Response to Comments.	
131	Gen.	I heartily support the LANL open burn permit. I would rather the material that is being burned at Los Alamos continue to be burned there rather than transported through our neighborhoods and towns across our roadways. I find it rather ironic, comical, and sad that those opposed to the permit have no issues over heating homes by burning wood. During the winter months, Santa Fe, Espanola, and Taos have a brown haze over them due to all of the wood being burn for heat. Such emissions are far more deleterious to the environment and human health than that produced by LANL. When will logic and reason ever get a fair voice? Please add my support to the "FOR" column.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
132	Gen.	I am writing to urge renewal of the open burn permit for Los Alamos National Laboratory. Having read the NMED fact sheet concerning the plans to deny the permit, I find the credibility of the technical arguments particularly weak. One needs only consider that the burning of one cord of wood in the fireplaces of northern New Mexico releases between one and two milligrams of dioxins (see Yasuhara et ai., Env. Sci. Tech., 2002)--and the paper and other refuse often thrown into fireplaces and stoves produce significantly more--to realize that the burning of explosive waste at the very high temperatures advertised by LANL adds a negligible amount of these chemicals to the environment compared to the many unregulated sources in the region. I realize that many residents in the area have a fundamental dislike of LANL, but the fact is that the Lab does a vital job for national security and the economy of the area is tied to the fate of the Lab. Any decision by the State of New Mexico that hinders LANL in the execution of its mission is, in my opinion, short-sighted.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
133	Gen.	I am writing you at this time because of recent events involving your department and the Los Alamos National Laboratory (LANL). Specifically, my concerns deal with the continued ability of the Laboratory to dispose of its energetic waste materials on-site. I understand there are a number of related health and environmental considerations to be addressed within the framework of the permitting process, but I wanted to restrict my comments to the safety aspects because that is where my area of	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		expertise lies. For over forty years my career has directly involved me in work with explosives, munitions, and explosives safety for both the Department of Defense (DoD) and the Department of Energy (DOE.) The practice of packing and shipping energetic waste materials off-site for treatment that can be accomplished at their point of origin (i.e., LANL) flies in the face of the Cardinal Principal of Explosives Safety as accepted by DOE, DoD, and any agency handling explosives or energetic materials, to wit: *Expose the minimum number of people to the minimum amount of explosives for the minimum amount of time.* Los Alamos is well positioned to safely and efficiently treat explosives waste materials generated on-site. Transporting these materials to an off-site location will involve additional packaging and handling operations as well as subjecting the energetic materials and those individuals sharing the highways and surrounding communities to the risk of exposure to an explosives accident. Such accidents can, and have, happened. (Reference: "Collision Between a Tractor-semitrailer Transporting Bombs and an Automobile, Resulting in Fire and Explosions. Checotah, Oklahoma, August 4, 1985" NTSB Number: SIR-B7-01. Note this accident was caused by the driver of the automobile, not the truck involved.) In addition to its traditional activities in support of Congressionally mandated national defense programs, Los Alamos has been assigned an increasingly significant role in support of the nation's homeland security and counter-terrorism programs. Many Laboratory activities in support of these programs generate explosives waste products and require the ability to treat this waste in a safe, efficient, and environmentally responsible manner. As noted above, transport of this waste to an off-site location may not always be feasible and is often not the safest alternative. The loss of the capability to accomplish this treatment at Los Alamos can place nationally important programs at risk, jeopardizing the future of the Laboratory and the economic vitality of Northern New Mexico.		
134	Gen.	I believe that LANL does a responsible job with its open bums, and I am sure that the amount of pollution generated is insignificant in comparison with the amount coming out of cars and fires around the state. I support LANL continuing to have an open bum	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

No.	Loc.	Comment	NMED Response	Δ
		permit.	Comments.	
135	Gen.	It is with great interest that we have read the proposed action to prohibit the burning of High Explosives (HE) and High Explosive contaminated articles at Los Alamos National Laboratory. We were particularly interested in understanding the issue at a technical level, so as to make our own assessment based on fact and not rhetoric or emotion. After reading the summary of the proposed action, we were quite puzzled by the State's position. We quote: "Evaluation of the human health risk assessment and soil data indicates there are no adverse impacts from exposure to current levels of contamination to either residential or industrial receptors. The air modeling indicated elevated risk in close proximity to the burn units, but on a site wide basis, confirmed that risk above target levels to human receptors is not likely from continued operations of the burn units." From this we note that the technical argument was made that "risk above target levels to human receptors is *not likely* (emphasis is ours) from continued operations of the burn units." Yet the Department includes as a basis for their decision the following summary of some 1400 negative responses: "The principal objection has been to the use of unconfined burning to treat high explosives and high-explosive contaminated waste, causing uncontrolled releases to the atmosphere. Citizens have cited the health risks to wildlife, public health, and the environment. Open burning is particularly objectionable to persons with allergies or other sensitivities to airborne pollutants." From our perspective, the states' position has been swayed by public opinion (not fact) and has turned the argument from one based on technical fact and informed by science, to an argument that is to be decided by belief and emotion. In fact, we would have liked to seen additional factual information about the total quantities of HE and HE contaminated articles that have been burned historically, and the expected quantities that the laboratory plans on burning over the next ten years (not proposed limits - rather, what the lab's plans actually are). By providing this summary and future plans, some information about current contamination measurements, and whether levels might go up or down, could be included in the analysis. It is not clear to us whether the state has	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding how the Department factored "future projections" of quantities of high explosive into its decision, the Permittees' proposed maximum annual weight of 12,500 lbs. for the units was factored into the Department's air	Yes

No.	Loc.	Comment	NMED Response	Δ
		factored the historical basis and future projections into their conclusion. For example, historically (i.e. in the fifties and sixties) the laboratory was a very large manufacturer of high explosive components, with the entire plant operating with scores of people around the clock (three complete shifts). Currently, all of the explosive operations at S-Site have been reduced from tens of people in multiple facilities, to less than a dozen utilizing about half of one facility in a single shift. Further, the state itself writes as if it has moved from a factual basis to one of "belief' (our comments in parentheses): "Because the Applicants have not provided sufficient demonstration that continued operation of the burning units would not result in adverse risk to the environment (what happened to not likely?), the extensive public opposition to open burning, and the Department's *belief* (emphasis ours) that there may be preferable and viable alternatives to burning the HE waste, the Department intends to deny a permit to the Applicants to open burn wastes at LANL's TA-16." Finally, our analysis has attempted to rely on fact in determining whether or not there is increased risk to us and to our neighbors of health issues associated with open-burning (we live east of the laboratory and near the site boundary). We do not find that the state has made a technical argument that would indicate that we would be at greater risk of contamination-induced diseases, and we find that the laboratory has made the argument that the increased risk is "not likely". We now consider the benefits of allowing these operations to continue. From information provided by LANL and from our own experience, we acknowledge that High Explosives and High Explosive articles "provide the initial chemical energy that powers our Nation's nuclear and non-nuclear strike capabilities and are employed by adversaries in Improvised Nuclear and Explosive Devices (INDs and IEDs) and other threats." Thus, in addition to providing the basis for our nuclear deterrent (explosives enable our nuclear and thermonuclear stockpile), explosives power conventional munitions (for the Army, Navy, and Air Force), and unfortunately, explosives are utilized by terrorists and enemies of the United States in an attempt to disrupt and threaten our great country.	dispersion/deposition model. It was the results of that model that led to the collection of soil samples that confirmed the production of dioxins and furans. Regarding historical operations, the Department has not been provided with that information and has not seen evidence that that information exists in a form that would be considered definitive.	

No.	Loc.	Comment	NMED Response	Δ
		Maintaining the intellectual capability associated with high explosives and the science of nuclear weapons not only maintains a technical deterrent, it also enables the scientific discipline that will allow inventions and breakthroughs to be developed that will mitigate and defeat those that would do us harm through the use of IEDs and INDs. The risk of harm from open-burning of explosives to citizens of the United States is not likely - the risk of harm to citizens fighting on the front lines in Iraq and Afghanistan from IEDs is severe - approximately 40% of the casualties in Iraq are attributable to IEDs. And what about IEDs and INDs and their potential use on American soil? There are those that are concerned that it is only a matter of time before such devices are detonated on our soil. It is our opinion that we must invest in the science and tools that will allow us to make early discovery possible and to develop techniques that will disable and render such devices inert. "High Explosive" or "Energetic Material" Science will enable these breakthroughs, and in addition, this same science will eventually allow the development of methods that will allow us to destroy unwanted explosive materials using techniques other than open-burning. The Los Alamos National Laboratory, our Nation's Premier National Security Science Laboratory, has a mission element that requires High Explosive Science and is being looked to for solutions for the war-fighter and for the next generation of tools and technologies (e.g. Home-Made Explosive training; MagViz for detection of liquid explosives) to detect and defeat those that would do us harm. We look forward to the day in which our country has developed safe, cost-effective alternatives to open-burning, but until then, we respectfully request that the state allow open-burning to continue so as to not harm our Nation's deterrent and High Explosive Science capabilities.		
136	Gen.	I am writing to urge your department to continue allowing open burning at Los Alamos National Laboratory. The programs utilizing open burning are numerous and represent a significant National asset with respect to security and defense. Much of the work directly supports our armed services and Homeland Security through training, tool development, and cutting-edge research in novel detection systems. The arguments I have read against open burning have little or no merit and certainly have no scientific basis.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Please continue to support high explosives work at Los Alamos by permitting open burning and open detonation.		
137	Gen.	I am commenting as a private citizen and 18.5 year resident of Los Alamos. I have a bachelor's degree in Chemical Engineering from UC Berkeley. Prior to moving to Los Alamos, I worked for 10 years for Pacific Gas and Electric Company in California doing a variety of environmental compliance work, including air quality, water quality, and hazardous waste. I support approval of the hazardous waste permit along with open burning. I have raised 3 daughters in Los Alamos and am confident in LANL's dedication to protecting human health and the environment. All of the scientists I have met through my volunteer work in PTO, soccer, high school marching band and choirs, Girl Scouts, and other community activities have demonstrated a high level of commitment to environmental stewardship and confidence in LANL's environmental performance. This has been confirmed in the last 5 years that I have spent working for a LANL contractor. Based on my experience working for PG&E and LANL I am convinced that open burning is the safest was to handle specific lab waste streams handled at the open bum units. These waste streams result from research critical to protection of our armed forces and our citizens. I have not seen any evidence that this open burning poses a threat to human health or the environment. I strongly encourage the NMED to consider the scientific evidence and approve the RCRA permit with open burning. It is so important that this vital research done at LANL be allowed to continue.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
138	Gen.	I was born and raised in Northern New Mexico and currently reside and work in New Mexico. I am fully aware of the current conflicts surrounding LANL permits for hazardous waste disposal and treatment. I have read the files and fact sheets on the permits needed for open burning and I wanted to give my support as a member of the public for the inclusion of these two open burning treatment units in the permit. It is imperative that waste explosives be disposed of in a way that is environmentally safe and takes human life and health into consideration. This unit is the most logical and safe means of disposal and I fully support the inclusion of these permits. There are so many other activities of day-to-day life that human beings engage in that create much	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		more of a health hazard than these open burning sites do.		
139	Gen.	Open burning isn't a bunch of men rounding up trash and waste and setting fire to them in their backyard every weekend. This entire thing is a process that is dealt with by professionals with safety in mind. The open burning process proposed by the hazardous waste permit is a logical solution, and a controlled burn done by experienced workers. It makes more sense to be rid of the waste at the site, rather than transporting it somewhere else and making it another issue at another location. And possibly a problem in route. All it would take is one truck accident in the middle of a snowy Los Alamos highway to see that transporting hazardous waste is a bad idea. Perhaps instead of calling it 'open burning', it needs a more official term so the people who do not understand the process will not fear it and oppose it. The Environmental Compliance people at the Los Alamos National Laboratory are smart people and have the best intensions for the environment in mind when they request these permits. Let's let them do their job.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
140	Gen.	I'm writing to express my support of an open-burn permit for los Alamos National laboratory. The explosives testing enabled by this permit benefits U.S. troops and has minimal environmental impact.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
141	Gen.	Denying Los Alamos National Laboratory (LANL) an open burn permit is inequitable, based on less-than-scientific evidence, inappropriate, and even dangerous. The New Mexico Environmental Department fact sheet on the permit states in conclusion that the basis for denial is: o insufficient proof from LANL that the continued operation of the burning units would not result in an adverse risk to the environment, o Extensive public opposition to open burning, and o NMED's belief that there may be preferable and viable alternatives.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		Let me address these points, then close with a few costs of a denial. NMED needs to apply its standards equitably - It is ironic that the NMED allows the public to burn hundreds of tons of wood each winter without permit. Burning wood in a home fireplace has the same effect on the air as open burning since there is no filtration to the exhaust. Burning wood, driving a car, and running a diesel generator all produce dioxins and furans. Combustion temperature is important; at 1400 degrees the dioxins are destroyed. The burning of explosives at LANL is done at much higher temperatures than wood burning occurs. This already indicates LANL is doing better on grams of dioxin released per ton of material burned than the home fireplace. If one argues that LANL's volume of burned material is large, one quickly sees the frivolity of the argument: the permit allows LANL to burn about 6 tons per year; the public in the upper Rio Grande valley probably burn that quantity every day in winter. There is no doubt wood burning and car emissions in the area far exceed LANL's possible dioxin emission. In the fact sheet there is no evidence connecting current emission rates to soil concentrations. Denying the permit will not reduce the soil dioxin concentrations. I think LANL is prepared to admit operations were not as environmentally sensitive in decades past as they are now. Cleaning up from past operations is a different issue from stopping current operations. NMED plume modeling with the code OBODM suggests preferred depositions to the north and south/south-east. Day-time winds in Los Alamos are predominantly out of the south so how can one get a deposition to the south? My impression is that there are very restrictive wind conditions under which burning may occur. Would this not drive modeling plumes? One must seriously question the input data used for the modeling. The entire risk assessment discussion in the fact sheet uses soil data (an integral of past emissions), but not current emission rates. Surely, if the NMED wants to make scientific judgment on current operations it needs to base decisions on what is happening now. But even going with soil data, the risk for humans was considered acceptable even under conservative assumptions. This is not what one would expect from reading the opposition letters to the NMED. A commonly used form-letter used in protest says LANL's open burn activities "releases poisons into the air we breathe"		

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		(interestingly of the apparently 1400 letters of protest only about 10 - 20 (i.e. 1%) came from Los Alamos County residents, the people most likely to breathe this air). Canned protests claim a "direct threat to … public health" without providing any substantiating evidence or cogent reasoning. This claim seems inflammatory and contradictory to the NMED-endorsed human risk calculation. Who is correct? I'm going with the NMED here. The NMED supports the claim of a "slightly elevated" risk to deer mice and acceptable or low risks to all other wildlife. The risk to deer mice is so slightly elevated that even assuming a substantial bio-availability of 50% instead of the conservative 100% would drop the risk to acceptable for deer mice. The NMED also says it wants LANL to do an evaluation based on "lowest observed" rather than "no observed" adverse effects levels. Is this not a simple inverse-linearity where NMED could recalculate the risk with the other numbers? Two minutes of work, folks! To save the two minutes, using the most conservative "lowest observed" level the risk is acceptable. (Aren't we daily trying to kill this hantavirus-carrying pest anyhow?). NMED cites extensive public opposition to the open burning. If one takes the time to look at the fourteen hundred expressions of opposition posted on the NMED website, we see that about 73% simply signed a petition and 24% submitted a form-letter which uses language and makes references which almost certainly are unfamiliar to most signatories. Ironically, the number of opponents that actually wrote their own opinion (the remaining 3%) is fewer than the number of people writing in support of the permit. further point to note is that the biggest risk of LANL's open burning is posed to the nearest residents. Only 1% of the opponents live in Los Alamos County (mostly a downwind population); a paucity in Espanola, the nearest large downwind town outside the county. The lion's share (about 80%) of those against the permit lives in Santa Fe, not downwind and over 20 miles away. I am curious as to why the NMED would be swayed by the opinion of more than 150 opponents who live outside New Mexico (70 from Kentucky alone!). The handful from Canada, Austria, Northern Ireland and Sweden add an irrelevant touch. I seriously contest the significance of the opposition to this permit. The population within a 50 mile radius of LANL is about 300,000 so 1,400 objections is under 0.5%. I am counting on the NMED not being influenced by anything else but defensible		

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		evidence and sound science. The NMED is hoping for "preferable and viable alternatives". This sounds like a reasonable goal - but not a reason for denying the permit. Unfortunately, under this umbrella comes a number of outstandingly irresponsible candidates, the most popular being transporting the high explosives elsewhere. I urge the proponents of this alternative to think hard about how much they want high explosives (possibly more unstable than new purchased material) going through their town. Does the NMED want to take on the liability for forcing the transport of unstable high explosives through urban areas? LANL has previously considered the cost and risk of doing so and opted for the more socially responsible burning in place. Another plan considered by LANL was use of an incinerator, but that was blocked by NMED a few years ago. For all alternatives one must always ask what is the cost incurred for the benefit gained. Speaking of costs and benefits, I hope the NMED realizes the costs of denying this permit. They are numerous. Much of the open burn and open detonation work at LANL supports defensive strategies relating to homeland security and protection of military personnel who are often from disadvantaged socio-economic backgrounds. This work is intended to save lives; this is not weapons manufacture. Does the NMED want to be known nationally years down the line for thwarting these efforts? If this work can't continue here, pressure to get it done will move it elsewhere, along with the federal dollars and the people who can do the work. Think trickle-down economics; think children losing a parent to an improvised explosive device. Another cost is the damage to NMED's reputation as a reliable and sensible enforcer of the law. The tardiness with which this permit has been handled over more than a decade is already a poor showing. The Department's making decisions based on unfounded public fears and preferences can only tarnish. Finally, are these opponents to the permit really interested in air quality or is there a broader agenda. The form letter addresses six other issues not related to burning. The petition is also a mixed bag, including a generic claim that LANL threatens "our cultural, spiritual and ecological survival". I postulate one could get millions of nationalists in other countries to sign such a petition if they understood the ultimate goal to be to stymie US arsenal maintenance. The anti-nuclear weapons agenda belongs elsewhere.		

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		I conclude in pressing you to grant an open-burn and open-detonation permit to the Los Alamos National Laboratory and work with their staff in addressing scientifically-based concerns.		
142	Gen.	I am writing in favor of the hazardous waste permit for the open burn units at LANL for high explosive waste treatment. I am submitting comments concerning the hazardous waste permit for Los Alamos National Laboratory. Specifically, my comments concern the ability for LANL to continue to dispose of high explosive waste by open burning; because: 1. the burning of high explosive waste poses no risk to employee, public, nor environment; 2. the burning of high explosive waste is safer than their storage and transport, via public road offsite for treatment; 3. the high explosives research conducted by LANL provides life-saving knowledge that is imperative to our nation's missions to counter-terrorism, provide national security, and improve troop safety; and 4. the denial of open burning to dispose of high explosive waste, thereby making treatment too costly or difficult, may result in cessation of research conducted at LANL and subsequent job and revenue losses in an already volatile economy. The mission of the New Mexico Environment Department is to provide the highest quality of life throughout the state by promoting a safe, clean and productive environment. Allowing the continuation of open burning of high explosive waste at LANL provides the safest treatment of the waste.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
143	Gen.	NMED is threatening to deny open burning at LANL due to extensive public opposition, possible alternatives to HE waste disposal, and uncertainty of ecological risk to deer mice and earthworms. I believe the public opposition is heavily swaying NMED with their emotions. In public hearings and comments, the persons opposing the permit are blaming LANL for the state of the economy, school budget crisis, the Cerro Grande Fire, poor air quality, ground water contamination, etc. There is no indication that OB has adversely affected New Mexico. The persons making these comments clearly have an opposition to	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		LANL's mission. LANL would not be in operation if they were not meeting requirements and regulations set by the state to protect the public and environment. The amount of HE that is burned during open burning is a trivial amount compared to the risk associated with transporting HE for burning elsewhere. We have had three incidents in the past year where terrorists have planned attacks against our country using explosives. Transporting HE on a vehicle that is placarded as such can be seen as a CHANCE for these terrorists. Accidental and prescribed fires, burning wood for heat, and cars cause more pollution and create the same if not more of a risk to deer mice and earthworms than open burning of HE in a planned and controlled fashion. The heat and temperature during the OB burns destroys the dioxins and furans that could possibly hurt deer mice and earthworms. I hope the hearing officer can see past the emotion of the public opposition, understand the risk with transporting HE on public roadways, see that there is no clear evidence that there is risk to deer mice and earthworms, and allow the continuance of OB at LANL.		
144	Gen.	I am writing as a private citizen and resident of Los Alamos County. I have spent the last twenty years as an environment scientist specializing in environmental compliance. I have worked enforcing hazardous waste management regulatory requirements for the State of Arizona and have provided compliance guidance to LANL relative to hazardous and solid waste management and stormwater regulatory requirements. It is my opinion that there is no other entity that is required to do more monitoring of air, surface water, stormwater, groundwater, soil, biota, and animals than LANL does in the entire United States. Modeling of contaminants that may be generated from open burning of ignitable or reactive hazardous waste does not show harm to human health and the environment (other than to deer mice and earth worms) from this activity. I personally would rather have ignitable or reactive material managed at the LANL burn ground than have this material put into public transit, where it could be subject to an accident. DOE has strict controls on explosive safety. In addition, the hazardous waste management regulations also strictly control management and treatment of explosive waste. In my opinion, it is not worth potentially endangering the public by transporting explosives through public areas to save deer mice (which have been shown to carry hanta virus in Los Alamos County) and earth worms.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		I have lived in and around Los Alamos for 15 years and have not witnessed one incident of open burning operations that negatively affected the surrounding public. In addition, I am very concerned that the denial of open burning operations as part of LANL's Hazardous Waste Facility Permit could contribute to the loss of jobs in Northern New Mexico and negatively affect research and development of identified homeland security issues (like detecting explosives, defeating improvised bombs, and creating stronger armor). Thus, I support the continuance of open burning operations at LANL within the framework of environmental regulations and hope for fair oversight.		
145	Gen.	I want to go on record as supporting the open burn policy that LANL has been following. As long as the usual controls and monitoring is in place and no or in tolerance contaminants are found, we should support this practice. The benefits to the country out weigh the imagined catastrophic doomsday views being mass propagated. If monitoring shows a problem, I have every confidence the proper controls will go into effect at that time.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
146	Gen.	I am very concerned about the possibility of LANL losing its open-burn permit for high explosive waste. To do so would deal a death blow to research in the area of energetic materials. Those objecting to the renewal of this permit are doing so from an uninformed or misinformed point of view, or, from a general anti-LANL agenda. Our country is quickly losing its position of leadership in scientific research.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
147	Gen.	I would like to comment in favor of permitting Los Alamos National Laboratory to continue open burning. I am familiar with the work the Laboratory does in training military personnel to identify and deal with improvised explosive devices, and this is extremely valuable work that would be stopped in the absence of an open burning permit. I understand that those who dislike and distrust the Laboratory are using this permit renewal process to try and hinder the institution's activities. But in this case, they are doing so at the risk of causing the deaths of US military personnel who could otherwise have had essential training here. Open burning is NOT the problem -- Opponents are fighting LANL's existence as a	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		weapons laboratory -- and they're damaging a valuable, non-nuclear program while objecting to the site's mission and history. Don't let this happen.		
148	Gen.	I am writing to voice my opinion regarding the possibility that NMED may revoke or discontinue the permit that allows LANL to store and treat certain wastes, particularly conventional explosives. I voice my concerns as a citizen of Los Alamos, raising 2 children here, and as a US taxpayer with an inherent interest in national security, and as a scientist conducting explosives research at LANL. In my personal opinion, the national security missions of LANL are important to every US citizen, and should be conducted as cost-effectively as possible and with a real eye towards protecting the environment. However, the burning/destruction of conventional explosives does not pose a significant environmental risk for those of us in and around Los Alamos, or for those in New Mexico, in general, and such waste-disposal practices have greatly facilitated the work being done. I am concerned that the shipping of such waste off-site will financially prohibit a great deal of the work being conducted in our nation's interest. I ask you to please consider extending the permit to LANL for local burning/destruction of conventional explosives. Otherwise, I do fear that important work will ultimately be stopped or relocated for no actual benefit to the community or the environment.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
149	Gen.	My family and I live in Los Alamos and operate a small business here. I am here today in my capacity as Chairman of the Board of Directors of the Los Alamos Commerce and Development Corporation and Los Alamos Chamber of Commerce. Our Board represents about three hundred member businesses and organizations throughout our community and area that employ thousands of citizens in Northern New Mexico. We support approval of the proposed hazardous waste facility permit for Los Alamos National Laboratory (EPA ID No. NM0890010515); *Furthermore,* ... we find that no reasonable rationale based on health, safety, or environmental concern has been presented by the NM Environment Department or any other party for denial of Los Alamos National Laboratory's permit for the open burn units at TA-16; *that,* ... the LANL operations and capabilities supported by the LANL open bum	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		capability are important to the security and safety of our armed forces and the nation in general; *and that,* … the LANL operations and capabilities supported by the open burn capability are important to the present and future economy of New Mexico. For these reasons, we respectfully request that the NM Environment approve the referenced permit to include the requested permission for the open bum units at TA16-388 and TA-16-399. In addition, our Chamber of Commerce made a petition available at our office over the past weeks so that people could come by and sign to indicate their agreement with our position. If appropriate, I would like to present to you today the signed petitions as additional input into your proceedings.		
150	Gen.	I am in the support of the Hazardous Waste Permit for Los Alamos National Laboratory to continue operations to continue to conduct cutting edge research and development for our nation. I am also in support of Open Burning activities in support of IED and counterterrorism training for our troops fighting wars in Afghanistan and Iraq. The denial of the Open Burning permit by the New Mexico Environment Department is based on a very conservative risk assessment that showed a low risk to deer mice and earthworms. This issue is not enough to derail the important mission that LANL conducts to protect our troops from further harm from IEDs or the necessary training conducted for the Department of Defense regarding field identification of IEDs. By my signature below, I am asking NMED to grant the Los Alamos National Laboratory a hazardous waste permit that includes the Open Burning provision.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
151	Gen.	My comments today are entirely my own. I support the draft LANL HWFP issued by NMED with one important exception, that being the denial of permitted provisions for open burning units at TA-16-388 & 399. These units provide the long-standing, on-site means for safe, compliant, and effective means to dispose of certain kinds of HE waste and waste contaminated by HE. I, therefore, focus my comments on this one exception and provide justification for reinstating permit provisions for these open bum units. My comments are those of a New Mexico citizen and a resident of the incorporated	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		County Municipality of Los Alamos for more than 38 years. These comments are also provided from an unusual blend of expertise and working knowledge. Four years ago, I retired as a member of the Los Alamos National Laboratory and an employee of the University of California following a career spanning some 35 years of national service. In the late 1980s, I served as deputy and subsequently the division leader for Dynamic Testing, which was the organization responsible for operations and facilities involving local testing with explosives, HE R&D, and emerging technologies employing explosives. I then spent several years as the deputy associate director for Nuclear Weapons Technology, the Laboratory's major mission program. That assignment provided broader context for the importance of HE R&D for stockpile stewardship and emerging programs involving HE. Then, in 1993, I served eight years as the director and institutional executive/manager for environment, safety, and health. In this capacity, I had responsibility for environmental protection, worker safety and health, and public safety and health. It is perhaps ironic that during my term as ES&H director, I was the Laboratory signatory on facility specific permit-renewal applications that are included in the draft Hazardous Waste permit. The irony is not that I signed the applications, but that I did so more than a decade ago in 1999/2000. Three Reasons for Reinstating Permit Provisions for the Open Bum Units 1. I submit that responsible regulatory processes require an objective basis for denying existing and long-standing operations. Since there is no objective standards-based evidence as to the operational risk presented by the continued use of these units: to the safety & health of Laboratory workers, to the safety & health of the public beginning with the residents of Los Alamos County and moving out into the communities of Northern New Mexico, or to the safety & health of the environment, either on the Laboratory site or offsite, there would seem in this instance no quantifiable basis for NMED's intent to deny these permit provisions. 2. I submit that the loss of these bum units would unnecessarily and irresponsibly compromise an R&D capability critical to national security, that being LANL as an international center-of-excellence for HE R&D and for technology advances involving explosives. As the Laboratory has testified, certain mission-based efforts involving HE, including present efforts which focus on counterterrorism		

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		and proliferation, depend on the bum units for disposal of explosives waste. Whereas critics postulate that other means are available for explosives waste disposal assuming LANL's desire to continue such research, I commend to you a recent study that suggests otherwise. The study concerned the transfer or closure of Site 300 at LLNL [Lawrence Livermore National Laboratory]. This study contains a comprehensive analysis as to the merits of options given an assumed closure of Site 300 burn units similar to those operated by LANL. The study was conducted by TechSource using a team in which I participated and chaired. TechSource is a small company employing retired national laboratory and NNSA experts. It is recognized by the federal government for its objective and comprehensive analyses of national security issues, especially those related to the weapons complex. The study, submitted to DOE/NNSA in September 2008, was done in the context of evaluating preferred alternatives in NNSA's draft Complex Transformation Supplemental Programmatic EIS. After assessing the full range of disposal options, the TechSource team concluded that desired continuation of LLNL's "HE R&D excellence depends on the retention of specific support capabilities at Site 300, especially those for HE waste treatment (i.e. disposal) and storage." Translating, closure of the Site 300 waste treatment capability would lead to a demise of the LLNL HE R&D capability in that there were no safer, effective, sustainable, affordable, or permitted options to on-site disposal of explosives waste. I submit that such would be the case for the LANL emerging mission programs if the permit provisions for the burn units were not to be reinstated. I further believe that this issue would become a moral dilemma for the State of New Mexico. Following through on the NMED intended action to deny operation of the open burn units would sideline LANL world-class researchers in the current national imperative to find technical means to detect and defeat IEDs at a safe distance. We all know that such devices continue to kill and maim American soldiers and those of our US allies. Denying participation in this quest to save lives and disabling injuries without objective reason is, in my judgment, unconscionable. 3. Finally, I submit that denial of permit provisions for the open burn units at		

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		LANL on what appears to be a purely subjective and arbitrary basis would compromise New Mexico's regulatory responsibility and integrity. The lack of objectivity in this situation is dismaying and inconsistent with expectations for fair, defensible, and transparent regulation. Having served on loan from the Laboratory as Governor Richardson's science policy advisor early in his administration, I have great admiration for the Governor and his accomplishments. Following through on NMED's intent in this regard will, I am sad to contemplate, not be viewed as a positive accomplishment of this administration for the reasons I have stated and for many other reasons entered into the record by many others. Recommendation: Given the intent of NMED deny permitted provisions for the open burning units at TA16-388 & 399; and given the lack of objective-based and quantifiable risk to workers, the public, and the environment to support the intent; and given the consequential negative and unconscionable impact that such intent would have on near-term and long-term national means involving HE RD&T; and given the associated negative impact such intent if implemented would have on the need for fair and objective regulation in the State of New Mexico; I recommend reinstatement of said permit provisions in the draft LANL Hazardous Waste Facility Permit and further recommend upon reinstatement its speedy issuance to conclude 12 years of processing.		
152	Gen.	I am a chemical engineer retired from Los Alamos National Laboratory (LANL). For 41 years, I have also been a volunteer public advocate for a healthy environment. My years of volunteer work include testifying and cross-examining at numerous regulatory hearings, participating in public projects of the NMED and others, and writing a regular environmental column in the Los Alamos Monitor since 1971. From this background, I submit comments on the issue of open-burning of high explosives at LANL. The comments are consistent with my long-standing approach to making environmental progress. They apply equally to open-burning for disposing of high explosives and open-burning for training non-nuclear bomb technicians. The propositions I have used to help bring large and long-lasting environmental gains rest on certain principles. My criteria are: (1) apply the best technology to minimize pollution that is consistent with sound economics and (2) weigh the total degradation of	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		the environment that results from each alternative proposal. In short, the best solutions work from more than a piece. These principles raise two specific questions in the issue of open-burning at LANL: • Is stopping the open-burning a sound use of pollution control expenditures? • How much total degradation of the environment results from each alternative proposed? I assume "stopping" the open-burning will result in trucking the high explosives to another state to be burned or disposed of in some way, or will result in building a structure here of sufficient dimensions to continue the work here. I do not have the information required to sum up answers to the key questions. The NMED has much more of the relevant information. To my long-tested way of thinking, it is important to use the best available information that answers the questions. Not to do so weakens the fabric of regulation itself and diminishes the sum of public support for regulation. I believe in regulation and I actively support its effective and efficient use. In the long run, maintaining public support for sound regulation is vital. My comments are not answers, but guidance. My aim is to broaden the assessment enough to gain the best long-lasting results for the environment.		
153	Gen.	I have lived in Los Alamos for 31 years and hope to do so for many more. Hence, I have as much interest as anyone in the safety of the people and environment of this community and region. I am presently serving my eighth year on the Los Alamos County Council, the governing body of our community, and have worked on various health, economic, transportation, environmental, governmental, and other civic issues locally, in the North Central NM region, and throughout the state for nearly 20 years. The statement of the Council is being provided separately. I speak here as an individual. The mission of the Alamos National Laboratory (LANL) is to provide science to support national security needs as identified by the President and the Congress. Several of those pursuits result in explosive material wastes which must be treated.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		The largest present contributor to that waste stream results from the need to understand the constantly evolving Improvised Explosive Devices that maim and kill thousands of our troops in the Middle East and have and will in other theaters of modem warfare. LANL transfers what is learned at the Laboratory directly to soldiers who can put that science to immediate use reducing casualties on the battlefield. What is more important, a possible minor risk to common earthworms and mice in a small patch of LANL property or the lives and limbs of our military service personnel? Waste is also derived from research relevant to detection of explosive devices at airports and other transportation hubs, reducing the spread of nuclear weapons, and from cleaning up legacy laboratory facilities. All are worthy pursuits, These are just a few of the many, many areas of research providing technical solutions to national problems that are part of the ever more diverse missions of the Laboratory. Treating waste materials near their point of generation in space and time creates fewer risks to fewer people, and to the environment, than transporting the waste for treatment elsewhere. These components of the LANL mission are essential to the national interest. The risk associated with open burning of energetic waste, if it is significant at all which is questionable, is less than any other means of accomplishing this treatment. I urge you to issue the requested RCRA permit for open bunting of energetic waste materials at LANL.		
154	Gen.	I'm a former 15-year employee of LANL and a resident of Los Alamos during that time period, total 40-year resident of New Mexico, but I wanted to make it clear that I'm speaking here in my own capacity, I'm no longer affiliated with the laboratory or the University in any way. So I'm just speaking on my own this morning, and I just have a couple of brief comments. I wanted to comment on two issues, the first issue being the open burn issue. I would like to make my request that that permit for open burn not be denied to the laboratory. I understand that there are risks associated with the open burn and there are risks associated with running the laboratory. There always has been. I think that the laboratory has done an amazing job over the years of reducing those risks, and I also believe that whatever risks there are in open burn at this point in time are far lower than	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		the risks that are being faced by our young men and women who are serving in Iraq right now and in Afghanistan. My own daughter is serving her second – her second term in Iraq. It's a very, very frightening, very scary place to be. I think that LANL is uniquely qualified to perform the kinds of research that needs to be done to protect our national security, and I think the open burn is essential to the performance of that research. So I encourage that that permit be allowed to continue, that they be allowed to continue to open burn. The second issue is just a little bit more general, and it's about the final issue of the permit to the laboratory to continue their hazardous waste work. This has been an 11-year process that has involved tens of thousands, perhaps hundreds of thousands of pages of documents, and hundreds of millions of dollars have been spent, and as a taxpayer of the State of New Mexico and of the United States, I'm very frustrated with the fact that so much time and effort and money has gone into this process, and not as much work has been done as could have been done if that money had been redirected to the actual performance of the environmental restoration that it was intended for. To me, it seems like the bureaucracy has overtaken events here, and I would encourage the New Mexico Environmental Department to move forward, allow the laboratory to do the work that they need to do in order to get -- to get something accomplished in this area.		
155	Gen.	I think the chemicals in question that the people are worried about are the -- are, basically, part of the chlorine cycle, natural chlorine cycle of the earth processes, especially the chemical groups in question are the dioxins and the furans. Basically, those chemicals are naturally occurring chemicals in wood, in forests, and in other areas, natural burn processes of volcanoes and other naturally occurring gases, as well as manmade combustion engines and various others, and that is actually on the website of those groups who oppose the -- those kind of chemicals themselves. I found that on Wikipedia and basically on-line text. Well, those two chemicals -- chemicals fall into the two basic groups that comprise 75 and 140 some chemicals, exact chemical compounds, and I don't think -- I don't know if we have enough time to discuss it, but I just wanted to comment on all those things, that even the chemical structures are indicative of chemicals that occur naturally in the strata of the soil over many millions of years, even before the recent developments since the	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		1930s or '40s of the cold nuclear programs of the world. In addition, I can comment on that what everybody worries about is the effects on the biologic/ecological systems by those chemicals, if there are any. Still, it's inconclusive. Every finding that they have any effect at all is in terms of the history of the earth and formation of live biological systems on the earth. Those chemicals have been present in the living tissue throughout ages and generations for millions of years, or hundreds of thousands of years, at least. Also, I want to comment on what people call emitting radiation of chemical compounds, as discussed in this hearing. Those regulatory effects are actually present not only in areas on the surface, where there is no activity, any kind of nuclear or manmade activity, they are present as natural components of fields in the earth, what's called -- I remember a lady mentioned alpha radiation, all radiation. So I don't think I have enough time to go into all the specifics of that, and I don't think it's appropriate right now, but just an overview of that's how it actually is.		
156	Gen.	New Mexico citizens will be exposed to potential highway accidents involving high explosives if the New Mexico Environmental Department denies Los Alamos National Laboratories' permit to treat those explosives at Los Alamos. Each year, LANL, Los Alamos National Laboratory, safely burns many thousands of pounds of high explosive waste at temperatures sufficiently elevated to destroy all toxins and render them inert. If the permit is denied, these wastes will have to be transported on New Mexico's public highways to treatment facilities in distant states. Cost-wise, it is cheaper to ship these wastes; however, LANL made the choice decades ago to treat on site in order to eliminate public exposure. Ironically, the New Mexico Environmental Department is now attempting to force the laboratory to take the cheaper, but much less safe course. The role of the Environmental Department is to protect, not endanger, the public.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
157	Gen.	The work done for our national security at LANL over the past 65 years has resulted in undeniable damage to the environment of Los Alamos and surrounding areas, and this damage must be repaired. As a citizen of New Mexico and a candidate for New Mexico House of Representatives, District 43, I strongly support the New Mexico Environment Department's responsibility to regulate the cleanup of past environmental damage and to	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		regulate present operations at LANL involving hazardous wastes. As a citizen of the United States and a scientist at Los Alamos National Laboratory, I also support the work done there for our national security. Some of this work involves research into how to deal with emergency situations involving high explosives and high explosive residues, which can be extremely hazardous. Experts at LANL provide training to military personnel and first responders who have to deal with such situations. The safest way to dispose of the hazardous material produced in this research and training is to move it as little as possible and then burn it in the open with high temperature burners. New Mexico Environment Department and Los Alamos National Laboratory agree that this procedure produces almost no air pollution or additional health risk to humans and little other environmental impact. The work at LANL that requires open burning can save the lives of people who are asked to deal with hazardous situations. One of my duties is emergency response involving high explosives. It would be irresponsible for NMED to place me and my fellow responders, military and civilian, at greater risk by denying the lab permission to dispose of such waste in the safest and cleanest possible way. Los Alamos National Laboratory personnel, such as myself, are ready and willing to do this work. The State of New Mexico should not tell the nation to find another place to perform this important mission. I urge the New Mexico Environment Department to allow continued controlled open burning of the wastes produced in this work at Los Alamos National Laboratory. The lab has agreed to appropriate monitoring of any potential environmental impacts.		
158	Gen.	My family and I live in Los Alamos, and I operate a small business here. I'm here today in my capacity as Chairman of the Board of Directors of Los Alamos Commerce and Development Corporation and Los Alamos Chamber of Commerce. Our Board represents about 300 members, member businesses and organizations throughout our community and area that employ thousands of citizens in Northern New Mexico. We support approval of the proposed hazardous waste facility permit for the Los Alamos National Lab. Furthermore, we find that no reasonable rationale, based on health, safety or environmental concern, has been presented by the New Mexico Environmental Department or any other party for denial of Los Alamos National	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Laboratory's permit for the open burn units at TA-16; that the LANL operations and capabilities supported by the LANL open burn capability are important to the security and safety of our armed forces and the nation, in general; and that the LANL operations and capabilities supported by the open burn capability are important to the present and future economy of New Mexico. For these reasons, we respectfully request that the New Mexico Environment Department approve the referenced permit to include the requested permission for the open burn units at TA-16-388 and TA-16-399. In addition, our Chamber of Commerce has made a petition available at our office over the past weeks so that people could come by and sign to indicate their agreement with our position.		
159	Gen.	I worked at the lab for 38 years, and I've been retired and been involved in the community since 1990. I wanted to -- during my years at the lab, I worked in a number of the research programs, but included -- most of the years were involved with the weapons program, and ten of those years were with the GMX Division, which dealt with high explosives. So I have some concern about how these are used. I wanted to make just a few quick points. One is -- it's already been stated, but I'll state it again. The burning -- I support the permit. The burning is clean, and it's done with -- with a high temperature, with propane torches or butane torches, and it's done at a high enough temperature that the elements involved or the chemicals involved will be dissociated into their basic elements of hydrogen, carbon, and so forth, light elements, none of which will harm the atmosphere or harm anybody around -- beyond the immediate area. I wanted to say that -- and I think it's already been stated by a previous speaker -- that if you were forced to put this material -- put these small quantities of high explosives on a truck to ship somewhere else to be burned, that would be much more dangerous. Any trucking -- I'm sure the people of Santa Fe wouldn't want these trucks going through downtown Santa Fe with this explosive on them. It should be -- the disposition should be inside, where it's created, where it was used. Now, that has to do with the process itself. The second point I want to make, or major point I want to make, is that the HE capabilities, the ability to use high explosive at Los Alamos, has long been crucial. First, this -- it's my understanding that this particular permit is -- only involves this burning of	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		a small -- of small amounts of HE, and that that's what the permit is about, and that is required, and that's being requested. But these small amounts of HE are -- as was stated previously, are being used to do research to -- and again, for the roadside bombs, to learn how to handle roadside bombs, and all kinds of possible high explosive-induced harm that could come to our troops in Afghanistan, or other people in our situations, terrorist situations. So that -- and that's -- and this program is just a small spin-off of the major high explosive work that's long been done at Los Alamos. It's crucial that in considering the permit you also consider the value of the need for the work being done -- of the high explosives being done, and the high explosive work at Los Alamos is traditional, it's necessary for the understanding of nuclear weapons, and it's necessary -- for example, just if you want to get the -- if some of the people who are concerned about this, if they want to get a comprehensive test ban treaty ratified, they better let us keep on using high explosives at Los Alamos. I strongly support the permit.		
160	Gen.	My very interesting career at the lab makes me realize that the work that is being done there has -- has had worldwide impacts for years. I was interviewed by BBC several years ago, and they said, "Do you think you had anything to do with tearing down the Berlin Wall?" And most certainly, all you have to do is read the newspaper, and when the Russian scientists started coming in to Los Alamos to visit, and so forth, they realized real quick, "Hey, you know, this is a jewel in world peace and doing what's best for the -- for the world." As we're trying to do that, this seems like such a small petal. And by the way, my career went from everything from computers to human resources, and I ended up with a career in the Environmental Strip Chip Division, where I had the pleasure of working with the NMED, and they are very sharp people, so this is a path that we should be thinking about. This is just a finite problem that's going on, and it's not going to impact New Mexico. I was involved in a project about 20 years ago, when we were looking at having a high temperature incinerator, and some of our people in town said, "Well, hey, that's going to cause so much damage," and they would put out less contaminants -- and this was 20 years ago – less contaminants than five wood stoves here in Taos. So our scientists here do know what they are doing and do know what they are getting us into and out of.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		My prop is a photograph of all of the New Mexico servicemen that have been killed in Afghanistan and then in Iraq. And when you look at that, it looks like a very nice high school graduation picture; all these young soldiers and military people are in there. So what we're trying to do here in Los Alamos is to make it safer for them. One of the servicemen that spent time over there as an officer shared with me that the last couple of years that -- when he was over there, they knew that the roadside bombs could get them and would get them. Well, what Los Alamos is doing now is trying to control that and make it safer for not only the servicemen, for world peace, but also for the citizens of the United States when they are traveling on the airlines. So, to me, it just seems a real simple deal, rather than trying to have more pictures of the graduating class of the American citizens in United States, of all of the states that are losing soldiers and losing citizens, but in New Mexico, and then I looked at that picture with all of those people, I thought of the families, and I thought that I'm so glad here in Los Alamos we're doing a little bit to help them.		
161	Gen.	I am here wearing two hats, sir. My first hat is I am the Chairman of the Los Alamos County Council, and I am here to represent the governing body's unanimous view of this potential permit. I also wish to speak to you, sir, as a former -- as a veteran, who has served 21 years in the service of our country, and a person who volunteered and worked in Baghdad, in the Green Zone, as the Iraqi parliament was standing up its first government after the overthrow of Saddam Hussein. So, first, sir, I'd like to speak to you about what the governing body's position is on this permit. The Los Alamos National Laboratory is seeking an open burn permit to continue to allow for the open burning of various products generated at LANL, including live ordnance that has been fired but which did not detonate upon impact. The incorporated County of Los Alamos does not oppose the LANL open burning permit at Technical Area 16 based upon the information provided to the county from LANL and the New Mexico Environment Department. However, the county does not support any plan that would result in unexploded ordnance being transported onto our local roads. According to the September -- excuse me, according to the February 2nd, 2010, notice of intent to deny the requested open burning permit at TA-16 to LANL, the NMED opined that open burning posed a risk of generating furans and dioxins. According to this notice, the results of the human health risk assessment demonstrated that additional	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		analysis is not required and evaluation of soil data indicates there are no adverse impacts from exposure to either residential or industrial receptors. The notice also indicates that air modeling demonstrates that risk above target levels to human receptors is not likely. The basis for permit denial appears to be focused on two factors: public opposition and the uncertainty of ecological risk to the deer mouse. The county is not part of the public opposition to open burning. However, the county is opposed to one of the alternatives set forth in the NMED notice of intent to deny - transporting the unexploded ordnance for disposal. The county does not support any plan that would result in unexploded ordnance, some containing high explosives, being transported beyond the boundaries of LANL onto county and state roads. Shipping the applicable waste off site is not a viable alternative to open burning due to the inherent human health and safety risks associated with such shipments. Such ordnance has the potential of being unstable and its transport on public roads introduces an unnecessary and unacceptable hazard into the community. NMED identifies in its letter that the ecological risk of furans and dioxins is characterized as low to moderate, with only a slightly elevated hazard to the deer mouse, which is neither an endangered or threatened species, and is, in fact, a rodent that is regularly used for laboratory tests. Further, the proposed permit denial does not address the risk to human health posed by the deer mouse. The deer mouse has been identified as a carrier of the hantavirus, a deadly virus which is present in Los Alamos County. Under these circumstances, it would be appropriate to consider the risk of the deer mouse to human health compared to the risk of transporting unexploded ordnance through the community. Comparing the relative low risk, which seems to be currently unknown, to the deer mouse from on-site burning, with the risk to humans associated with transporting live, potentially unstable ordnance outside of the laboratory, on-site disposal appears to be appropriate. Further, such a balance of risk considerations would be expected to alter at least some of the opposition to the permit that influenced -- and I hope to influence -- NMED's decision. I would also like to speak to you as a veteran and as a civilian who went into the war zone and lived in the Green Zone and worked with the Iraqi government. Every day, I watched our brave young men and women drive out on their combat patrols to escort dignitaries, to escort supplies, to fix infrastructure, and come back in,		

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		and go out prepared and trained for unexploded ordnance and vehicle incendiary devices, and every day the insurgents tried something different, from hiding explosives in dead animal carcasses, to bushes, to rocks, to anywhere that they could, to hiding them in vehicles, and not being able to stay one step ahead of the technology that the insurgents were using. The research done at the Los Alamos Laboratory is conducted primarily by a team of five of the seven chemists in the country that are familiar with the most detailed explosive experiments being conducted today, and this research is vital to the end user, which is our military troops on the ground trying to fight a war for the United States. I urge the NMED to consider the technical aspects of this and grant the permit requested by LANL.		
162	Gen.	I've lived in Los Alamos for 31 years and hope to do so for many more. Hence, I have as much interest as anyone in the safety of the people and environment of this community and region. I'm presently serving my eighth year on the Los Alamos County Council and have worked on various health, economic, transportation, environmental, governmental and other civic issues, locally, in the North Central New Mexico region, and throughout the state for nearly 20 years. The statement of the council was just provided separately. I speak here as an individual. The mission of the Los Alamos National Laboratory is to provide science to support national security needs, as identified by the President and the Congress. Several of those pursuits result in explosive material wastes, which must be treated. The largest present contributor to that waste stream results from a need to understand the constantly evolving improvised explosive devices that maim and kill thousands of our troops in the Middle East and have and will in other theaters of modern warfare. LANL transfers what is learned at the laboratory directly to soldiers who can put that science to immediate use, reducing casualties on the battlefield. What is more important, a possible -- and I emphasize possible -- minor risk to common earthworms and deer mice in a small patch of LANL property, or the lives and limbs of our military service personnel? Waste is also derived from research relevant to detection of explosive devices at airports and other transportation hubs, reducing the spread of nuclear weapons and from cleaning up legacy laboratory facilities. All are worthy pursuits. These are just a few of the many, many areas of research providing technical	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		solutions to national problems that are part of the ever more diverse missions of the laboratory. Treating waste materials near their point of generation in space and time creates fewer risks to fewer people, and to the environment, than transporting the waste for treatment elsewhere. These components of the LANL mission are essential to the national interest. The risk associated with open burning of energetic waste, if it is significant at all, which is questionable, is less than any other means of accomplishing this treatment. I urge you to issue the requested RCRA permit for open burning of energetic waste materials at LANL.		
163	Gen.	I am a chemical engineer retired from Los Alamos National Laboratory. For 41 years, I've also been a volunteer public advocate for a healthy environment. My years of volunteer work include testifying and cross-examining at numerous regulatory hearings, participating in public projects of the NMED and others, and writing a regular environmental column in the Los Alamos Monitor since 1971. From this background, I submit comments on the issue of open burning of high explosives at LANL. The comments are consistent with my long-standing approach to making environmental progress. They apply equally to open burning for disposing of high explosives and open burning for training nonnuclear bomb technicians. The propositions I've used to help bring large and long-lasting environmental gains rest on certain principles. My criteria are: one, apply the best technology to minimize pollution that is consistent with sound economics; and, two, weigh the total degradation of the environment that results from each alternative proposal. In short, the best solutions work for more than one piece. These principles raise two specific questions in the issue of open burning at LANL: Is stopping the open burning a sound use of pollution control expenditures? Secondly, how much total degradation of the environment results from each alternative proposed? I assume stopping the open burning will result in trucking the high explosives to another state to be burned or disposed of in some way, or will result in building a structure here of sufficient dimensions to continue the work here. I don't know what those dimensions are for the test work on bombs, it could be very large. I do not have the information required to sum up answers to the key questions. The NMED has much more of the	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		relevant information, as do others. To my long-tested way of thinking, it is important to use the best available information that answers the questions. Not to do so weakens the fabric of regulation itself and diminishes the sum of public support for regulation. I believe in regulation and I actively support its effective and efficient use, and have spent many, many months and man-years over 41 years pursuing that. In the long run, maintaining public support for sound regulation is vital. My comments are not answers, but guidance. My aim is to broaden the assessment enough to gain the best long-lasting results for the environment.		
164	Gen.	As State Representative for District 43, I represent all of Los Alamos, part of Santa Fe County, part of Sandoval County. I served six years on the Los Alamos County Council. I have been in the legislature for 20 years. I do plan to continue. You know, over the years -- we've lived in Los Alamos for 52 years, and so when other people get up and say we've lived here for 30 some years, I think, "Gee, I've lived here 52 years already." Cleanup has been a big issue over the years, and I don't want to get into what we call -- talk about as far as RCRA goes, but it is part of what we're talking about. I have worked with DOE many times, I've made many trips to Washington over funding issues for the cleanup, and, yes, we have worked on it diligently. We haven't always agreed with the Environment Department, but that's been our own disagreement. Let's get into the safety of what we're talking about now -- the open burning versus the transportation. The open burning does not cause the damage that we are afraid that the transportation -- we have not seen what regulations we would have for the trucking. We have not seen how we can transport it safely, the materials that are in the open burning. I do not want to repeat everything everybody has said, I would just urge you to listen and move forward with due diligence on the RCRA permit.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
165	Gen.	I'm a Los Alamos County Councilor. There is no better place to come than the beautiful State of New Mexico, and I appreciate the efforts of NMED to make sure that our water is safe to drink and our air is clean, and I appreciate the work that you do. I would like to speak in favor of granting the open burn permit for Los Alamos, because	Comment noted. See the Department's response regarding open burning in the document titled General Response to	Yes

No.	Loc.	Comment	NMED Response	Δ
		I believe this is the best way for us to safely dispose of this HE waste. I was impressed with the record of Los Alamos National Laboratory in dealing with HE waste. Over the last few years, they have reduced the amount of HE waste that they produced by more than half, and I think that's to the benefit of Los Alamos County and all of Northern New Mexico. But there is a real danger in transporting this material on our roads, through our communities, through residential areas, and I don't like to see that happen. In the course of making a decision about whether to grant the permit or not, I think if the permit were to be denied, I think that should be based on hard, concrete evidence that this practice of open burning will, in fact, have a damage to the environment and have an adverse impact on wildlife. One of the treasures that we have here in the State of New Mexico is our beautiful environment, and we don't want to see that tarnished. I don't see conclusive, concrete evidence that this activity at Los Alamos National Laboratory will have any detrimental impact on wildlife in the community. I'd like to point out that this activity is done in an isolated, outdoor burning pit. I see very little chance for interaction with wildlife. And, furthermore, I characterize this kind of disposal of waste as being no more dangerous than burning charcoal in one's backyard. I think this really is the best way to dispose of these materials. But what is concrete -- and as I've said, I don't see that the damage to wildlife is concrete, but what is concrete, should the permit be denied, is the fact that science is going to be hurt at Los Alamos National Laboratory, and I believe, ultimately, we will lose not only the capability to do research that's vital for our country, but we're also going to lose jobs here in Northern New Mexico, and I don't want to see that happen. If the permit is denied, this work will go somewhere else, and we're still -- we have the capability to do it right now at Los Alamos, there is going to be a delay before that capability gets reproduced somewhere else, and while we're delaying, we're denying the opportunity of our government to find ways to defeat improvised explosive devices and the kinds of threats that we could face, not only in our airports and subways, but that our soldiers are facing every day overseas. So I think that in the absence of any concrete evidence that this is going to hurt the wildlife, I would urge NMED to approve the open burn permit.	Comments.	

No.	Loc.	Comment	NMED Response	Δ
166	Gen.	I'm enormously disappointed by this attempt to stop the lab from burning excess high explosives. Given all the technical information available, there seems to be no other reason for this decision other than politics. In fact, it seems that this decision is a misguided political attempt to stop or make more difficult programs that use unique laboratory skills to protect our troops and our citizens. Much has been made from the threat to our troops from improvised explosive devices. I'll point out it's not only our troops. We face occasional -- thank goodness, they are only occasional -- problems in our homeland as well. We recently just remembered the 15th anniversary of the Oklahoma bombing. Thank goodness that that hasn't been repeated. But the same science that will address these issues for our troops overseas may have to address those at home, and it would be best to be as well prepared as possible. I also speak from a very personal view. I have a son who is a Marine -- who was a Marine in Iraq and served and who was with one of these young men that died. He was later disabled by an IED, while in service in Iraq. So any attempt to stop the science that will further protect our troops, I find to be objectionable, at best. I've been involved in New Mexico state politics for some time. I've been a consultant to numerous state agencies. I've been an acting IT manager for the state Supreme Court. I've served in the Governor's Cabinet. I was a member of -- I was a leader of one of Governor Richardson's transition teams. And this -- and I must say that this is the most -- let me rephrase that -- this is the least rationale-based decision I've ever seen, and I highly object to this blatantly political decision. I consider it irresponsible at best and malicious at worst.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
167	Gen.	I'm a resident here in Los Alamos County, and it's in that capacity that I'd like to speak. In addition, I'm also the principal associate director for weapons physics here at the lab. My own technical background is that I'm a physicist. Early in my career, I actually did quite a bit of work with HE myself, and so I think from that background, I have some understanding of HE and HE operations. I'm speaking in support of the laboratory's request for the open burning permit. The first piece of this, in my mind, is that the open burning permit, I believe, allows a very safe,	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		very environmental sound approach to dealing with the explosives that we're using in the broader national security mission that goes beyond the weapons program at the laboratory. Compared to the alternatives, such as transportation over the roads, I believe this is a very sound way to approach the issues. The second is that this capability at the laboratory enables us to support, as I said, the broader national security mission, but in particular our troops who are deployed today in Afghanistan. As you probably know, the laboratory has a training effort that it does for soldiers who are on their way to Afghanistan, and I've been privileged in my laboratory position to be able to go out and see some of these courses, to see the young soldiers who are on their way to Afghanistan. The kind of work that the laboratory does in showing these soldiers what to expect, what they can see in terms of improvised explosive devices, how to recognize the precursors and then deal with those, I believe, is saving lives today. So I believe that the permit that the laboratory has applied for here is not only a sound thing to do, but also is important in the broader national security mission and in saving lives.		
168	Gen.	I'm speaking today as a private citizen, although I am employed at the laboratory. I support the continued burn operations at TA-16. Yesterday, I was fortunate to receive two environmental awards for eliminating truly hazardous waste from TA-16. The most environmentally friendly way to deal with the materials we're discussing is by open burning. There is -- there is no documentation or evidence to support that that is not the most environmentally friendly way. I support the national security mission of the laboratory in this respect and point out that in addition to the lives and the faces that were on the poster presented by Carl a few minutes ago, there are very many hands and feet and arms and legs spread over Iraq and Afghanistan that our work can help prevent the recurrence of.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
169	Gen.	I'm writing you at this time because of recent events involving your Department and the Los Alamos National Laboratory. Specifically, my concerns deal with the continued	Comment noted. See the Department's response regarding	Yes

No.	Loc.	Comment	NMED Response	Δ
		ability of the laboratory to dispose of its energetic waste materials on site. I understand there are a number of related health and environmental considerations to be addressed within the framework of the permitting process, but I want to restrict my comments to the safety aspects because that's where my area of expertise lies. For over 40 years, I have been directly involved in work with explosives, munitions, and explosives safety for both the Department of Defense and the Department of Energy. The practice of packing and shipping energetic materials off site for treatment that can be accomplished at their point of origin -- that is to say, the laboratory -- flies in the face of the cardinal principle of explosives safety as accepted by the Department of Energy, Department of Defense, and every other agency handling explosives or energetic materials, to wit: Expose the minimum number of people to the minimum amount of explosives for the minimum amount of time. Los Alamos is well positioned to safely and efficiently treat explosive waste materials generated on site. Transporting these materials to an off-site location will involve additional packaging and handling operations as well as subjecting the energetic materials and those individuals sharing the highways and surrounding communities to the risk of exposure to an explosive accident. Such accidents can and, in fact, have happened. The reference is the collision between a tractor/semi-trailer transporting bombs and an automobile, resulting in fire and explosions, which occurred at Checotah, Oklahoma, August 4th, 1985. The reference is NTSB Number SIR-87-01. I note that this accident was caused by the driver of the automobile, not by the truck transporting the explosive materials. In addition to its traditional activities in support of congressionally mandated national defense programs, Los Alamos has been assigned an increasingly significant role in support of the nation's homeland security and counter-terrorism programs. Many laboratory activities in support of these programs generate explosives waste products and require the ability to treat this waste in a safe, efficient, and environmentally responsible manner. As noted above, transport of this waste to an off-site location may not always be feasible and it's not often the safest alternative. The loss of the capability to accomplish this treatment at Los Alamos can place nationally important programs at risk, jeopardizing the future of the laboratory and the	open burning in the document titled General Response to Comments.	

No.	Loc.	Comment	NMED Response	Δ
		economic vitality of Northern New Mexico. I certainly support the continued on-site disposal burning of the explosives waste materials we generate here.		
170	Gen.	I'm currently an employee of the Los Alamos National Laboratory and a resident of Santa Fe. My comments here are my own and should not be construed to represent LANL's position. As a mother of small children, and like any concerned resident, I want to make sure the air we breathe and the water we drink is healthy and safe. I think much of the permit that NMED has prepared is a positive step. It is important that we each -- that each waste storage, treatment and disposal site in New Mexico receives a permit. Permitting requirements need to be consistently applied, and requirements need to be based on regulations and provide clear and consistent guidance for facilities to operate under and for the regulator to enforce. However, there are several key issues that I would like to address. First, the removal of the open burning is not a -- is not justified on environmental grounds. The treatment units for open burning are designed so that they burn hot and clean. No impact to human health or the environment is present. However, if NMED imposes a requirement to ship the waste elsewhere, the trucking impacts could be significant, because there are few, if any, in-state options for burning this type of hazardous waste, and these wastes must be burned, if not here, then somewhere else. Frankly, I trust the Laboratory's environmental controls more than I would trust the environmental controls of burning in Texas or elsewhere, where they may not have the environmental requirements to burn hot and clean like we do. How many miles to the gallon do these big hazardous waste trucks get? What are the emissions of the big hazardous waste trucks? What are the safety hazards posed to other drivers in New Mexico by the trucking? These environmental impacts could all be avoided by allowing the open burning. If there were significant auto emissions resulting from the open burning, I would feel very differently about this issue, but that is not the case. Second is the information repository. Anything other than a virtual information repository is not justified, again, on environmental grounds. It has been proposed that in addition to the virtual repository there be hard copies of everything stored in a location in Espanola. We're talking about stacks and stacks of paper, and many trees sacrificed to	Comment noted. See the Department's responses regarding open burning and the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		maintain this hard-copy repository. Additionally, it encourages people in Santa Fe and Los Alamos and other places to drive many miles to review the information. Automobile emissions are one of the top sources of emissions in the state and in this country. I recommend keeping the repository on-line, accessible to all, in a modern 21st century way, and preventing loss of trees or unnecessary automobile emissions. Thank you for your consideration. Protection of the public health, as well as the environment, is an extremely high priority for both sides of this issue and for all of us who live and work here. Please make sure that the environmental health and safety issues are truly guiding NMED's decision making.		
171	Gen.	My comments today are entirely my own. I support the draft LANL hazardous waste facility's permit issued by NMED with one important exception, that being the denial of permitted provisions for open burning units at TA-16, Buildings 388 and 399. These units provide the long-standing, on-site needs for safe, compliant, and effective ways to dispose of certain kinds of HE waste and waste contaminated by high explosives. I, therefore, focus my comments on this one exception and provide justification for reinstating permit provisions for these open burn units. My comments are those of a New Mexico citizen and a resident of the incorporated county and municipality of Los Alamos for more than 38 years. These comments are also provided from an unusual blend of expertise and working knowledge. Four years ago, I retired as a member of the Los Alamos National Laboratory and an employee of the University of California, following a career spanning some 35 years of national service. In the late 1980s, I served as deputy and subsequently the division leader for Dynamic Testing, which was the organization responsible for operations and facilities involving local testing with explosives, high explosive R&D, and emerging technologies employing explosives. I then spent several years as the deputy associate director for Nuclear Weapons Technology, the laboratory's major mission program. That assignment provided broader context for the importance of high explosive research and development for stockpile stewardship and for other emerging programs involving HE. And then in 1993, I began my eight years of service as the director and institutional executive manager for environment, safety, and health. In this capacity, I had responsibility for environmental protection, worker safety and	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		health, and public safety and health. It is perhaps ironic that during my term as ES&H director for the laboratory, I was the laboratory's signatory on several of the facility-specific permit renewal applications that are included in the draft hazardous waste permit. The irony is not that I signed the applications, but that I did so more than a decade ago in 1999 and 2000. I give you three reasons for reinstating the permit provisions for the open burn units, and I'm sure that in testimony throughout the last month there have been many more. First, I submit that responsible regulatory processes require an objective basis for denying existing and long-standing operations. Since there is no objective standards-based evidence as to the operational risk presented by the continued use of these units to the safety and health of the laboratory workers, to the safety and health of the public, beginning with the residents of Los Alamos County and moving out into the communities of Northern New Mexico, or to the safety and health of the environment, either on the laboratory site or off site, there would seem to be in this instance no quantifiable basis for NMED's intent to deny these permit provisions. Second, I submit that the loss of these burn units would unnecessarily and irresponsibly compromise an R&D capability critical to national security, that being Los Alamos National Laboratory as an international center of excellence for high explosive research and development and for technology advances involving explosives. As the laboratory has testified, certain mission-based efforts involving high explosives, including present efforts which focus on counterterrorism and proliferation, depend on the burn units for disposal of explosives waste. Whereas, critics postulate that other means are available for explosives waste disposal, assuming LANL's desire to continue such research, I commend to you a recent study that suggests otherwise. The study concerned the transfer or closure of Site 300 at Lawrence Livermore National Laboratory in Northern California, the sister laboratory to Los Alamos. This study contains a comprehensive analysis as to the merits of options given an assumed closure of Site 300 burn units similar to those operated by LANL. The study was conducted by TechSource, using a team in which I participated and chaired. TechSource is a small company employing retired national laboratory and NNSA experts. It is recognized by the federal government for its independent, objective, and comprehensive analyses of national security issues, especially those related to the weapons complex. The study,		

No.	Loc.	Comment	NMED Response	Δ
		submitted to DOE/NNSA in September of 2008, was done in the context of evaluating preferred alternatives in NNSA's draft Complex Transformation Supplemental Programmatic EIS. After assessing the full range of disposal options, the TechSource team concluded that, desired by NNSA, the continuation of Livermore's high explosive research and development excellence, quote, "depends on the retention of specific support capabilities at Site 300, especially those for HE waste treatment (that is, disposal) and storage," end quote. Translating, closure of the Site 300 waste treatment capability would lead to a demise of the Livermore HE R&D capability, in that there were no safer, effective, sustainable, affordable, or permitted options to on-site disposal of explosives waste. I submit that such would be the case for Los Alamos -- for the Los Alamos National Laboratory emerging mission programs if the permit provisions for the burn units were not to be reinstated. I further believe that this issue would become a moral dilemma for the State of New Mexico. Following through on the NMED intended action to deny operation of the open burn units would sideline Los Alamos National Laboratory's world-class researchers in the current national imperative to find technical means to detect and defeat improvised explosive devices at a safe distance. We all know that such devices continue to kill and maim American soldiers and those of our US allies. Denying participation in this quest to save lives and disabling injuries, without objective reason, is, in my judgment, unconscionable. Third, and finally, I submit that denial of permit provisions for the open burn units at Los Alamos on what appears to be a purely subjective and arbitrary basis would compromise New Mexico's regulatory responsibility and integrity. The lack of objectivity in this situation is dismaying and inconsistent with expectations for fair, defensible, and transparent regulation. Having served on loan from the laboratory as Governor Richardson's science policy advisor early in his administration, I have great admiration for the Governor and his accomplishments during his two terms. Following through on NMED's intent in this regard will, I am sad to contemplate, not be viewed as a positive accomplishment of this administration for the reasons I've stated and for many other reasons entered into the record by many others. So given my justification and that of others, I provide the following recommendation.		

No.	Loc.	Comment	NMED Response	Δ
		So given the intent of NMED to deny permitted provisions for the open burning units at TA-16, Buildings 388 and 399, and given the lack of objective-based and quantifiable risk to workers, the public, and the environment to support the intent, and given the consequential negative and unconscionable impact that such intent would have on near-term and long-term national means involving high explosives research and development and technologies, and given the associated negative impact such intent, if implemented, would have on the need for fair and objective regulation in the State of New Mexico, I recommend reinstatement of said permit provisions in the draft Los Alamos National Laboratory hazardous waste facility permit, and further recommend, upon reinstatement, its speedy issuance to conclude 12 years of process.		
172	Gen.	I represent a company called Energy Related Devices in Los Alamos. When I heard about this, I was concerned that, as a business, I want to see sort of equal treatment to all businesses. So if you want to shut down -- since you are open burning explosives, if you think about all the other businesses or home residences that have open burning or people who have campfires and say, "Well, are we applying the rules to all of them equally?" I see the laboratory as a very remote facility and that burning can be taking place far away from the general public, so the impact is very small. So I'm trying to question why are we concerned about open burning of explosives, when it's probably the safest thing to do to get rid of those explosives, when the general public does have fires and they burn things that are probably just as hazardous. So what is the tolerance level, and how do we make sure that it's sort of an equal application of the rules and regulations.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
173	Gen.	I'm here as a private citizen. I have three children, who we raised here in Los Alamos. When I think about balancing the really small risk between transporting HE and burning HE, I would take burning HE any day, when I think about all of that -- those tons of explosives going along the public roads.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
174	Gen.	I'm with College Democrats of America. College Democrats of America has a New Mexico division. We recently submitted a petition in support of allowing the waste	Comment noted. See the Department's response regarding	Yes

No.	Loc.	Comment	NMED Response	Δ
		permit, and I'd like to read the literature as it reads on the petition. It says, I am in support of the Hazardous Waste Permit for Los Alamos National Laboratory to continue operations to continue to conduct cutting edge research and development for our nation. I am also in support of Open Burning activities in support of IED and counterterrorism training for our troops fighting wars in Afghanistan and Iraq. The denial of the Open Burning permit by the New Mexico Environmental Department is based on a very conservative risk assessment that showed a low risk to deer mice and earthworms. The issue is not enough to derail the important mission that LANL conducts to protect our troops from further harm from IEDs or the necessary training conducted for the Department of Defense regarding field identification of IEDs. By my signature below, I am asking New Mexico Environmental Department to grant the Los Alamos National Laboratory a hazardous waste permit that includes the Open Burning provision. I also understand I can submit more detailed and private citizen comment to: John Kieling at john.kieling@state.nm.us." Basically, we gathered the signatures from Northern New Mexico, as well as in the Albuquerque area. We're in support of allowing this permit because it establishes that New Mexico's willing to do business with our laboratories and provide long-term jobs. We feel that if the permit isn't allowed to continue, it sends a message to Los Alamos National Labs that New Mexico government isn't in support of cutting edge research and -- and development. We believe it's also important that they consider all the research, not just pick pieces out and make an argument based on that. We believe that New Mexico deserves the long-term jobs that this permit allows for, and if the permit isn't allowed, the research is going to go to another state, as well as those jobs, those taxes, those revenues will go to another state. We've sent letters to all of our Democratic leaders across the state, including Congressman Lujan, Congressman Teague, and Congressman Heinrich. We have a meeting actually with Governor Richardson today at 2 o'clock, when he's holding his open office hours, to submit the -- submit copies of this. And we're also lobbying with	open burning in the document titled General Response to Comments.	

No.	Loc.	Comment	NMED Response	Δ
		Diane Denish, who is our -- will -- Democratic nominee for governor to promote this. And we just believe that on behalf of all young people, especially College Democrats, that this is a very important issue to our state.		
175	Gen.	Public Participation Must Be Early, Often, Meaningful and Continuous. The EPA has issued enhanced public participation requirements for early, often, meaningful and continuous contact with the public about cleanup of the old LANL dump sites that are known as MDAs. The 25 dumps contain "legacy waste" which are dangerous mixtures of chemical and radionuclide wastes. The LANL Legacy Waste Dump Sites include MDAs G, Hand L at Technical Area 54 (TA-54) and MDAs A, B, T, U and V at TA-21. DOE/LANL have been lax in fulfilling public participation requirements for the cleanup of the 25 LANL MDAs, such as providing access to documents and opportunities for public input into the decision-making processes and holding public meetings. Further, DOE/LANL is required to establish an Information Repository where permit documents are readily available to the public. As an act of Restorative Justice and in order to meet the needs of both urban and rural communities and future generations, NMED must require DOE/LANL to establish both a physical Information Repository in the Espanola Valley as well as a virtual Information Repository. Further, NMED must require DOE/LANL to meet the enhanced participation requirements for early, often, continuous and meaningful contact with the public as specified by the EPA for both the Consent Order and the Final LANL Permit.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes
176	Gen.	There is a need for a Physical Information Repository for permit documents in the Espanola Valley, as: - a place for individual, student and community learning and research about the ten-year permit for continued hazardous waste operations at LANL, the permitting process, how to get involved and make comments. - an act of Restorative Justice and in order to meet the needs of both urban and rural communities and future generations, Therefore, NMED must require DOE/LANL to establish both a physical Information Repository in the Espanola Valley, as well as a virtual (electronic) Information Repository before the permit is finalized.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
177	Gen.	I am a PhD physicist, retired for the last four years, following twenty years of employment at Los Alamos National Laboratory, in the Applied Physics Division (X Division). Prior to my LANL years, I worked for seven years as a Research Associate Professor of physics at the University of Connecticut. I have lived in Espanola for seventeen years. During the past two years I volunteered my time to the DOE's Northern New Mexico Citizens Advisory Board (NNMCAB), where I became familiar with issues concerning hazardous waste generation, storage, and treatment at LANL. While with the NNMCAB I also learned about the sometimes difficult relations between the present regulator, the Hazardous Waste Bureau (HWB), an arm of the New Mexico Environment Department (NMED), and LANL's present owner, the National Nuclear Security Administration (NNSA), as well as LANL's current management contractor, Los Alamos National Security Limited Liability Company (LANS-LLC). I also learned about the role played in these relations by local citizens groups such as Concerned Citizens for Nuclear Safety (CCNS), Nuclear Watch of Northern New Mexico (NWNNM), and Citizens Action of Albuquerque (CAA), as well as local pueblos, especially those allied into the Eight Northern Pueblos; e.g., Pojoaque, Santa Clara, Ohkay Ohwingeh, San Idelfonso, Tesuque, Nambe, Taos, and Picuris. It was with much interest that I heard testimony presented at this hearing. I have also listened with interest to comments presented by many private citizens. I have been particularly struck by the emphasis placed by private citizens on the call for an information repository, to be located on the campus of Northern New Mexico College (NNMC). As conceived, this repository would be for the purpose of accumulating and making available to local residents information relating to the history of the generation, storage, and treatment of hazardous waste at LANL, as well as relating to the history of relations between the local communities and the DOE, the NNSA, and LANS LLC, and to relations with the previous management contractor, the University of California (DC). It appears that NMED is well aware of a desire on the part of local citizens for such an information repository. In fact, Mr. James Bearzi, head of the HWB/NMED, addressed this issue in Sect. IV. D. of his written testimony. However, he said in that testimony that it is the opinion of NMED that an electronic information repository should suffice.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Even so, he also says in his written testimony (Sect. IV. C.) that NMED is attempting to adhere to Environmental Protection Agency (EPA) concerns for the promotion of environmental justice among local communities. Such concerns require that local communities be provided with all possible opportunities to participate in decisions related to local environmental matters; e.g., matters resulting from the actions of government in New Mexico, especially the federal government. In this regard, environmental justice concerns would be better met, in my opinion, by the establishment of a permanent information repository at NNMC, than with a simple electronic repository. In my view, if such a repository is to serve the purpose for which it is intended, it must have an on-site staff, trained in its maintenance, and able to assist local citizens in their quest for information. Mr. Bearzi also refers to the RACER database in his written testimony (Sect. IV. G.). He points out that RACER is a compendium, in electronic form, of environmental data recorded in and around the Pajarito Plateau. He notes too that this database is already fully accessible to the general public (at least that part of the general public that has access to a PC and a high-speed data link) and is being well-maintained by the Los Alamos Community Foundation. He does not mention that it is currently a part of the RACER plan that RACER shall eventually be maintained by a staff located at NNMC. I would like also to recall a critical public comment made at this Hearing, this past Tuesday, regarding the influence of LANL on the local economy. In this remark it was suggested that an unfortunate dependency had been created in the local community on the economic benefits brought here by LANL over the last sixty years. It is in this context that J would like to speak briefly about the last few months of my two years of service on the DOE's NNMCAB. It was during this time that I first recognized the presence of a tension between Board members who believed that economic benefits brought by LANL to the local communities were always of paramount concern when dealing with regulatory matters, and other Board members who felt that health matters were much more important. In an attempt to quantify the strength of such opposing opinions, and the degree to which such opposed opinions were wide-spread in the local community, I conducted a public opinion survey.		

No.	Loc.	Comment	NMED Response	Δ
		This survey was conducted in the fall of 2009 in the towns of Santa Fe and Espanola, and accumulated responses from 225 persons. The questions in the survey were written, the survey administered, and the results analyzed entirely by myself. In an effort to obtain some technical guidance in this matter, I did consult briefly with a staff member from Research and Polling, Inc. of Albuquerque. The results of the survey can be perused in my attached report (provided to hearing officer at hearing). In quick summary, these results show that there are indeed two strong attitudes about LANL to be found within the local community. One attitude is of appreciation for the economic benefits brought here by LANL. The other attitude is one of worry about possible environmental hazards arising from the type of work done at LANL. This second attitude is combined with uneasiness about the nature of that work itself, i.e., the R&D of nuclear weapons. Simplifying somewhat, approximately 25% of respondents felt that the economic benefits brought by LANL were great, while environmental hazards were of little concern, and uneasiness about nuclear weapons R&D was just not a factor. Approximately 25% of respondents felt just the opposite, i.e., while economic benefits did not impress them, the threat arising from environmental hazard was great, and the culture of nuclear weapons was rejected strongly. Interestingly, ~50% of respondents displayed both attitudes simultaneously. For these conflicted individuals, there was an awareness of a clear economic benefit brought by LANL to the local community. At the same time, however, worry about possible environmental hazards due to the business of LANL, and uneasiness about the nuclear weapons industry was also great. In closing, I make the claim that it is the effect of LANL's business on the local community which should be the subject of further study. Evidently, this effect is perceived to be wholly positive by some and wholly negative by others, but generally both positive and negative effects are experienced simultaneously by at least half the members of the local community.		
178	Gen.	I support the people of Espanola in requesting a physical repository be required in the RCRA permit! Safeguard us from these deadly poisons at LANL! Do not cave into pressure from LANL and the U.S. government! How will future generations judge your decisions?	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
179	Gen.	We request that there should be both an electronic and a physical information repository.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes
180	Gen.	EPA recommends that the Informational Repository at a minimum be a physical repository to allow access for individuals without internet capability.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes
181	Gen.	I'm a Sister of Loretto, and I am authorized to speak in the name of the entire Loretto community of sisters and co-members. The Sisters of Loretto have been in the Northern New Mexico area since 1852, 60 years before New Mexico became a state, so you know we care about this Land of Enchantment and its beautiful people. We support the physical information repository in the Espanola Valley that was in previous drafts of the permit and somehow is now omitted. I have, on occasion, had to rely on using the library computers and have found it to be very frustrating. Sometimes I've had to wait an hour or more to use a computer, and then I would be limited as to how much time I could spend on it before giving someone else a turn. If I was not finished, I would then have to sign up again and wait for another turn. I have heard that the time allowed in the Espanola Library is even shorter than the time I was given in the Santa Fe Library. This puts an undue burden on the citizens of the Espanola Valley, who are downwind from the Los Alamos Lab, and thus most affected by airborne contaminants. Refusing to give them a physical repository is saying to them, "Yes, we will make available this information, but we will make it difficult for you to access it." Since many citizens of the Espanola Valley are Hispanic or pueblo people, it feels to us to be an example of economic and racial injustice. The Loretto community requests that as a matter of justice, the New Mexico Environment Department require DOE/LANL to establish a physical information repository in the Espanola Valley, in addition to the electronic version, before the permit is finalized. I also want to commend the nonprofit organizations that are represented in these	Comment noted. See the Department's responses regarding the information repository and environmental justice in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		hearings, who work full-time not only to protect the environment and health of citizens living downwind and downstream from the nuclear labs, but also for the safety and health of the workers at the labs. Corporation and government attorneys are paid substantial salaries. The nonprofit representatives here struggle for meager funding and sometimes have to find other part-time jobs in order to eat and pay their rent, which cuts into their time and energy to fulfill their primary nonprofit mission. Their commitment to public health and safety is admirable, and the Loretto community thanks each of them.		
182	Gen.	I am from Northern New Mexico College. I am not speaking on behalf of the college as a whole. I am speaking on behalf of the environmental sciences program, and I am also chair of math and sciences at Northern New Mexico College. I have been in discussions with community members regarding a physical repository at Northern New Mexico College and have been very active at the college in acquiring capabilities for the RACER project. I do not have any statements with regard to the proposed burning, but more so with regard to our community's ability to address and understand these issues more appropriately. On behalf of the college and my role as environmental science director, I will say that I did spend a number of years working at the laboratory myself and have been very proud of the work that we've done in -- at the time in the Environmental Safety and Health Division and look forward to continuing our opportunity educate our community. A lot of the questions that come up, a lot of the dialogue and the discussion, has a lot to do with a misunderstanding, a lack of information, and frankly an inability to understand the types of issues that we're actually talking about. We live in a community that spends a lot of its time concerned about the environmental health risk. As a person whose background is in environmental health and environmental epidemiology, I understand the questions, the types of concerns that do come up regarding these matters, and the importance of addressing these matters in our community and particularly in the communities of the Espanola Valley. I'd ask for any type of consideration and support in assuring that, as the laboratory proceeds with the work that it does, that we do more to prepare the community, our community with regard to our students, our work force community, those who will actually work on environmental restoration projects, those who are impacted off the hill	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		and on the hill, that our opportunity to actually develop our educational capacity in these areas. So I speak on behalf of the environmental sciences, in the interests of bringing education to this bigger picture, in the interests of what I will say is not chasing our tails and wondering why some are just worried and concerned, and bringing more of a science and background in a broader context in the Northern New Mexico area.		
183	Gen.	I work with a nonprofit organization, Cultural Energy. We're starting a new public radio station for Northern New Mexico and a new TV station. One of our goals is to involve all the disparate communities that will be in our listening and viewing areas in generating content. I'm speaking to urge the Hearing Officer to consider that the internet is not the only way that people get information. People learn in many different ways. Internet access is very, very different in different communities. If you go around, you'll find that most people in Northern New Mexico do not have broadband. The demonstration today, in a building that has wireless, you can't even download a darn file. It gives you an idea of how inaccessible this information will be to most people. I speak, as a media person, and wanting to get youth involved in understanding these issues and communicating them to their elders, if we had an information center at Northern, with the kind of expertise that people that Camille bring to helping people understand the information, if we were able to have actual physical hard copies, where I can take this part of the permit application and this part of the permit application, open up to one page, refer to the other page -- you know, to print out the volume of paper that is required to study this whole permit application, you'd be running into hundreds of dollars in printing fees. If there is a physical paper copy that you can read and compare with another paper copy that's already in the repository, and there is -- you know, and other students that work with the Environmental Department at Northern can then help people understand the terms that are in these documents -- these are very technical documents. I mean, even if you have a lot of time, you're going to have a hard time understanding this stuff. We need that physical repository. We have a university that, according to the reports here, is interested in doing that, and they are already setting up a repository for the database and for the report, so why not support that, and get people so that they can actually meet and discuss these issues, so that youth that would work with us, which we plan to do with the students at Northern and at UNM Taos, that they could access this. How many students are going to be able	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		to print out hundreds and hundreds of pages of these reports at every -- you know, at the prices that we're talking about? The internet is not the only way people get information. Most people don't get their information from the internet, in spite of Obama's and other people's push to make everything broadband. We need to preserve the other media sources. We need to preserve paper. Paper is very valuable, and that's from me coming to a media that wants to do radio and TV. So please consider the value of a library-type situation, where you can sit down with these paper documents, study them, have other people help you understand them. That doesn't happen staring at a computer screen. Scrolling down, I mean, the – the gentleman from Los Alamos kept saying, "Well, you can just scroll down the screen." Well, that's not the same thing as opening up one page, looking over here, taking notes. It just isn't the same thing. So I urge you to support the physical information repository that is being proposed by HOPE and other advocates here.		
184	Gen.	I'm a member of the board of directors of Concerned Citizens for Nuclear Safety. The testimony this morning from the witnesses requesting a physical information repository as part of a broader vision recognizes that a significant portion of the concerned population lacks the technical skills and sophisticated equipment to manage efficiently a virtual repository, in spite of their commitment to be better informed about the regulations governing their relationship with LANL. In LANL's line of cross-examination this morning, I was alarmed and distressed by the reluctance to acknowledge this reality. As America has become a two-tiered society, in terms of income and wealth is inequitably distributed, we see the same thing in Northern New Mexico. Without wishing to offend anybody, I want to observe that it is important for the representatives of LANL to acknowledge that their neighbors are relatively deprived and relatively vulnerable. To fail to respond affirmatively to the expressed needs of their neighbors is a further expression of unacceptable economic discrimination and is unconscionable.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes
185	Gen.	I am the legislative advocate for the New Mexico Conferences of Churches. The New Mexico Conferences of Churches represents over 800,000 Protestant and Roman Catholics across the State of New Mexico. I had planned to make comment later in the	Comment noted. See the Department's response regarding the information repository in the	Yes

No.	Loc.	Comment	NMED Response	Δ
		week, but I feel compelled, after this morning's testimony about the information repository, to speak. Before I begin, I do want to acknowledge that Senator Udall has honored us by sending Michelle Jacquez-Ortiz here this afternoon, and we're so grateful that you're here on behalf of Senator Udall. Let me just say that I am simply baffled by the opposition to the information repository. I think that LANL and NMED have wasted yet another opportunity to demonstrate to the public that you are concerned about and respectful of the needs and quality of life of your neighbors. To oppose this request, I believe, is shortsided, frankly insulting, but it is also revelatory. As people of faith, we believe that budgets are moral documents, and they are very good indicators of our true values. How we choose to spend our money is a reflection of what we believe in value. Our budgets speak louder than our words. In light of FY 2011 and the fact that President Obama has announced that he has put a freeze on domestic funding for domestic projects, but has increased funding for programs like the CMRR at LANL and the 2.2 billion dollars that has been appropriated for LANL, it is beyond me why you would deny this small request from those who have lived in the shadow of LANL for 67 years now. If it is your goal to further alienate, antagonize, and erode public trust, you will succeed. It is not, I believe, the impression that you want to leave, and I would implore you to reconsider and to take advantage of this opportunity to invest in good PR. There is nothing that has been presented so far today that explains the grounds for your opposition to the information repository. Simply -- what you have said is simply this: that you have determined what we need and what we don't need. It is reminiscent to Marie Antoinette, who, when told that the people had no bread, responded naively, "Then let them eat cake." It is a measure, I fear, of the disconnect between LANL and NMED and the people that you have been called to serve. You are setting up a double standard for us by denying us the resources that are available to you. It is frankly unbecoming behavior. Is your opposition based on the cost? I would suggest that what you are investing in staff and legal fees for these hearings to oppose our concerns could probably fully fund the information repository for a year. Is it seen as providing too much access to	document titled General Response to Comments.	

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		information? Is it that you do not share the vision for Northern New Mexico College and for the Espanola Valley, other than to continue to use them as a cheap labor force? Is it your fear that if they have too much access to information, they will know more than you truly want them to know? I would suggest some reasons for supporting the information repository, by setting up a win/win situation. First of all, it is cost-effective. Second of all, it is environmentally responsible, by limiting the needed travel, printing of documents, by providing this hard copy of the permit to people who are in this concentrated area who have the most interest in having access to it. It is also a huge investment in goodwill. Northern New Mexico College, my understanding, is already a grantee of LANL. You have already made an investment in its future, in its vision, and its mission, and this furthers that. We have a vision of Northern New Mexico College of being a state-of-the-art institution in New Mexico, something that's long overdue. Finally, it's fair. It not only benefits the people of Northern New Mexico, it benefits you, by doing the right thing, putting people before profits. It benefits the people who have lived in your shadow for 67 years now, who have served you and who have suffered far more than they have benefited from LANL. It is an opportunity for both LANL and NMED to demonstrate your tangible, measurable respect and concern for your neighbors.		
186	Gen.	I'm director of public affairs for Northern New Mexico College, just up the street. We're proud that you're our neighbor. There is no more important research and educational institution to us at this time than Northern's matriculation as a four-year graduate school and a close relationship with the lab. We think about it every day. We're in touch with your external affairs people on a weekly basis, we're thinking and working all the time to find ways that we can participate with you to enhance opportunities for our students and our faculty. You're 20 minutes away from us, highly unusual facility, terrific resources, and an environment in which our people can get exposure, perhaps, and students elsewhere -- many other places never even see. So we're proud to be with you. I'm here today on behalf of David F. Trujillo, who is the interim president of Northern.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		David asked me five minutes ago if I would take time from my schedule to come here and support Dr. Camilla Bustamante, who heads our Environmental Sciences Department, in a plea to you to support us in building the capacity of our programs that are lab related in order to, in particular, better understand and address all environmental issues affecting our community and Northern New Mexico. In particular, we're requesting consideration for support of the environmental reading room, the information repository at Northern, and would be proud to host that facility for you.		
187	Gen.	One of the things that I would like to state, I am here as a community member, but I'm also an employee of Northern New Mexico College. When we're speaking of the information repository for this community, I'd also like to state that our facilities and our technology that we have available is capable of providing this information to this community, it is a central location for our community, as far as higher knowledge, and it is the place where we continue to educate our community well beyond the typical college experience. This is a community that has long been in need of moving on to a higher education, so that we can continue into a future where we're not so heavily dependent on chemicals and chemical properties that are destructive to life in our community and the planet and the global environment. So I just want to simply state that having an information repository for this community, based on all that is going on in LANL, I don't see as difficult for people to understand this need. This community is directly affected by what happens in those laboratories, and we would like to see the information available to the public. What we already have the knowledge of is, obviously, the groundwater situation. And as much as there could be debate on numerous sides of this issue, we are also aware of the fact that LANL has already been cited for safety violations, in fact, just this year by Governor Bill Richardson. I think LANL was fined a million dollars for a potential hazard with the storage of the waste that's already been produced by the facilities. So that, in itself, also brings up issues with regards to the future of the labs. I understand that we are here to speak specifically about the repository and open burning, but I would also like to emphasize that, as it's been discussed in previous hearings, that the laboratory has plenty of potential for moving forward and to another direction that can potentially avoid any form of life-destructing types of activity that go on there. Already	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

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		at the laboratories, we do have a large amount of research occurring that is in the direction of renewable energies, and I would also like to emphasize that that's a potential for an increase in heading in that direction. Already the President of the United States has stated that we want to move in a direction toward that. I don't want to allow for that discussion to end even though we are discussing something more specific as far as open burning. So in closing, I just want to emphasize that this community has the capability to have the information available to the public, but also that we have hard copies available for those individuals who do not have access to the internet and digital devices that exist within this community, being that it's rural and an impoverished community, that we have a location where they can receive that information by hard copy, and also keeping to the knowledge and traditions of this community as being able to continue and informing our population about what is going on in that -- in those facilities up there. Of course, there are plenty of top-secret type of activities that goes on up t here, but we do have a right to know what we may be exposed to, and that is -- and should be pretty much common knowledge that should be fairly understood.		
188	Gen.	I just wanted to say that, as a younger person, I think that we should be concerned about the future of the environment, and we should think about how the air and the water, groundwater, will be affected, and also I think that there should be a printed copies for like people who don't have internet or access to any computers.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes
189	Gen.	I'm a librarian and I've just signed a petition that reads this way, "We, the undersigned, state: There is a need for a physical information repository for permit documents in the Espanola Valley, as a place for individuals, students and community learning and research about the ten-year permit for continued hazardous waste operations at LANL, the permitting process, and how to get involved and make comments, also an act of restorative justice, and in order to meet the needs of both urban and rural communities and future generations. Therefore, NMED must require DOE/LANL to establish" -- that's not fair DOE/LANL, let's be fair -- "to establish both a physical information repository in the Espanola Valley, as far as a virtual electronic information repository, before the permit is	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		finalized." Let me just say, briefly, the reason I've -- I'm signing this is obvious, I was talking with some of my librarian friends and even patrons, and while that looks like a lot of documents, or the equivalent sort of situation is -- it is an awful lot of information to have out there in hard copy -- what's called hard copy. I really think it's very important to do so. People can browse on the internet, that's true, and people who have internet availability with printing availability at home are at an advantage, but there are lots of people in this area who don't have that. So as a librarian, as a person who likes to read through these kind of things, I do think it would be a great PR, if nothing else, a very important step. People just don't have the time to come in and -- you know, you have to schedule time in the library, and if you jockey around, you can spend more than an hour at the library getting information, it's 10 cents a page to print something up. I think it's really important.		
190	Gen.	Yesterday, I got to make most of my comment, but today, after listening to people talk about the physical repository and hearing that they had no idea that Northern wanted to have this physical repository, I just wanted to get up and say that I know that's not true, because I was working at Northern at the time, and I work informally with Marian Naranjo and Joni Arends and helped to facilitate meetings between Dr. Camilla Bustamante, the president at the time, Jose Griego, and Marian, and I had lunch at El Paragua with Mr. Bearzi and other people from his staff, and we talked about this, and they held listening sessions in Espanola on, you know, this permit, and we talked about this there. I mean, this has been going on for quite a while, and a lot of it has centered on the RACER database, but there is a larger vision, and that has been discussed, and I want that in the record, that if New Mexico Environment Department is going to say that they had no idea that Northern wanted it there, that's not true, and that's breaking faith with me. I'm probably the only community organizer that's come to this hearing that's not affiliated with one of the nonprofits, and if you're breaking faith with me, then you're breaking faith with a big part of my community, and I'm going to make sure that they know that. So before people lie on the record, they should just think about what they are saying to our community, because people like me -- there are a lot of people who count on me to make sure that things are getting done that they don't have time to do, because	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		they are working in Los Alamos, or wherever else, to feed their kids, you know. I'm one of the few people who will take my own time to make sure that things that I think are important get done with the women who have been doing this work for a long time. So it's important that this relationship remain intact and that LANL honor that and that they listen to our community, because, honestly, for everything that LANL has destroyed in our community, they owe us, and they owe us more than this repository. So I'm expecting that to happen, and I think the people at Northern are really excited to think that that's going to happen there. So there are big consequences to people not holding up their end of things. The Rio Arriba County Commissioners are ready to pass a resolution in favor of this physical repository. So there is a very broad interest in our community.		
191	Gen.	I was at the meeting with the former president of Northern College when we were discussing the idea of an information repository, and then later Joni Arends and I met with former Mayor Joseph Maestas, the mayor of Espanola, and in the course of that conversation, we talked at length about the idea about an information repository. So the idea that this isn't -- that this is just an idea that's been floated broadly in the community baffles me again, because I was privy to many of those conversations.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes
192	Gen.	I had a little time to kind of think it over, but in regards to the physical repository, just kind of thinking about the concentration of people in Northern New Mexico who don't even have computers -- like, for instance, my father, you know, he doesn't even know how to operate a computer, much less, you know, go out to a website, mark a file "save as," put it in a folder, be able to use Adobe Acrobat, open that, and take it to a local printer and take it, get on it in duplicate, but that doesn't really make his life any less worthy. Growing up in the digital age, I mean, this is like reading for me, but I can speak for a lot of people in saying that this is out of the grasp of many people, and I think it's doing a disservice, and it's actually a form of disrespect to people who have maintained the land for generations to impose this technology on them without helping them. I mean, if the argument is for or against a physical repository -- I mean, if you're going to go digital, you can't just hand somebody a wire and say, "Good luck." I mean, there	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		would have to be an educational process involved in teaching somebody how to do that. You know, I work for the local school district, and we have the technology, we have the computers in the classroom, we have multiple labs, but we're finding time and time again that the teachers don't know how to utilize the technology, and it ends up being the kids that are teaching the teachers. So, you know, again I would like to petition for a physical repository at as many locations as possible, because as my wife said, you know, this here is sacred, and there is really a lot of people who would like to read that information, have it available to them in a setting where it's comfortable for them, you know, and there is a lot of people that don't like to ask for help, they don't like to feel stupid, and it's disrespectful to assume that everybody has that sort of knowledge, when you, yourself, possess the knowledge.		
193	Gen.	And it seems like I've been doing this for too many years. But anyway, this is a particular time that we need to all be informed and be involved. And from all of the information I've heard today and known about for many years, I strongly recommend that New Mexico Environment Department deny a permit to LANL to continue burning hazardous waste in the open air. New Mexicans have suffered the disastrous health problems from all of the hazardous waste created by LANL for too many years. Native Americans have been particularly impacted with their water being contaminated, as well as their air and soil. The New Mexico Environment Department must require that LANL clean up all hazardous sites and start restorative efforts as soon as possible. I strongly support that LANL be required also to establish both a physical repository in the Espanola Valley as well as an electronic version before the permit is finalized, and that all documents relating to the type of waste and kind of treatment to be established be included in that repository. The vision for the repository is that it will contain permit documents, regulations and maps, as well as computers, printers and a copier. It will provide a venue for people to become familiar with the complexity of the Los Alamos National Laboratory site. And there will be opportunities for all who are interested to learn about the permit – the permitting process, the compliance order -- on the consent order and the cleanup and the database that contains the historic and current environmental sampling results. In fact, it might be interesting enough that young	Comment noted. See the Department's responses regarding open burning and the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		people will get involved. And as a matter of fact, we were all young when we started this. It's 40 years that I've been doing this. And I really think it's time for Los Alamos National Laboratories to start its cleanup.		
194	Gen.	I think it's just kind of common sense stuff. I don't think -- I mean, I know you guys are sitting here for many, many hours and many thousands of dollars are being spent on lawyers to, you know, debate and quantify whose science is better than the other, but I think at the end of the day, the -- we all know it's about like our future generations, right? And that water is a basic, vital ingredient to human life. We as human beings -- the majority of our body is water. We need water to survive. I'm a breast-feeding woman, and I think about a lot of the toxins that enter my body and enter his body, and I think about a lot of diseases or -- that are impacting children, like autism, and we don't have a lot of stuff. Barely now are we seeing research to quantify a lot of reproductive health issues that we're seeing in women of my generation as we're not being able to conceive, right? So I think it's -- it's just common sense, right? We all know that it causes cancer. That's been quantified. We all know that it's being connected to a lot of health issues within children. So it just seems to me that we wouldn't continue to contaminate something that's so basic to life, right? From the food we eat to the water we drink. And that the which -- and it's about future generations, right? How are we ensuring Mother Earth for our children? And I also think a basic thing is just – I mean, we supposedly live in a democracy and shouldn't a basic tenet of democracy be transparency and that all community members should have access to that information? And understanding that I'm -- not all of us can afford computers, and not all of us can break down this technical jargon that you need a lawyer to decipher for you, and even the lawyers need scientists, right? So I think it's just kind of, once again, basic common sense that -- that this information should be provided. I don't even see what -- what the struggle is. If you say you're not hiding anything, then just make it public. It's that basic.	Comment noted. See the Department's responses regarding groundwater protection and the information repository in the document titled General Response to Comments.	Yes
195	Gen.	I am presenting a resolution that was passed by Northern New Mexico College Student Senate. This letter is addressed to Mr. Kieling.	Comment noted. See the Department's response regarding	Yes

No.	Loc.	Comment	NMED Response	Δ
		"Thank you for the opportunity to make public comments to the LANL hazardous waste permit. On April 20th, 2010, the Student Senate from Northern New Mexico College met and passed a Resolution in support and establishing a physical information repository at Northern New Mexico College. Along with this letter, I have attached the Resolution. *Resolution in Support of Establishing an 'Information Repository' at Northern New Mexico College* As students want to be involved in the public process for the permit, we would like the Northern New Mexico College Student Senate to adopt this resolution for the following reasons: Whereas, our proximity to LANL and Northern New Mexico College is a central location for the information to be held, Whereas, the hearing for the draft ten-year permit for hazardous waste operations at LANL begins on April 5th at Santa Fe Community College, Whereas, an 'information repository' is in Section 1.10 of the hazardous waste permit. This permit is requested by LANL and regulated by the New Mexico Environment Department, Whereas, the term of the permit will be for ten years, Whereas, this is a learning opportunity in that this would support the right to be informed as citizens in the events at LANL, Whereas, NNMC will serve as a place to keep citizens and students informed; by providing a place for permit documents, maps, regulations and any equipment necessary to download, print and/or copy the information, As a result of this resolution, the Student Senate will be in support of bringing the information repository to Northern New Mexico College and participate in the public forums throughout New Mexico. This was signed on April 20th, 2010, by all the Senate members.	the information repository in the document titled General Response to Comments.	

No.	Loc.	Comment	NMED Response	Δ
196	Gen.	The Permittees support the requirements for an information repository as set forth in the revised draft Permit, which allows the Permittees to establish either an electronic repository with access available through the internet or a physical repository or both. It is the Permittees' position that a virtual repository will provide the most accessibility and will support the goals of transparency and providing information to the public. 40 CFR §124.33 provides the Secretary with discretion to determine if an information repository is needed and the type of repository that should be maintained. The requirements in Section 1.10 satisfy and exceed the requirements of §124.33.	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes
197	Gen.	I am currently an employee of the Los Alamos National Laboratory and also a resident of Santa Fe. My comments here are my own and should not be construed to represent LANL's position. As a mother of small children, and like any concerned resident, I want to make sure the air we breathe and the water we drink is healthy and safe. I think much of the permit that NMED has prepared is a positive step. It is important that each waste storage, treatment and disposal site in New Mexico receives a permit. Permitting requirements need to be consistently applied, and requirements need to be based on regulations and provide clear and consistent guidance for facilities to operate under and for the regulator to enforce. There are several key issues that I would like to address. First -removal of the open burning is not justified on environmental grounds. The treatment units for open burning are designed so that they burn hot and clean. No impact to human health or the environment is present. However, if NMED imposes a requirement to ship the wastes elsewhere, the trucking impacts could be significant because there are few if any in-state options for burning this type of hazardous waste. And these wastes must be burned -if not here then somewhere else. And frankly, I trust the Laboratory's environmental controls more than I would trust the environmental controls of the burning in Texas or elsewhere, where they may not have the environmental requirements to burn hot and clean like we do. How many miles to the gallon to these big hazardous waste trucks get? What are the emissions of the big hazardous waste trucks? What are the safety hazards posed to other drivers in New Mexico by the trucking? These environmental impacts could all be avoided by allowing open burning. If there were significant emissions generated as a result of open burning, I would feel very differently about this issue. But that is not the case.	Comment noted. See the Department's responses regarding open burning and the information repository in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Second (information repository) Anything other than a virtual information repository is not justified on environmental grounds. It has been proposed that in addition to the virtual repository there be a hard copies of everything stored in a location in Espanola. We are talking about stacks and stacks of paper-and many trees sacrificed to maintain this hard copy repository. Additionally, it encourages people in Santa Fe and Los Alamos and other places to drive many miles to review the information. Automobile emissions are one of the top sources of emissions in this state and in the country. I recommend keeping the repository online, accessible to all in a modern, 21st century way and preventing loss of trees or unnecessary automobile emission. Thank you for your consideration. Protection of the public health as well as the environment is an extremely high priority for both sides of this issue and for all of us who live and work here. Please make sure that environmental health and safety are truly guiding NMED's decision making.		
198	Gen.	Public notification and information and the information repository are issues that are very important to the public. I, as member of public, wish to support the concept of a virtual repository. It is that type of progressive thinking proposed by NMED in the draft permit that will give a broader range of the public access to the repository. Libraries and general access to the internet has become so pervasive that this is the best possible approach. It also makes it easier for the Laboratory to maintain an up-to-date repository. A single facility with hard copies would be difficult for the public to access and difficult for the Laboratory to keep current. Access to a virtual repository is 24/7, not just during business hours making it difficult for people working to partake in the public participation aspects of the program	Comment noted. See the Department's response regarding the information repository in the document titled General Response to Comments.	Yes
199	Gen.	"All things are connected. What we do to the earth we do to the children of the earth" Chief Seattle	Comment noted	NA
200	Gen.	Sometimes – often – I get the feeling that even through government agencies "go through the motions" of asking for and receiving public comment and opinions, it seems like those same comments are disregarded, and again the big business interests prevail. Please give public health and safety, and long-term protection of the earth, a chance.	Comment noted	NA
201	Gen.	As a citizen of Northern New Mexico, I am concerned that hazardous waste of any kind from LANL be disposed of in waste consistent with public health and safety.	Comment noted	NA

No.	Loc.	Comment	NMED Response	Δ
202	Gen.	I serve on the Board of Directors for the NM Conference of Churches which works with a constituency of about 800,000 congregants. We are watching this issue closely.	Comment noted	NA
203	Gen.	Hazardous waste should be subject to strict regulation and should also be responsible for these products.	Comment Noted	NA
204	Gen.	When the fire happened, I and a few of my neighbors got stomach aches and could smell fumes in our neighborhood outside of Taos. We need clean air.	Comment noted	NA
205	Gen.	I have environmental illness and these issues are killing me and my family – all sensitive – faster than necessary. There are other ways … let's look at those ideas.	Comment noted	NA
206	Gen.	The root of all the malaise in the world stems from the mistaken belief that you can make war on all your fears by creating the more destructive weapon – the livelihood of most LANL employees depends on this wrong thinking. In the course of acting on this wrong belief, LANL has polluted a large part of our atmosphere and land and people with radioactivity. This is no way to show respect for life itself. It is time to stop this insanity and listen to these brave soles who are trying to communicate with you. That is the only path to peace and your own hearts.	Comment noted	NA
207	Gen.	It would seem that NMED has no regard for our children's future let alone the planet we live on. I am appalled the CCNS has to exist.	Comment noted	NA
208	Gen.	I would like to know who make the spending decisions on a project-by-project or month-to-month basis. Is it Congress or a secret committee? Also, public hearings are essential and so are LANL responses to public demands.	Comment noted	NA
209	Gen.	As a M.D. in Santa Fe, NM and I test patient's hair levels for toxic elements. Very high levels of uranium are found in the drinking water that drains off the Los Alamos plateau – Pojoaque, Espanola, etc. Please do something to prevent this water and soil contamination.	Comment noted Well water in Pojoaque, Espanola and, generally, in the area between Santa Fe and Espanola, originates in the Sangre de Cristo Mountains and not on the Pajarito Plateau. High concentrations of	NA

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			uranium in drinking water in some wells in that area are the result of documented uranium ore deposits that extend from Tesuque north to Espanola (for example, see a map at http://geoinfo.nmt.edu/faq/mining/Ur_20Dec04.pdf or the publication McLemore, V. T.; Chenoweth, W. L., *Uranium Resources in New Mexico*, New Mexico Bureau of Mines and Mineral Resources, Resource Map 11, 1989). Although these ore deposits are generally low-grade and not economical to develop, a single mine south of Espanola (San Jose #13) produced 12 tons of uranium ore in 1957 (McLemore, V. T., 1983, *Uranium and thorium occurrences in New Mexico: distribution, geology, production, and resources; with selected bibliography*: New Mexico Bureau of Mines and Mineral Resources, Open-file Report OF-182).	
210	Gen.	Please do the right thing.	Comment noted	NA
211	Gen.	We, the citizens of northern New Mexico, deserve to live and work in a healthy environment. During these economic times, more and more people are growing their own food, and turning to farming and other sustainable lifestyles. There are many new and innovative technologies that LANL could develop to participate in reducing global	Comment noted	NA

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		warming, in creating alternative energies and fuels, and other sustainable sciences. This is not the time to be continuing to make weapons of mass destruction. Not only is it illegal and unethical, it further drags us into irreversible debt. It is a time to respect the teachings of the indigenous peoples whose land LANL took over and to join with scientists from all over the world to solve some of the many problems that threaten our very existence on this planet. We implore you to respect the environmental laws and safeguards, strengthening rather than undermining them, and encourage LANL to begin the process of cutting back on weapons work and shifting to "green" alternatives.		
212	Gen.	Time is necessary for CA and the public's review for non-enforcement of the analytical requirements of the Consent Order by the NMED at LANL. The same requirements are now required in the draft permit. The public needs to be confident that the analytical requirements for protection of the public are being enforced by the NMED.	Comment noted	NA
213	Gen.	Generally, and as explained in more detail below, the LANL draft permit should be denied because it does not comply with all local, state and federal requirements. (42 U.S.C. Section 6961). Under these circumstances, the LANL Draft Permit should be denied by the New Mexico Environment Department (NMED).	Comment noted	NA
214	Gen.	I live downwind of Los Alamos and have Leukemia from breathing the TOXIC air from the 2000 fires. It can only get worse with so much waste sent into the air. Please think about how you might feel if it were your family breathing this polluted air. Please do everything you can to stop this release of POISON air.	Comment noted	NA
215	Gen.	What part of the scientific mind has gone totally to sleep to the facts that support LANL's responsibility for the increasing number of cancer deaths in Los Alamos as well as surrounding regions? All residues must be cleaned up, not buried in Fed. Approved So N Mexico Collection Territory!	Comment noted	NA
216	Gen.	I object to hazardous waste that harms humans and living creatures all, whether airborne, water, or the earth. Stop insidious waste.	Comment noted	NA
217	Gen.	The battle for safe, clean air has gone on for so very long. Battle after battle has gone on in the state to halt or lessen the dangers of hazardous waste, yet we are still dealing with the same questions and the same responses. When will the safety of ordinary people hasten action?	Comment noted	NA

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218	Gen.	Please let's stop the money game and make our water really safe for ourselves and especially for our children.	Comment noted	NA
219	Gen.	I have been horrified over the years what LANL chooses to do with its' toxic waste. Really, this needs to end. The "monitoring" has been a bad joke on the public for years. Lord knows what the consequences of the 2000 fire were, or the 79(?), or the daily burnings. Surely our water is a precious resource and I say enough! Prove a sound disposal method. Better yet, stop the waste and give our people honest meaningful work to help save our planet and to stop providing jobs for killing people, inhabitants, and resources. Our air needs to be cleaned, not contaminated, and it all returns to the earth and our water. "In the wastebasket" no longer. Let us be heard! Vulnerable are we like infants. We need each other's care or we will suffer. - St. Catherine of Sienna	Comment noted. See the Department's response regarding groundwater protection in the document titled General Response to Comments.	NA
220	Gen.	New Mexico must no longer allow any hazardous waste or any toxic substances to foul our already fragile environment. The New Mexico Environment Department must do all in its power to be mindful and responsible to their constituents and to protect the environment and the populace from any and all harm. Our present and future depends on it.	Comment noted	NA
221	Gen.	It's really not a matter of "saving the Earth" as the planet will be here long after humanity has gone. It's a matter of waking up and respecting each other and each other's right to clean air, clean and abundant water, and the right to planetary citizenship. The loss of respect for other human beings, as well as the loss of integrity in some, is what will end the human race. Cultures world-wide know this is our last chance. And that chance is now. Right now. Unless we wake up to our responsibility to each other, our children, and succeeding generations, there will be no more humanity. Is that a risk we are willing to take? In the movie, "Oh, God", a grocery store manager realizes how much has to be done and goes into a panic stating, "How are we going to do all this?" God answers, "That's why I gave you each other". That's what we've got…each other. And the understanding that the answer to the	Comment noted	NA

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		problem is never found at the level of the problem. Guidance and direction from a higher level will get us through this crisis-based "status quo" (which is Latin for "the mess we're in"). It's really quite simple.		
222	Gen.	It seems to me that you are doing your part to hasten climate change. Do you know whether we will develop immunity to tritium and uranium in our water?	Comment noted. Regarding the Department's knowledge of the development of immunity to tritium and uranium in our water, the issue of radionuclides is not within the Department's authority and the Department does not know about how individuals might develop immunity to the associated constituents.	NA
223	Gen.	We need you to examine your heart and your ethics, and not be influenced by those whose greed is destroying our health, our lives, our planet. Please, no more dumping and no more toxic waste leaking into our children's bodies. Hear us please. I think you know what to do.	Comment noted	NA
224	Gen.	As a Taos resident who lives downwind of LANL with two small children, I'm writing to encourage you to do all you can to help LANL become the safest and least polluting facility it can be. Though, to be honest, I disagree with LANL's mission regarding the upkeep of old and making of new nuclear warheads, I understand that the facility will most likely continue its nuclear weapons work as well as work with other dangerous materials. Given this, I respectfully ask that you do all in your power to keep those dangerous chemicals and materials safely contained within the facility. The legacy of our nuclear weapons program is includes more than just deterrence. There is, as you know, the legacy of nuclear-related illness in civilians ranging from uranium miners to downwinders to nuclear facilities workers, including my neighbor in Taos who installed warheads at LANL and now suffers from cancer. There are also the ubiquitous beryllium disease fliers around town, implying that numerous LANL	Comment noted	NA

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		workers are now suffering from that disease. If we are going to have military work in NM, it is my heartfelt desire that we do so with the utmost care for the safety and health of those people involved in the work as well as those of us who live in our beautiful and extraordinary state.		
225	Gen.	I've known David McCoy for years and honor and respect his work on behalf of all New Mexicans. His views concerning LANL mirror my own and I implore you to respect Mr. McCoy and act on his reservations and recommendations. He represents over 60 % of the people of New Mexico vis a vis LANL related issues concerning safety and health.	Comment noted	NA
226	Gen.	Yo me siento muy preocupada por este asunto de "Desechos Nucleares." Vengo de un pais un el cual este problema no existe. Cuando me traslade a este pais pense que mi salud esta ria major, mayor seguridad, menos contaminantes de los que tiene mi pais, cuando pone basura plastica y desechos en el agua por falta de recursos monetarios para hacerlo de la manera correcta. La situacion aqui es escalofriante e inpredecible. Un potencial mas elevado de riesgo con enfermedades polmona res, cancer, y danos permanents a los habitontes y el medio ambiente. In Latinoamerica tenemos la imagen de USA, como una gran nacion, una potencia, entonces Esta es una actitud inteligente Con tantos especialistas, nadie piensa por lo menos en su propia familia? En mi pais queremos ol major para la nacion, ustedes no? Otra situacion: Estube en Mexico cerca de areas nucleares y peligrosas, pero pude ver muchas senales por millas y millas, marcando y senalando "Ruta de Evacuacion." Tenemos alguna aqui? De verdad cree cada uno de ustedes que estamos o a salvo? NMED esta hacienda lo major nosotros Y New Mexico. I'm very worried about "Nuclear waste." I come from a country where this problem does not exist. When I came to this country I thought my health would be improved, there would be greater security, and less pollution than in my country, which it puts	Comment noted	NA

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		plastic and other wastes in the water due to insufficient resources to do it do the correct way. The situation here is chilling and incomprehensible. There exists a potential of elevated risk of pulmonary disease and cancer doing permanent damage to homes and the environment. In Latin America we have the image of the USA being a great and powerful nation. However, I wonder. There are so many specialists yet no one considers the threat to society. In my country we want the best for our nation. Apparently you don't. Another situation: When I was in Mexico near nuclear plants and other dangerous areas I could see miles and miles of signs indicating an evacuation route. But do we have some here? These signs assist everyone out of danger. NMED must do what is best for the people and the State of New Mexico.		
227	Gen.	I'm a board member of New Mexico Conference of Churches, and we're very concerned about these issues. I'm also a new Citizens Advisory Board member, which oversees the cleanup of LANL, working with the DOE. I came to these hearings to educate myself, and I do have a history of understanding some of these issues and problems, however, not the technical aspects of them. As a citizen, I'm very concerned. I came here to register my concern on the inadequate -- what I see as the inadequate regulation of cleanup at LANL and throughout the complex. It certainly isn't LANL alone. I was reminded of this inadequacy during Mr. Grieggs' testimony this morning regarding the treated effluent being released in outfalls, which still contains tritium, which is a serious contaminant. It's absurd to me that the radionuclides are not regulated by the agencies responsible for overseeing cleanup. I am -- I would like to know the level of the tritium being released into our environment.	Comment noted	NA
228	Gen.	My concern is that in the past five years there has been tremendous research around nano-particle contamination. They are looking at zinc dioxide -- nano-particle zinc in sunscreens, they are looking at titanium dioxide in health-care products, and recognizing that this crosses cellular membrane. So my question is, does the radioactive contamination that we may be exposed to in our water from the Buckman Diversion project cross cellular membrane, and how will it affect fetal development, and increase birth detects, affect autoimmune diseases, premature birth, low birth weight, those types	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		of issues. I'm concerned about how this mix -- how one affects the other and how one may become a catalytic reaction that would cause something to permeate the cell membrane, that if it was not in the mix, and that there is not research for this. When I've asked for research, I'm not even getting research. They are saying they have not looked at research for this. To my knowledge, the water quality standards do not even look at specific needs of infants, of pregnant women, or people that have -- whose autoimmune systems are suppressed in some sort of way. Regarding standards for cleanup for soil contamination, to my knowledge they have not been reviewed, and it's my concern, because, as we know in the past ten years, all standards have been reviewed. We used to be able to smoke in bars, and now it's recognized that in bars that secondhand smoke can affect everybody in the bar. Originally, those standards, you know, we thought they were safe. We've looked at arsenic in lumber. You used to be able to put arsenic-treated lumber in water and that was the accepted standard. Now you can't buy arsenic-treated lumber, because the standards have changed. We're also looking at carbon footprint and that contamination in our air is effecting us globally. I feel, like I say, it's time for a thorough review of -- or here is the research that tells us it is safe for nano-particle contamination in our air at the levels it's at, in our water at the levels it's at, in our food at the levels it's at, and what happens when you get nano-particle contamination in the water and in the air and in your food and you're pregnant, you know, what are the consequences, what are we setting up for future generations. The reproductive organs of an infant are created in the womb, and so we're not only looking at this current generation, but for three generations down the line. And so I want standards that reflect the state-of-the-art biotechnology, looking at epigenetics, how are these levels of radioactivity affecting us. I am concerned about the chemicals and the toxins. We have fish in the river that, you know, we can't eat, and yet they continue to have fishing contests for children, and they won't tell them that they are not supposed to eat the fish. And so with regard to your work on the Buckman Diversion project and the concern about the finding of plutonium in the Buckman Well Number 1, may I show you this		

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		figure? It's from James Bearzi's testimony. I believe it is Exhibit 87. This is new information, and I'd like to share it with you. I know that you're familiar with some of the schematics from the laboratory. I don't understand what a basalt vent is. I'm assuming that that is -- a vent, to me, means there is some sort of channel. It raises the question for me that I did not speak about originally, that in our water quality test in 2006, it was recorded publicly that there was an undetectable detection of plutonium in our drinking water, and the public was noted -- notified six months after the detection of the non-detectable detection. We were presented the information only if you were a land holder, and so if you were a renter, you had to go to the library or you had to seek out the information, and then nobody could answer what is an undetectable detection of plutonium. I mean, it's like what does that mean? If it means at the nano-particle level, then tell us what the standards were. I mean, is this where it came from? I mean, where did the plutonium come from that was at this undetectable/detectable level? So I don't have the understanding of what this would mean, but it's something that I certainly would want to find out more about. If it goes to the well, does it go to the river? What is venting down through this, and how long has it been there, how long has there been a potential threat that we have not been informed of?		
229	Gen.	After many years of attending hearings such as these, witnessing overwhelming public opposition to nuclear weapons production in New Mexico, I'm dismayed that LANL is still under operation. I vehemently oppose approval of all permits in relation to this hearing. It is clear that there is no safe way to dispose of nuclear wastes. Radionuclides have been detected in the Rio Grande's water, now the source of drinking water for Santa Fe. Open pit burns have sent deadly carcinogens into the atmosphere, including radionuclides. And native lands appropriated for nuclear weapons production, testing and waste disposal have become dead zones for centuries to come. After so many years, I've grown somewhat cynical about the hearing process itself, seeing it as a smokescreen created to perpetuate the illusion that the public actually has a say in how the federal government maintains its global empire. I therefore indict and shame both the US federal government and the New Mexico state government for being complicit in this ongoing crime against nature and its people.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		Yet I do believe that we stand a chance of diminishing these crimes by denying this hazardous waste permit which would inhibit LANL's ability to operate. Perhaps some day the NMED will have the courage to deny its operational permit, the voters will vote in a governor who is not so DOE friendly and end New Mexico's status as a nuclear colony of the United States.		
230	Gen.	I was here 21 years ago with many of the same concerns about LANL. As I explained last week, I'm a retired public schoolteacher. I have been in Santa Fe and this area for 40 years. In that time, I've been proud of our ability to be heard as a public. I feel that legislators in the past -- not the recent period, but in the past -- would listen to voters' opinions. I understand there has only been a handful of people coming to speak at this public hearing, and I asked myself, "Why aren't the people that I know" -- and I know, many, many, many, many people -- "Why aren't they coming?" People are intimidated by the cross-examining, which can happen after any individual speaks; and people are losing faith, losing faith in the public process. I don't really understand exactly what's happening here at this public hearing. I am very interested in having the public's opinion a part of this process today. It doesn't seem to me, that in something that concerns my life and the life of my friends and my students and the people here in New Mexico, it doesn't seem that it's right that it's a win or lose process -- Los Alamos wins, the public loses; the public wins, Los Alamos loses. I just don't think that's a real healthy way to go about this. I don't understand why things like these aren't -- when they are so, obviously, two extremely different opinions, I don't understand why things -- more things aren't mediated, and I'm just -- I'm sort of -- I'm appalled, because there are things that are affecting my life; and, for example, if you could read, not just listen to people reading the secret documents that were produced, if you could read those and see those. I actually feel frightened – I could feel intimidated or frightened by these people, but I'm not. I'm a teacher, I'm used to standing up and saying something, you know, and whatever goes, whatever goes, but I'm frightened the way we could be heading right now and the way we are heading politically. It's not a team. It isn't a team. It's the one with the most money, the most experts. Those are the ones that are winning, and that	Comment noted. See the Department's response regarding contractor documents in the document titled General Response to Comments.	Yes

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		frightens me. I hope that you will consider, in your reading, to have some type of a board that looks at these problems, and that people that are supported by the public, like CCNS, is included. I hope that some of the recommendations on that -- on those secret documents, 123 of them, are looked at and included. I would not want your position for anything in the world, and I'm glad that you're doing this and not me. It's very difficult to foresee something that will be a win/win situation.		
231	Gen.	I would like to voice an opinion of what I generally saw since 9:00 this morning in testimonies, or whatever you want to call it, the discussions of the LANL board, the panel, and that is it seems to me as though there is a lack of thoroughness in terms of the testing in the lab. It's probably a hard call to say that, because I'm sure there is a tremendous amount of testing that does go on and has to go on, but, for instance, the seismic problem, the seismic hazard up there, it increased by 50 percent. Why has it been left alone? Why is it not being addressed? Another point today that was made by the woman on the LANL panel, Ms. Vigil, that there was no time to test -- I believe it was the composition of the ash, that there were certain components suspected to be in there, but they didn't have time to test it. Well, why didn't they have time? There should be no such statement at the LANL laboratory facility that there is no such time for testing. Now, that may have to do with the orders from DOE, which, of course, come from clear across the country. They don't live here. They did not experience the Cerro Grande fire, et cetera, et cetera, et cetera. And, also, I'm sure most of the people in Washington, DC, do not have their children gaining clusters of brain tumors from playing outside in the canyons around Los Alamos. So it just seems to me that I would -- I, for one, would like to see more thoroughness in the testing of all of the activity that goes on in the lab. I want to also come -- coming after Anna from CCNS, I want to just say something about the Cerro Grande fire. I was at that meeting in 2000, in July of 2000, after the fire, at the Eldorado Hotel, where there were about 400 people or so, and we got a chance to stand up in the aisles and speak over a microphone, as residents of the area. I asked the LANL panel that day whether or not the burning of plutonium would remove the radioactivity from the	Comment noted. See the Department's response regarding seismic hazards in the document titled General Response to Comments. Regarding the composition of ash that resulted from the Cerro Grande fire, the subject is beyond the scope of the Renewal Permit.	No

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		substance, and they said, "Absolutely not, burning does not ruin plutonium. It continues to go on for 24,000 years." So I sent to the Albuquerque media mounting company for a tape from a news program that I saw on Wednesday, right after the fire -- it was the first time the fire was reported on television, as a matter of fact, and that afternoon, I packed up my animals in my little camper and got out of town, because the smoke plume was predicted to come over the next day. I had seen the broadcast on television that morning of John Brown, standing up in front of the microphone, and professing that there were plutonium particulates -- plutonium and tritium particulates in the smoke plume. Then Barry Ramo came on right after John's talk and advised everyone in the area who was four years old or younger to get out of dodge immediately, because he didn't want the young children to be around that smoke plume, and he also advised anybody with any respiratory problems to get out. I did not have either one of those conditions; however, I got out, because my family has a history of cancer, including my son, who died of cancer at the age of 29. So at that meeting at the Eldorado Hotel, I asked the scientists on the panel, the LANL part of the panel that morning, "Is it true that burning plutonium removes the radioactivity from plutonium?" and they said, "Absolutely not." So I sent to this media for the tape of that news broadcast, and they could find nothing showing John Brown speaking on television that morning. The only thing they could send me, for a $40 tape, was Barry Ramo's talk on that newscast. Now, that says something to me, which is really bad. It's a cover-up. It's an obvious cover-up right there. I think that, combined with the lack of thoroughness, what sounds to me are -- is definitely a lack of thoroughness in the lab's testing of things, I think all of these issues should be addressed as soon as possible.		
232	Gen.	I'm 17 years old, and I'm from the Pueblos of Ohkay Ohwingeh and the Santa Clara Pueblo. I'm a youth coordinator for Honor Our Pueblo Existence, and I'm an S5 NCO at the Espanola Military Academy. I work with public relations. I'm commenting on behalf of myself and the youth of the valley. I am honored to have the opportunity to experience local, state, national and international networking at educational environmental gatherings. I have been involved	Comment noted. See the Department's responses regarding the information repository and public involvement in the document titled General Response to Comments.	Yes

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		with such activities since my childhood. Very few people have had this opportunity to attain and even fewer retain and pass along this knowledge to fellow students. As some may say, they show great interest, which is vital, for one day they will lead the structure of which will keep this community together. I feel these growing minds of the Espanola Valley should have the right to a reliable reference in close proximity and easy accessibility to all students, no matter what their situation, for these actions will affect our future, as there are many people who may not be able to accurately browse and/or comprehend this virtual repository without the hands-on assistance of a trained professional. With my understanding, there won't be very many of them. How can we assure that the students and the peoples will have the same opportunities in reference to acquiring the ability to comprehend and pull the criteria on which this document is based? Everyone's voice has a place. I wrote this poem, it's entitled "Why." Why is a word many times I have heard, a cause, purpose, or reason no matter the season. Do you ever wonder, dream, or think how worse life could be and thus I think and thank God the sun's still gleaming so we may search for life's true meaning, learning the ways of the lands, the mountains, waters, and sands. This will be done, passed along from father to son, mother to daughter. It will spread like fire without water. And what to ask when you come along, someone whose knowledge is surpass? Fire away for what they say will live on with you for days and days. And with that, plant a seed and let it grow, share with the world what you know, and if something isn't right, don't be afraid to stand and fight, share with the world your important insight, for alone we are weak but together we are strong, gathered here to protect Mother Earth from all that is wrong.		
233	Gen.	I'm a resident at Ohkay Owingeh. I'm a tribal member. I have the opportunity to just make a couple of comments. First, during the fire that occurred up in Los Alamos on the mountain, 2000 or so, the -- when that happened, it covered this whole	Comment noted	NA

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		valley with smoke. For seven days, it rained ashes on my house and on my field. That tells you where the open burn ashes are going to land. It's going to be in here. I want to remind the New Mexico Environment Department, it's their job, and it's your responsibility, to keep us safe.		
234	Gen.	Maybe I can give you a tiny bit of an anecdote as to why I'm concerned about this as a civic issue. My wife is related to people we brought over from the Ukraine, and they were living near Chernobyl, and the -- when Chernobyl erupted and melted down over there, they were reflecting back that for so long the experts, so-called, had told them not to worry, not to worry, and it happened. When it happened, they had people with Geiger counters come down, and they were checking their garden and said that you could have radishes from this part, but don't have carrots from this part. That's the reason they left. We have a situation, I think, where we have some of the finest minds in the country, scientists, working at the lab, and for very, very long, they couldn't imagine that this would become an issue. The fact of the matter is it's like a room with two doors. In one room you are getting rid of garbage; the other room, you're bringing in more garbage. So we have a situation where we have to deal with possibilities. The Cerro Grande fire, I think, should have alerted us that Murphy's Law is not abolished. You still have things develop that you didn't plan on, you didn't want. So I do believe that the expert minds – and they are indeed expert -- could reorient themselves towards solving problems. In Chinese, problems sometimes -- the letters are re-altered to make it opportunity. I think this is a real opportunity for us to go forward, but it takes a certain amount of courage and recognition that people have to get a life – a very, very new life -- if they are going to help our community and our states and our nation.	Comment noted	NA
235	Gen.	I'm from San Ildefonso Pueblo. I didn't prepare a speech, and I don't have all the technical terms and information that a lot of the people who are doing the work around this do, but I'm concerned about our children and what we're leaving behind for our children. I'm concerned about our land, our animals. I know that my daughter was born in 2007, and the first time she heard the detonation, the explosion, she started to cry, and it made me really sad, because it's something that	Comment noted	NA

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		so many of us have become used to. And me, it still startles me, and it still startles her. When she asked me -- when she was old enough to ask me, you know, what is that noise, what is that sound, I told her that it's explosives coming from the laboratory. When she asks me why, I can't answer that question; and if it's safe, I can't answer that question, either. I'm concerned that that alone, the noises, the things that we can't see, are affecting our environment, they are affecting our trees, our animals, our wildlife; even the process that things have become -- that used to be around our house, like lizards and snakes, some have become rare and some have grown in abundance. I think these are all things for us to consider and look at and think about when we're thinking about these toxins that have been released into our air. And not only that, but this needs to stop, and this needs to stop now, and not only for our future generations, but also we need to think about what harm we've already done and how we can clean up and how we can make amends with our children, with our earth, and with one another.		
236	Gen.	The information I'm about to impart is not so much to protest anything or -- it's mainly information that was given to me, and I have no idea why it was given to me, but when I saw this forum being presented here, I said, "Well, this is a good place to, you know, divulge what's come my way. There is three items. The first item happened, I think, about a year or so after the Cerro -- Cerro -- that fire. A friend of mine, who lived in Pojoaque, was telling me that after visiting the -- well, the person had a little rough time with money and so forth and went to get food stamps, and at that time -- and it was during the noon hour, and I don't know, you've probably have never been to a Human Service office, but it gets pretty busy down there, and the supervisor was out in the -- helping the workers, and my friend said to the supervisor, "Why are you here, you know, you're a supervisor, you know, you're not supposed to do this kind of work." The supervisor said that there had been a great influx in people seeking food stamps, and the reason was that -- this is what my friend told me --that the high rate of birth defects after the Cerro Grande fire [had caused] the people's welfare had run out and they were now going to the state for food stamps. Of course, I'd never heard anything in the papers about birth defects after the fire, and so, you know, I was a little surprised and saddened. Then maybe a month or two months later, I read an article in the paper that said that	Comment noted. Regarding the effects of the Cerro Grande fire, the subject is beyond the scope of the Renewal Permit.	NA

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		there was no bad or poisonous residue in the air after the Cerro Grande fire, after the fire, but it didn't elude to anybody was protesting it or anybody that had made any comment, it was just sort of a blanket statement, which sort of told me that, "Well, there is some kind of rumors going around, but nobody wanted to talk about it, whatever the rumors were." And then the third incident was -- well, I think it was about a year ago, where I was talking to a person that was on -- more or less on the front line to the fire and told me about the -- the air filters that were put out by the State Environmental Department, and those filters, this person told me -- they still have them up in Los Alamos, they stored them up there and they can be checked. I said, "Oh, you mean" -- and he said, "Oh, yeah, they checked for this and that," and the whole list. And I said, "Well, did they check for radioactivity?" And the person said, "No, they didn't check for radioactivity." The person said, "You could go up there and check it now, because they are still up there." But, you know, like I say, I'm just a person that received this information, I didn't -- I'm not here to pursue that. You people are more qualified to do that kind of thing than I am.		
237	Gen.	I'd just like to also say that I know it's important to think of -- I know I've talked about, you know, the human cost and the human risk of this, and I just also felt like I needed to speak for the land and the animals and the plants. One of the opposing arguments for this is that, well, maybe it's done away from people, but this is a place where people live, and you can't deny how we're connected to where these environmental releases are happening. Our water comes from there. The animals that we still hunt and eat come from there. We make clay for our dishes from there. We gather plant medicines for our kivas from there, from the mountains. It's sad enough that we have to be disconnected from our ancestral sacred mountains, where we've essentially been cut off from generational knowledge by not even having access to these places. I'd just like to take this opportunity to recognize the Jemez Mountains for what they are and what they represent to my communities. I'm from Santa Clara Pueblo, and I feel the need to speak out in defense of our ancestral lands and for the right for the future generations to live in their ancestral lands and knowing that they don't have to fear invisible poisons from anybody and knowing that this is their place where they belong	Comment noted. Regarding the effect of the activities addressed in the Renewal Permit to the land, animals, and plants, *i.e.*, the environment, the Department considers all effects to these receptors and it is principally this reason that the Department denied the Permittees application for open burning, See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		and where they can remain. I know our water is in big danger right now, and our water is everything. If we don't have our water, we can't live here. I'm sure it would be really convenient if everyone had to just move, but it's not right that -- the source of this water is like for everybody here, and not just the people that live next to it, it's like the whole State of New Mexico, you know, one source – there is only like one puddle of water under this land for all of us. It's not -- it's too precious to put in danger for any kind of prediction or any kind of profit. I've also heard that there is a BWX military training that is happening at the labs, and this is concerning to me because it's not a military base. You know, they say they are doing research there, and why are they having military trainings where they have to detonate extra bombs? I have a big issue with having to listen to these bombs being on my back porch, you know. They can't even -- and I know it's a lot to ask, because this is from the same people that will not stop detonation for a week while we have our ceremonies and religious happenings from our community, you know. It's -- we think it would be respectful to at least refrain from doing it at that time, but they still do it. I just think that that's something that's definitely not necessary to be going on. There is plenty of bases where that can take place in a safe way, if it's necessary. So now I'd just like to close with a poem I wrote for a public meeting a couple months back, if that's okay. It kind of just talks about what we've had to go through generationally in having our ancestral lands occupied and having -- having to get born into this kind of time and place where we exist and where now my children are growing up. Growing up I was disconnected, some things were not discussed among people who valued hard work and employment. One-sided silence through years of schooling, I learned about the nuclear age from movies and propaganda and Bradbury field trips, the glorified versions of a history that happened in my own backyard, in our state of Enchantment, pristine open spaces and a population not respected by a higher nation, still living off the land as the industrial age passed them by, only to get thrust into nuclear realization, beneath a mission, urgent and thick with intensity, beneath a shroud of secrecy. I was not yet born the day scientists feared for our sky, thoughts of atmospheric ignition, and that everyone would die. I was not yet born when the Jemez		

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		was taken, homesteaders relocated, not of their volition, uranium miners, on the road to perdition. Beloved mountains, occupied before I could praise them, disconnected from ancestral knowledge, in three generations, clan animals vanished, even as the jobs began to appear, unprotected hired hands from the valley, a job was nothing to fear. It was a welcome exchange in hard times. I wasn't yet born the day silver ash rained down for days, and a plume of poison drifted over state lines. Radioactive fallout, on cisterns of drinking water, on crops and livestock, who all miscarried that year. The people were lied to and went about life as usual, while the truth fled, with bread over their mouths to keep from breathing air they knew was foul, and the world was changed forever. A month later, 80,000 people were killed instantly, justified atrocity named enemy, and the book was closed on Trinity. Even though it was our own citizens who were bombed, children born into an experimental population, with a cancer rate way higher than the average nation, entire families still sick and dying, still crying, for the elders they lost too soon. I was born into military healthcare, mixed blood and desert beauty, free from the shame of colonized blame. My grandfather employed by Sandia, my down-winder grandmothers who birthed babies and taught me songs, while washing tainted laundry and making pots from local clay. I wonder now, can earth decay? Eating the elk my uncles brought down, and fire smoke from trees that drank from discarded waste placed anyplace. Today my daughters are born into single car driver twice daily parades, dependence on industrial weapons, economic charades, the sounds of bombs exploding as we pray to the sun in mornings. Will my cornmeal prayers protect them as they play in ditches, carrying water from a source three miles away from tritium releases? What did my oldest get exposed to? As I breathed in smoke from a tech area burned three times over. What kind of poison can penetrate the walls of my womb? What stories were silenced, and why and from whom? The truth must be told from the people who lived it, who dwell in this place that houses our spirit. Respectfully, I pray, for past, present and future souls to be at peace someday, for clean earth, air and water, so my children can play, splashing and laughing as we tend to our gardens beneath the living gaze of our sacred mountains, free of fear from invisible poison, free to hear, undisturbed and clear, the birds sing in the morning, as we continue to question and speak our points of view, let us share the stories anew that have never been told and release the pain not even a century old. No longer shamed by accusations of ignorance, let our diverse voices be our deliverance. No breath here is unimportant. We are free to pray, each in our own way, for justice, strong leaders, and supportive institutions, a		

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		foundation for our expectations, as we welcome in this time of healing for the good of all future generations.		
238	Gen.	This is a comment from a Chelsea Valerie Kathryn Colon and me. We live downriver of Los Alamos and get 20 percent of our tap water from the Rio Grande. We're concerned about the communities who are downwind from Los Alamos National Laboratory. And we support the denial of LANL's permit applications for any more polluting of our State of New Mexico.	Comment noted	NA
239	Gen.	I'm from the organization Think Outside the Bomb. We're a large youth network nationwide that opposes -- or that's antinuclear. And I'd just like to go on record saying that I'd like a denial of the permit because Los Alamos -- its waste is affecting the communities specifically around Los Alamos, like Espanola and the pueblos, and -- and it's also trickling down and coming into Albuquerque. And I feel that it's a huge health hazard and that we need to start protecting our state instead of polluting it with radiation.	Comment noted	NA
240	Gen.	I am very worried about the issue of nuclear waste. I come from a country where this problem does not exist. When I came to this country, I thought that my health would be better, that there would be more safety, less contaminants of the ones that my country has when they place plastic trash and waste in the water, because we don't have the financial resources to do it in the correct way. The situation here is very scary and unpredictable, with the higher risk of potential with diseases of the lungs with cancer and permanent damage to the inhabitants and to the environment. In Latin America, we have the image of the USA as a great nation, a world power. Then is this an intelligent attitude? With so many specialists, nobody thinks at least about their own family. In my country, we want the best for the nation. Don't you? Another situation, I was in Mexico, near nuclear areas, and other dangerous areas, but I could see that there were a lot of signs for miles and miles stating "Evacuation Route." Do we have one here? Do you truly think that we are safer here? Is NMED doing the best for us and for New Mexico?	Comment noted	NA

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241	Gen.	I'm a teacher here in town [Albuquerque]. The DOE lost my trust a long time ago. I used to live by the Fernald -- worked by the Fernald nuclear plant, and lived there, too, actually. And my students started getting cancer. So I do not trust the DOE. And, you know, I watched a six-year-old child go through hell with a brain tumor and a nine-year-old child go through hell with leukemia. The thing that I want to say is that I'm rapidly losing trust with the NMED. You know, we have radionuclides in the Rio Grande now, and our water -- our drinking water is coming through the Rio Grande. So I wish I could avoid bathing, showering and drinking the water that we have, but I don't have a choice. If I had an infant, I know I would move out of town. We now have jet fuel underneath Bullhead Park, where my husband and I walk a couple of times a week. We see the wells cropping up all over the place there. I don't understand why we would even give a permit -- a hazardous waste permit to Los Alamos National Laboratories. If we can't keep the radionuclides out of the Rio Grande and we can't keep the jet fuel out of our water, why would we allow more risky things to happen here in this state? I think that that permit should be denied. I think there should be total transparency, and I think the NMED should do its homework before it approves a permit. And I don't think the permit should be approved. And I don't think the NMED has been doing its homework.	Comment noted. Regarding radionuclides, though the Department does have jurisdiction over the hazardous component of mixed wastes, the Department has no regulatory authority over the radioactive component or radionuclides in general.	NA
242	Gen.	I got a call this afternoon that this hearing was happening. I had -- had no knowledge of it. And I went in to Sarah Gustavus, who is the All Things Considered host on KUNM, and said, "Do you know that there's a hearing happening and they're talking about burning all of this hazardous waste from -- from" – I almost said Three Mile Island, because that's where I come from -- but "from Los Alamos National Labs?" And she said, "Oh, they wouldn't be allowed to do that. They can't open burn hazardous materials." Of course, she's from Texas and has lived in the Pacific Northwest so maybe she's not aware of how little the populous and the environment here is actually protected. So she thought it was an unthinkable thing. "Of course not, they won't allow that." So I am coming here today as a citizen, as someone who would like to retire in New Mexico. I'm here as someone who is the mother of this beautiful young woman who got up and spoke. And I would like her to stay in New Mexico. And if I ever have	Comment noted	NA

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		grandchildren, I would like them to stay in New Mexico. But it has to be a livable place. And I hope that you have children and grandchildren so that you want it to be a livable place for them, as well, and for all of New Mexicans. And as I said, I -- I grew up around Three Mile Island. I remember going to the observation place across the river, when they were building the plant. I was dating at the time, and we went there on a date. Crazy place to go on a date. But they said, "The chances of an accident here" -- because my date asked, What's the chance of an accident?" They said are four -- one in four trillion. And March 29th, 1979, we had that accident. So that one in four trillion happened. And I speak to you from a personal standpoint, because my relatives on my father's side are all Mennonites, they all lived within a 10-mile radius of Three Mile Island. None of them ever smoked cigarettes. I think that they were probably the original subscribers to Prevention Magazine. They ate the food they grew. They didn't use chemicals. They ended up with the most hideous cancers that you can imagine. My cousin, his first child was born with all of his major organs outside his body. He was in the neonatal intensive care unit of Hershey Medical Center for three months while they pieced him back together. He did survive. The nurse there told me that there were many, many incidents of children born with their major organs outside their body, much higher than the national average, much, much higher. They got all sorts of cancers. And like I said, never once smoked a cigarette in their lives, didn't use chemicals. And all of this stuff is being hushed. I say please, please, for the sake of the people here, who bother to buy organic food and they bother to buy bottled water, they could -- you could still allow them to have their health and their lives and their children's lives and their grandchildren's lives destroyed. Put a lid on this nuclear industry; make them do the right thing by our people, please.		
243	Gen.	I first arrived in Albuquerque in 1939, grew up there, graduated from high school, went off to engage in the academic world, Stanford, Georgetown, US Naval Academy, State University of New Mexico, did research for George Washington University, chairman of a large Middle-Eastern/African language department for the Defense Languages Institute. I'm not saying this to boast, but just to qualify my type of opinion. All of my teaching research and chairmanship jobs were by invitation, not application. I came back to Albuquerque after my teaching career in 1977, which is almost as old as I am	Comment noted	NA

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		now. I've been back here in Albuquerque and New Mexico since 1977. I am mainly Caucasian, but part Native American. I identify with New Mexico. I tend to have relatively little patience with -- I should also mention my wife and I were employed by the CIA in Europe in the '60s, in Spain. So I've had contact -- I was there at the Universidad de Madrid for two years in connection with that activity. I am deeply concerned with the state of buried, dangerous waste materials in connection with Los Alamos and Sandia Laboratories, and I -- especially with you people, I know I don't need to review details with people who know, undoubtedly, vastly more about the details of this than I do. But, in general, I'll just say that I agree with the type of concerns that have been expressed by people, such as David McCoy, whom I barely know. I met him, I talked with him, I didn't even -- I hadn't seen him before a couple of days ago. I am very, very concerned about the -- what I perceive as inadequate preparation, oversight, examination; what I perceive as -- I tend to speak carefully, because, first of all, I have a PhD in linguistics, so I tend to be language aware, but what I perceive as trickery on the part of people whose vested interests tend to minimize the -- what seemed to me to be clear dangers of the way waste has been handled, is being handled, and the dangers to aquifers, et cetera, the kinds of things that I'm sure have been talked about before here and all of you are much more familiar with than I am in detail.		
244	Gen.	I'm an occupational therapist. I work for New Vistas, which works with our community's children under three that have developmental disabilities. I spoke earlier about concerns, and I neglected to voice some of the concerns. I'm a spokesperson for over 300 parents with children with special needs, representing doctors, nurses, health practitioners, therapists, early interventionists. We submitted our petition with our concerns that were presented to the Buckman Diversion project. The area that I did not go in detail about is our concern about the area directly upstream from the Buckman Diversion project, it's less than a hundred yards away, and there is -- plutonium has been detected by the New Mexico Environmental Department, and we've been told that the -- that there is plutonium in it, as well as other heavy metals. We are told that we do not have to be concerned, because these levels are at Superfund cleanup levels, so that they already meet Superfund cleanup levels. Our concern is that the standards for Superfund cleanup levels are not current, to our	Comment noted. Regarding radionuclides, though the Department does have jurisdiction over the hazardous component of mixed wastes, the Department has no regulatory authority over the radioactive component or radionuclides in general.	NA

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		present research, for epidemic research; and looking at what now particle contamination may do -- affect infertility, premature birth, birth defects, autism -- we feel like this needs to be reviewed. We consider the plutonium and the heavy metals that are buried three-foot underground, less than a hundred yards away from our public water source, a potential threat, if new research is not reviewed. We would like the most recent research for nano-particle contamination to be reviewed. We feel like this is an off-site contamination site. These are materials that were supposed to be covered under the hazardous waste containment laws. They are off site. We are being told, "Don't worry." Well, we're in a state where we need to worry, because the levels that were again present ten years ago for smoking have changed. The levels for contamination for arsenic in treated lumber have changed. We are now looking at a CO2 footprint that was not heard of when the Superfund contamination levels were made. I would hope that we will be looking at a nuclear footprint standard that will be changing as research changes, and we ask that that be reviewed.		
245	Gen.	I have worked as a library science professor, librarian, and estate consultant in the Department of Education for many years, and I'm now retired. I'm just speaking personally that I think – I would echo the sentiments of the previous speaker just before me, that not enough careful thought is made about the future of this place and the population who lives here. I have witnessed many people in the area around Los Alamos having cancer, and I'm also a cancer survivor. I feel like it should be the highest priority, and the safety of this population should take priority over what I feel are arbitrary decisions related to nuclear safety.	Comment noted	NA
246	Gen.	For several years, I've been trying to understand an aspect of plutonium chemistry that I haven't quite been able to fully wrap my brain around. In the literature, plutonium oxide, PuO2, in the four-plus oxidation state, is the stable oxidation state, and it's been generally known to not be very soluble in water. In my research, I discovered some articles published in Science Magazine since 2000 that indicate that there is a species of plutonium oxide, PU, that's a six-positive oxidation state that is actually soluble in water. I would like to read for the record the abstracts of three of those articles published in Science Magazine and then I would like to make a comment.	Comment noted. Regarding radionuclides, though the Department does have jurisdiction over the hazardous component of mixed wastes, the Department has no regulatory authority over the radioactive component or radionuclides in	NA

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		This is from Science Magazine, January 14th, 2000. The title is "Plutonium Chemistry: Toward the End of Plutonium PuO2's Supremacy?" by Charles Madic. "Plutonium oxide (PuO2) has long been thought to be the most stable plutonium oxide under oxidizing conditions. Its stability has been a key factor in safety considerations for military and civilian uses of plutonium and for long-term storage of nuclear materials. A report by Haschke, et al., shows that PuO2 is metastable and can be oxidized to PuO2+x, with more than 25 percent of plutonium ions oxidized to the more mobile Pu(VI) oxidation state. The results have implications for both military and civilian applications, for the long-term storage of plutonium, and for the geological disposal of nuclear wastes." The second one is published 14 January 2000, also, and it is from Science, and it's "Reaction of Plutonium Dioxide with Water: Formation and Properties of PuO2+x," by John Haschke, Tom Allen and Luis Morales. "Results show that PuO2+x, a high-composition" -- and this is X lesser than or equal to 0.27 -- "phase containing Pu (VI) is the stable binary oxide in air. This nonstoichiometric oxide forms by reaction of dioxide with water and by water-catalyzed reaction of dioxide with oxygen. The PuO2 plus H2O reaction rate is 2.27 nanomoles per meter squared per hour at 25 degrees centigrade; the activation energy at 25 degrees to 350 degrees C is 39 kilojoules per mole. Slow kinetics and a low lattice parameter composition dependence for fluorite-related PuO2+x are consistent with a failure to observe the phase in earlier studies. Perplexing aspects of plutonium oxide chemistry can now be explained." And the final one that I would like to read comes from October, 2006, in Science. It's called "Colloid Transport of Plutonium in the Far-Field of the Mayak Production Association, Russia." There are a number of authors for this. It says, "Sorption of actinides, particularly plutonium, onto submicrometer-sized colloids increase their mobility, but these plutonium colloids are difficult to detect in the far-field. We identified actinides on colloids in the groundwater from the Mayak Production Association, Urals, Russia; at the source, the plutonium activity is 1,000 becquerels per liter. Plutonium activities are still 0.16 becquerels per liter at a distance of three kilometers, where 70 to 90 mole percent of the plutonium is sorbed onto colloids, confirming that colloids are responsible for the long distance transport of plutonium. Nano-secondary ion mass spectrometry elemental maps reveal that	general. LANL and the Department have been aware of the possibility for colloid-facilitated transport of plutonium, and of the potential for fast movement of the colloid-bound fraction of plutonium downgradient from its sources. In order to detect and monitor both slow- and fast-moving contaminants, the groundwater monitoring network at LANL incorporates monitoring wells that are located at different distances from known or potential sources of contamination.	

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		amorphous iron oxide colloids adsorb Pu(IV) hydroxides or carbonates along with uranium carbonates. There are a number of other pieces in the literature that refer to colloid-facilitated contaminant transport, and there is even quite a long piece from the Savannah River site discovery of new plutonium chemistry and its potential effect on low-level waste disposal at SRS. I read those because I want to make a point regarding detection, and the ability of Los Alamos National Laboratory and NMED to assure the public that they know all they need to know, or that they know the latest and the most about the nature of these contaminants and their ability to migrate in the environment. For example, if the Buckman Diversion is going to use flocculaters to take out, for example, other actinides or plutoniums that would bind to soil particles, that would be fantastic, but if there is a certain percentage of this that become soluble in water and is attached to micro-colloids, it seems that the detection and the cleaning of -- out of those contaminants might be very expensive, which brings me to the point that the ability to -- the ability to detect these very small quantities is expensive, and I don't think it's within the reach of a municipality or community to be able to detect these small quantities. So in a sense, the assurance that these levels are safe has to be taken on faith. I have great concern about this, because of the known contamination of the silts behind the Cochiti Dam, the implications for that in the long-term future to people downstream, for agriculture, for perhaps when the dam ceases to work the way it's supposed to, and those sediments that are building up get exposed to the air and, therefore, are free to be transported in the air. I would like to emphasize, then, that something needs to be done to address the issue of the detection of very small quantities of these substances, and even understanding the level to which they exist, if it's not widely known that there is this colloid transport mechanism and that it could be responsible for transporting these radionuclides long distances from their source. I would like to see the NMED work with LANL to assure the public that these things are taken into consideration.		
247	Gen.	We're a victim of the Rio Grande -- the Cerro Grande fire ten years ago. Since then, I've	Comment noted.	No

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		been hoping that maybe the EPA, or whoever agency, could do some vital statistics, because you always do some ground, air, water, but never the animals and the humans, and, unfortunately, all around me in the mountain, a lot of people are getting sick, a lot of thyroid problems, a lot of cancer. You have a pretty stable population around Los Alamos, i.e., the pueblos, the people stay there for years, they don't move, so they could be a good control population compared to the rest. I mean, I know that in the area that people move. I'm curious to know what to do to get some kind of movement towards vital statistics of the area, to know exactly why so many people have thyroid problems, cancer problems, and before we go and burn some more or add some more. The recent hearing where the Center for Disease Control told us that Los Alamos -- or its existence polluted more than all the nuclear plants in America put together. It doesn't take too many heads to realize that maybe enough is enough, and that we don't need to be spewed anymore, whether it's radioactive or not radioactive. Not only that, but it seems to me that being on the side of a volcano, we don't want to have the Gulf of Mexico happening. I think not very long ago, there was a – the front page of the papers was saying that Los Alamos could be in deep trouble if there was an earthquake, and I know there is about 300 faults underneath Los Alamos. So you're talking about all the details of those wells, all you need is a little bit of shaking and all your monitoring will be obsolete. It will be like when the Cerro Grande fire happened and the ashes covered the monitoring so you couldn't see or know what was in the air. I mean, those are the things that – what happened ten years ago is not going to be forgotten. As a mother, I had to tell my children that maybe they should think about taking their possessions, because we may not ever be able to come back if the fire has been coming too close. Personally, I managed to -- I mean, I was part of a class, a video class, and partook in making two movies. One was about the safety of Los Alamos. It was paid for and organized by Johnson Controls at the time. And then we did another one the year after, and that was right after the fire. The teacher that did that movie with me is now dead from thyroid complication. And I feel like we need somebody to stand up and say, "Where are those vital statistics?" Well, could we have some vital statistics done about the area? I mean, how much does it	Regarding radionuclides, though the Department does have jurisdiction over the hazardous component of mixed wastes, the Department has no regulatory authority over the radioactive component or radionuclides in general. Regarding seismic activity, see the Department's response regarding the subject in the document titled General Response to Comments.	

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		cost?		
248	Gen.	I'm on the board of Concerned Citizens for Nuclear Safety and retired from teaching at St. John's College, Santa Fe. St. John's is a nonsectarian liberal arts college that has no departments and no academic majors. The faculty is committed to teaching across the curriculum, and my background has a bearing on my comments. This is the first public hearing I've attended on hazardous waste permits. Over these weeks, I've been struck by the way the LANL and NMED concerns fall into areas of specialization. On occasion, we've heard the NGOs pose what seem like reasonable questions, only to be told, "Oh, you should have asked that question of the expert who gave the testimony yesterday." It's true that the last time we met, Mr. Bearzi returned and replied to some of those questions, but my point about specialized territory remains and poses a significant challenge. I suppose it is natural, during the 21 years since there has been a public hearing on the hazardous waste permit, that a labyrinth, like the archeology of an old culture, has developed, with layer upon layer of efforts undertaken and abandoned, regulations modified, and results in some critical areas, groundwater among them, too often unreliable. Someone really needs not only to see and to know the whole picture -- I'm sure there are people who do that -- but needs to take responsibility for communicating the whole picture. A public hearing like this is a hallmark of our democracy, and what will keep our democracy strong is when the citizens are educated and can participate in their government. If specialized knowledge marks off its domains so sharply that it's difficult to grasp the whole picture, you get a fragmented world of experts that is insulated against citizen education and participation. Specialized knowledge is absolutely essential, of course, but it must not shield institutions from citizen inquiry. The information repository created to serve as a resource for downstream and downwind communities is the first step in addressing this problem. I would add one thing to it, which is an intelligible overview of the hazardous waste system. Real transparency goes beyond releasing secret documents, to offer a context in which to understand them. I would respectfully ask that LANL and NMED prepare an introduction to the administrative record, a kind of reader's guide or navigational tool. In my mind, this	Comment noted. See the Department's responses regarding the information repository and contractor documents in the document titled General Response to Comments.	Yes

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		depicts, in an abbreviated form, the state of hazardous waste regulations at LANL. It pieces together the scientific information and brings it into the domain of a common language, recognizing that it is to everyone's benefit for the material to be not simply accessible but intellectually accessible. With such a tool, students of this particular time segment of hazardous waste operations at LANL have a solid footing for their studies.		
249	Gen.	I'm a writer. I've been doing research about issues related to nuclear weapons for many years now. I've been at a number of these hearings. For me, it's a heartbreaking experience to witness the labor, the expense, the struggle, the recriminations, the whole lot of it that's going on over these issues, which are very real and very serious ones. The 600-pound gorilla in the room is an atomic bomb. The reason why we're having these problems -- the reason why we're dealing with radioactive contamination, contamination of hazardous waste, is because Los Alamos was the first to produce an atomic weapon, and it continues to be involved in atomic weapons production. The waste from these years, as you have heard from everyone on all sides of the issue, is enormous, and there doesn't seem to be a stringent enough policy, enough money, enough direction from the federal government, enough consensus, to get rid of this stuff. So for me, you know, I find it really heartbreaking. So I'd just like to say that it's about time we address the source of the problem. If Henry Kissinger thinks that it's time to get rid of nuclear weapons, then, certainly, we could agree with that. It would be really nice to see all the energy in this room directed to addressing the source of the issue, which are these ridiculous useless weapons that have been hanging over us for 65 years and causing all of this stress, cancer, and, you know, acrimony amongst us. It's time for us to get it together and come together and really solve the problem at its source, and finally to make sure that there is enough money to really clean up this mess correctly and restore the environment to how it was 65 years ago.	Comment noted	NA
250	Gen.	My personal and public comment is based on my own experience with water, and as the wonderful expression of the Spanish goes (speaks in Spanish) without water there is no life. The need to keep our regional water systems clean and pure is of the utmost importance. I've been a resident in five different states in my lifetime, from New York to	Comment noted	NA

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		Pennsylvania, Colorado, Texas and New Mexico; and in each state, I've been quite aware of the problems of hazardous waste threatening municipal water systems. I am not an engineer, I'm not a hydraulics expert, I'm not a scientist, but I am a very concerned public -- private citizen, who is very concerned about this public issue. I do hope that the situation will be very, very carefully looked into, and that the labs will act in a manner in accordance with our protection and with the secure -- securing of the hazardous waste that apparently, by the commission's own recognizance, is already seeping into the Rio Grande.		
251	Gen.	I am reading a letter [dated April 26th] from our interim director, Jim Baird. I wish to speak out in opposition to awarding Los Alamos National Labs a waste permit for the open air burning of dangerous wastes and the continued systematic spoilage of our land, water and air in this ancient and beautiful land. For 17 years, I worked with the Ghost Ranch National Conference Center. From 2000 through 2009, I served as the director of program and was charged with planning and staffing more than 300 educational programs each year. Before Ghost Ranch was given to the church, it was owned by Arthur and Phoebe Pack. Arthur was an environmentalist who helped repopulate the high desert with several species of animals and who worked tirelessly for clean air and water. During the early 1940s, families would arrive from 'the mountain,' Los Alamos, to stay at the dude ranch, and it was only after the war that Arthur discovered that during that time the lab was conducting dangerous tests on what would later be called the atom bomb. Therefore, when Arthur Pack made a gift of his beloved ranch, he also gave a mission. 'This land must be a land of peace and justice, not war and destruction. This land is God's creation, and we must be stewards, not its destroyers.' That was the mission under which I worked and made programming decisions. It was my privilege to work with our neighbors, including Tewa Women United.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		Through this dedicated group of Native women, I discovered the extent of the tragic history of waste from" -- again, in quotes -- "'the mountain,' the contamination of the waters that has killed the fish, created unsafe drinking water, spoiled the canyons, and made inaccessible the ancient sacred places. As I learned more about the Los Alamos legacy, I discovered that Arthur Pack was only beginning to see that legacy. He witnessed the immediate destruction caused by the powerful bombs that destroyed Hiroshima and Nagasaki. He did not live long enough to see the long-term destruction, every bit as powerful and destructive as the ball of fire over a city, the slow and insidious destruction by contamination of our land, water and air. Approximately 21 million cubic feet of hazardous, mixed hazardous and radioactive waste generated from nuclear weapons production has been buried at LANL legacy waste dumps all across the Los Alamos mesas. Now a permit is being sought to continue open burning, that has been proven to release toxins into the air. Although New Mexico citizens continue to call for LANL to cease using our air and our water to dispose of these dangerous chemicals, their voices have gone unheeded by an agency that continues to act with impunity and privilege. The time to stop this process is now. As an organization representing more than 600,000 citizen Christians in this state, it is often called upon as a voice of concern and -- as a voice -- to voice the concern and the needs of the voiceless. In this case, many voices, beginning with those of our Native American sisters and brothers, have been raised eloquently through the years. What is missing is the will to act, to step forward as a state, and not permit these activities to continue. I urge you to deny LANL's permit application and to strongly monitor their future activities. Signed Jim K. Baird, Jr., Interim Executive Director, New Mexico Conference of		

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		Churches."		
252	Gen.	After we finished reading sections of the documents that have been kept secret for up to 10 years, we prepared sections for people to read of a hotline report from the EPA's Office of Inspector General, titled *Region 6 Needs to Improve Oversight Practices*, dated April 14, 2010, which we obviously received after this hearing had begun. In anticipation that some of these pages would be read, I gave the court reporter a copy of the entire document, and also a copy to you, Your Honor, for your convenience as pages were read, because it had not yet been introduced into the record. It turned out that citizens who came for public comment since then have prepared their own statements, and thus these pages were not read into the record. So I highlighted in a copy of the full document those parts that we had intended to read, and I would like to submit this copy with the pertinent parts highlighted. We respectfully request that Your Honor take administrative notice of this serious report from the Office of Inspector General. And in closing, I thank you, Judge Alarid, for your patient listening to citizens' comments during this long hearing. I pray that the Holy Spirit guides you as you review the mountain of documents and make your recommendations.	Comment noted	Yes
253	Gen.	Representing the legislative advocate for the New Mexico Conference of Churches – [i]n 2007, after being approached by Faithful Security: The National Religious Partnership on Nuclear Weapons Danger, the New Mexico Conference of Churches board of directors adopted nonproliferation of nuclear weapons and waste as one of its top priorities. Since then we have worked closely with the interested parties who have participated in this hearing on behalf of the people of New Mexico, especially Concerned Citizens for Nuclear Safety and HOPE, Honor Our Pueblo Existence. I would like to take this opportunity to express our appreciation to Bob Gilkeson, Don Hancock, Scott Kovac, Dave McCoy, Marian Naranjo and Joni Arends for the extraordinary service they and their organizations provide to all of us. We are deeply grateful for your brilliant and effective work. I am reminded of a refrain from a Bob Dylan song; Well, it may be the devil or it may be the Lord, but you're gonna serve	Comment noted. See the Department's responses regarding regulated units/alternative requirements, groundwater protection, open burning, and the information repository in the document titled General Response to Comments.	No

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		somebody. Indeed, we're all gonna serve somebody. Clearly, these six and their organizations serve people rather than profits, and therefore serve in the best interests of God's creatures and creation. Which brings us to the issue of profits - We understand that the Los Alamos National Laboratory is currently operated by for-profit corporations that are committed to protecting and increasing those profits. That is the nature of for-profit corporations. However, we are witnessing the devastating consequences of allowing such corporations to compromise safety standards, most notably the decision by British Petroleum to not install a turnoff valve on their oil rig in the Gulf of Mexico, presumably to save $500,000. Their decision was supported by the regulatory agencies at the time, persuaded by BP that public concerns were unwarranted. The damage inflicted by LANL since 1943 on the environment and surrounding communities of New Mexico is not so dramatic, but it is arguably even more insidious. Only 11 lives have tragically been lost in the latest oil rig explosion in the Gulf of Mexico. There is, however, reliable documentation that shows the alarming number of cancer and autoimmune deaths in counties surrounding LANL and the Trinity site where an estimated 19,000 women, men and children were living when the first atomic bomb was detonated in 1945. Science can be manipulated to support just about any position one wishes, as can theology. Therefore, we are not persuaded by LANL's testimony that open burning is safe any more than we are persuaded by Philip Morris that secondhand smoke from cigarettes is safe for those downwind. We are not persuaded that our groundwater is safe from the 21 million cubic feet of radioactive, hazardous and toxic waste buried in unlined pits, trenches and shafts in and around Pajarito Plateau. We are inclined to trust Dr. Barcelona's testimony that the monitoring wells are ineffective and that LANL needs to start over. We are not persuaded that the physical repository at Northern College is unnecessary and continue to believe that it is a reasonable and affordable request. We trust that LANL will consider it a worthy investment and offer it as a gift to the community that has suffered so much for so long by living in the shadow of the lab. In the event that the NMED draft hazardous waste permit is compromised by the efforts		

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		of the applicant, the New Mexico Conference of Churches will continue to work with the interested parties until health and safety regulations are put in place at LANL and cleanup is complete. We do not share the opinion of some that New Mexico and the world would be better off if the Los Alamos National Laboratory was shut down. We believe that the brilliant minds and expertise at LANL have a vital role to play in achieving our vision for a nuclear weapons-free world. This is a vision shared by a growing number of citizens, government officials, national and world leaders, people of faith and people of conscience. On September 21st, 2009, the National Council of Churches issued a statement entitled *Nuclear Disarmament: The Time is Now*. I will provide a copy of that resolution and a copy of the spring, 2009, issue of *Reflections*, published by the Yale Divinity School, entitled *The Fire Next Time: Faith and the Future of Nuclear Weapons*. I would share a brief quote from that document. > It is understandable that conventional wisdom would dictate that this is not the time for the United States to eliminate its nuclear shield. Rather, we should maintain a strong nuclear arsenal as a deterrent to attack. This reasoning breaks down for a number of reasons. > As Jonathan Granoff (president of the Global Security Institute) puts it, 'Nuclear weapons are of no value against terrorists, they're suicidal to use against a country that has them, and it's patently immoral to use them against a country that doesn't have them. So why do we have them?' > We cannot compel the rest of human kind to do our will based solely on the sheer magnitude of our military power." I would like to close on a lighter and more positive note from yet another song, this time from the song Imagine, composed by John Lennon. > Imagine that LANL stops producing and designing new nuclear weapons and commits their collective intellect and resources to leading the global campaign for nuclear disarmament, a goal that will take decades of work and generate profits, no doubt. > Imagine that instead of working to defend questionable safety practices, LANL commits itself to designing the highest safety standards and embarks on research		

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		into the handling and storage of nuclear waste and demonstrates its efficacy by using it to restore the Pajarito Plateau. Imagine that instead of opposing the physical repository at Northern College, LANL becomes its benefactor and helps to educate the next generation of scientists and technicians dedicated to nuclear disarmament, cleanup and restorative justice. Imagine if the history of LANL became a new chapter in our history books read by our children's children and their children for your decision to end your 65 years of service to weapons of death, and in the interests of national security, turn your efforts to disarming, containing, controlling and eliminating every one of the thousands and thousands of nuclear warheads that are scattered around the globe before one of them falls into the hands of a terrorist organization. Imagine if the staff of LANL became the first national laboratory to win the Nobel Peace Prize for its contribution to achieving a vision of a nuclear weapons-free world.		
254	Gen.	I am writing to express my support for issuing LANL a Hazardous Waste Permit. I believe the laboratory can conduct its national security work and protect the NM environment and citizens.	Comment noted	NA
255	Gen.	My stance on this issue is for the laboratory, for the DOE. And the reason for that is because there's inconclusive proof of any kind of detriment to the -- any kind of -- by the burn, open burn, of whatever it's called, waste or not, limited waste, to the public. You can take a look at any kind of an event that happened throughout the country or throughout the world, and -- and cannot be linked to any cancer or anything like that, any kind of disease or malfunction of the body. And I believe that the laboratory is saying that even though there will be slight elevations in whatever, the amounts will be slight. There are natural variations in the radiation or any other kind of variations in the atmosphere and on earth throughout time, have been and always will be. And I truly do not believe there should be any limit set to the laboratories in the sense of what they need to do. And -- and the reason they are limited in disclosing any details about anything like that is in terms of national security, because public is vulnerable to those things, and those who do not need to know things is for the benefit of the country as a whole, because elements can be vulnerable, the public can be vulnerable because	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		they have information that they cannot keep to themselves. So I understand the nature of these proceedings to -- you know, to give information out only as is applied directly and not to -- not to have detriment to the national security in any other way to the country as a whole. But concerning the -- I believe this hearing is about the open burn issue and the permit for it. I believe the nature of the waste is -- although some people might consider is a terrible thing, it is not. It is a very minimal thing. And the elevations on and off in -- in whatever the – consider the elements will not be insignificant or will not signify any kind of risk to population, or they will never be proven because they don't exist to any kind of disease or cancer or anything like that. Radiation in this area has long existed for many millions of years, and in many cases, it has been much greater than people can imagine, whatever. And I just question the whole validity of the opposition to this permit.		
256	Gen.	I just want to briefly comment, in a nondestructible way, about the public's resistance to allowing the permit here to go through. And as I have observed, most of their questions directed to the personnel, the people from the labs, were in a sense -- their base was in terms of helping those who asked those questions to understand -- to help them understand better the policies or the law that they were asking -- that they were asking questions about. So, I feel these proceedings are more of an informational thing for those five individuals who are in the front row on the left and I don't believe it's the job of anybody to be educated in the proceedings to the full extent, but that should have been the homework of those who asked those questions. I feel those who are asking those questions do not understand at all in their entirety how -- what -- if there are any issues at all, and the policies, I don't feel they really understand that, although they call themselves experts.	Comment noted	NA
257	Gen.	I just want to say a few points, because I've heard all the testimony -- I mean, the opinions of the public today. I'll try and make this short, in general, that -- well, I'll just speak about what the last person said. The actual effects of -- the perceived actual effects of -- on tissues, such as organs, that the lady here summarized, are inconclusive, because the transport mechanism of the -- is inconclusive, if it is even responsible in promoting the -- or having any effect on cellular	Comment noted	NA

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		structure, or the cellular components within an organism, or within -- and within any organ. It's inconclusive, because the -- the molecule – the receptor that binds to -- that received the – that receives -- that supposedly receives the chemicals in question, it's inconclusive of what mechanism actually, if at all, transports any kind of chemicals in question to the cell or if it has any effect on the body. But in any sense, that's all about that. I just wanted to say that most of the chemicals in question that -- are also inconclusive, that they actually cause any detrimental effect to the body, because all these chemicals, if they are called -- or radiation, they contain an ash or a natural – most of them are in natural forms in the soil and have been there for a long time before any kind of atomic development. I have here documents -- basic stuff I looked up on Wikipedia, it's all there, it's not classified or declassified, it's all available on-line, you can look at any on-line encyclopedia. Okay? And -- and in terms of radiation or any kind of radiation, it's inherent to -- to the -- to this body -- to the earth and outside the earth, the sun, and actually the radiation in question is the -- also the -- what people are worried about is the alpha radiation that many people commented on. It's part of a helium molecule that is present in the atmosphere. Helium is natural gas that is required, and the radiation is part of the process of the helium atom -- the natural process of a helium atom. So I'm -- these are just basic facts that are available on-line, Google, an encyclopedia, or Wikipedia, that anyone can access. Even a child can look at that. So -- and in terms of comments and participation of the public, I looked on your website, the New Mexico state website, and there are thousands of comments posted on your website with all kinds of documents. Basically, they all say the same thing and -- all the comments say the same thing, and leading me to the conclusion that there is no basic understanding of basic processes.		
258	Gen.	I live in Los Alamos and have worked as a scientist at Los Alamos National Laboratory since 1986. I am not a spokesman for the lab. This is a statement of my own personal knowledge and opinion. At the April 13th hearing at Ohkay Ohwingeh Pueblo, I made a statement. I wish to add to that statement today. At that hearing, I said that the work done for our national security at LANL over the past 65 years has resulted in undeniable damage to the	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

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		environment of Los Alamos and surrounding areas, and this damage must be repaired. As a citizen of New Mexico and a candidate for New Mexico House of Representatives, District 43, I strongly support the New Mexico Environment Department's responsibility to regulate the cleanup of past environmental damage and to regulate present operations of LANL involving hazardous waste. As a citizen of the United States and a scientist at Los Alamos National Laboratory, I also support the work done there for our national security. Some of this work involves research into how to deal with emergency situations involving high explosives and high explosive residues, which can be extremely hazardous. Experts at LANL provide training to military personnel and first responders who have to deal with such situations. The safest way to dispose of the hazardous material produced in this research and training is to move it as little as possible, and then burn it in the open with high temperature burners. NMED and LANL agree that this procedure produces almost no air pollution or additional health risk to humans, and little other environmental impact. The work at LANL that requires open burning can save the lives of people who are asked to deal with hazardous situations. One of my duties is emergency response involving high explosives. It would be irresponsible for NMED to place me and my fellow responders, military and civilian, at greater risk by denying the lab permission to dispose of such waste in the safest and cleanest possible way. Los Alamos National Laboratory personnel, such as me, are ready and willing to do this work. The State of New Mexico should not tell the nation to find another place to perform this important mission. I urge the NMED to allow continued controlled open burning of the wastes produced in this work at Los Alamos National Laboratory. The lab has agreed to appropriate monitoring of any potential future environmental impacts. Today, I have additional comments. I have looked at many of the statements made in this hearing, which have been posted on the NMED website. There are statements critical of some of the national security work done at Los Alamos National Laboratory. We're all free to state our opinions on this, but these criticisms should not influence the decision NMED makes, because it is not the role of NMED to determine national security policy.		

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		There are statements criticizing the slow pace of the federal government to clean up previous environmental damage at the lab. I share this concern, and I continue to support the Obama administration's increase in funding for remediation work. There are also a lot of statements from people like me, who work here and live here, and from our local governments, such as the Los Alamos County Council, in favor of the permit to include controlled and monitored open burning. Of course, we want a clean environment in which to live and raise our families. We want to do our work at LANL in an environmentally responsible way. We expect the New Mexico Environment Department to work with the lab to make this possible, and to help decrease the misunderstanding about what we do at Los Alamos National Laboratory.		
259	Gen.	I care about health in my community and in northern New Mexico. Clean air to breath and clean water to drink are essential to a healthy life. The natural health industry is a vital part of our economy. I support NMED hazardous waste permit requirements that include confined burn facilities to capture harmful emissions, and financial assurance requirements that funding will be available to clean up contaminated sites when they are no longer in use. Please require LANL to START OVER by implementing a new system of wells for sampling and measuring the ground water contaminants, that will be effective overcoming the many current problems according to the expert technical testimony at the NMED permit hearing on 4/14/2010 by Dr. Michael Barcelona. Do not allow further hazardous waste operations without requiring adequate fire protection and a reliable network of seismometers to accurately monitor the seismic hazard, from ground motions, which is increasing at LANL. The national security mission of LANL demands that both the troops in Iraq and Afghanistan and the people in the United States, in New Mexico, receive protection and safety from LANL activities.	See the Department's response regarding open burning, financial assurance, groundwater, regulated units/alternative requirements, and emergency preparedness in the document titled General Response to Comments.	Yes
260	Gen.	I make the following public comments about the February 2, 2010 revised draft Hazardous Waste Permit for Los Alamos National Laboratory (LANL), which will allow the Department of Energy (DOE) and LANL to handle 114 million pounds of hazardous waste each year during the 10-year permit. I support the NMED denial of LANL's permit applications for the open air burning of hazardous waste. LANL has been on notice for more than 21 years that the public does not want them to use our air for disposal of hazardous waste. If DOE/LANL needs to continue to burn hazardous waste, there are alternatives, including confined burn	See the Department's responses, regarding open burning, the information repository, public participation, seismic hazards, financial assurance, and emergency preparedness in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		facilities that are designed to capture the emissions. Any permit for confined burned facilities must include limits on the amount and types of waste to be burned, as well as the frequency. I support NMED requiring DOEILANL to install confined burn facilities before the permit is finalized as an alternative to open burning. The permit must include limits as to the type and amount of waste and the frequency of the burns. The Environmental Protection Agency (EPA) issued enhanced public participation requirements for early, often, meaningful, and continuous contact with the public about the cleanup of the LANL dumpsites. The 25 dumps contain "legacy waste," which are dangerous mixtures of wastes contaminated with chemicals and radiation. NMED, DOE and LANL have been lax in fulfilling the public participation requirements, such as holding public meetings on a regular basis, providing documents, and informing the public of opportunities for input into decision-making processes. The permit must include prescriptive requirements for NMED and DOE/LANL to provide enhanced participation as required by EPA for early, often, continuous, and meaningful contact with the public about both the Compliance Order on Consent (Consent Order) and the Final LANL Permit. DOE/LANL is required to establish an Information Repository where permit documents are readily available to the public. NMED is only requiring LANL to create a virtual (electronic) repository. Previous drafts of the permit required both a virtual and physical repository. EPA supports a physical Information Repository. As an act of Restorative Justice and in order to meet the needs of both urban and rural communities and future generations, NMED must require DOE/LANL to establish both a physical Information Repository in the Espanola Valley, as well as a virtual (electronic) version before the permit is finalized. Over the past 10 years, serious deficiencies in the DOE/LANL Emergency Management and Response Division have been found by several government auditing agencies, including the DOE Inspector General, the Government Accountability Office, and the Defense Nuclear Facility Safety Board. The reports described serious problems with LANL fire protection before the Cerro Grande Fire of2000. The new reports describe the ongoing failure to provide fire protection.		

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		I object to NMED allowing DOE/LANL to continue hazardous waste operations without meeting the emergency management, planning, preparedness and response requirements. NMED must conduct a full investigation into the recommendations of the expert reports and require their implementation before the permit is finalized. A 2007 report described a 50% increase in the seismic hazard at LANL. It identified many deficiencies in the knowledge of the seismic hazard and made recommendations for further field studies. It also identified the failure of DOE/LANL to install and operate a reliable network of seismic instruments (seismometers) to accurately monitor the seismic hazard from ground motions. The current network consists of uncalibrated seismometers at only three locations. I object to NMED allowing DOE/LANL to continue hazardous waste operations without the necessary field studies and without a reliable network of seismometers. NMED must conduct a full investigation into the recommendations of these seismic reviews before the permit is finalized. DOE/LANL and its contractor do not want to provide the financial documents to ensure that funding is available to cleanup the contaminated facilities at LANL when they are done using them. I support NMED requirements in the revised draft permit that DOE/LANL must meet all of the financial assurance requirements for each of the 24 hazardous waste management units.		
261	Gen.	I make the following public comments about the February 2, 2010 revised draft Hazardous Waste Permit for Los Alamos National Laboratory (LANL), which will allow the Department of Energy (DOE) and LANL to handle *114* million pounds of hazardous waste each year during the 10-year permit. I support the NMED denial of LANL's permit applications for the open air burning of hazardous waste. LANL has been on notice for more than 21 years that the public does not want them to use our air for disposal of hazardous waste. If DOE/LANL needs to continue to burn hazardous waste, there are alternatives, including confined burn facilities that are designed to capture the emissions. Any permit for confined burned facilities must include limits on the amount and types of waste to be burned, as well as the frequency.	See the Department's responses, regarding open burning, the information repository, public participation, seismic hazards, financial assurance, and emergency preparedness in the document titled General Response to Comments.	Yes

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		I support NMED requiring DOE/LANL to install confined burn facilities before the permit is finalized as an alternative to open burning. The permit must include limits as to the type and amount of waste and the frequency of the burns. The Environmental Protection Agency (EPA) issued enhanced public participation requirements for early, often, meaningful, and continuous contact with the public about the cleanup of the LANL dumpsites. The 25 dumps contain "legacy waste," which are dangerous mixtures of wastes contaminated with chemicals and radiation. NMED, DOE and LANL have been lax in fulfilling the public participation requirements, such as holding public meetings on a regular basis, providing documents, and informing the public of opportunities for input into decision-making processes. The permit must include prescriptive requirements for NMED and DOE/LANL to provide enhanced participation as required by EPA for early, often, continuous, and meaningful contact with the public about both the Compliance Order on Consent (Consent Order) and the Final LANL Permit. DOE/LANL is required to establish an Information Repository where permit documents are readily available to the public. NMED is only requiring LANL to create a virtual (electronic) repository. Previous drafts of the permit required both a virtual and physical repository. EPA supports a physical Information Repository. As an act of Restorative Justice and in order to meet the needs of both urban and rural communities and future generations, NMED must require DOE/LANL to establish both a physical Information Repository in the Espanola Valley, as well as a virtual (electronic) version before the permit is finalized. Over the past 10 years, serious deficiencies in the DOE/LANL Emergency Management and Response Division have been found by several government auditing agencies, including the DOE Inspector General, the Government Accountability Office and the Defense Nuclear Facility Safety Board. The reports described serious problems with LANL fire protection before the Cerro Grande Fire of 2000. The new reports describe the ongoing failure to provide fire protection. I object to NMED allowing DOE/LANL to continue hazardous waste operations without meeting the emergency management, planning, preparedness and response requirements. NMED must conduct a full investigation into the recommendations of the		

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		expert reports and require their implementation before the permit is finalized. A 2007 report described a 50% increase in the seismic hazard at LANL. It identified many deficiencies in the knowledge of the seismic hazard and made recommendations for further field studies. It also identified the failure of DOE/LANL to install and operate a reliable network of seismic instruments (seismometers) to accurately monitor the seismic hazard from ground motions. The current network consists of uncalibrated seismometers at only three locations. I object to NMED allowing DOEILANL to continue hazardous waste operations without the necessary field studies and without a reliable network of seismometers. NMED must conduct a full investigation into the recommendations of these seismic reviews before the permit is finalized. DOE/LANL and its contractor do not want to provide the financial documents to ensure that funding is available to cleanup the contaminated facilities at LANL when they are done using them. I support NMED requirements in the revised draft permit that DOE/LANL must meet all of the financial assurance requirements for each of the 24 hazardous waste management units		
262	Gen.	As deeply concerned and worried residents of Santa Fe, my husband and I wish to present to you the following public comments regarding the revised draft Hazardous Waste Permit for Los Alamos National Laboratory (LANL), which proposes to allow the Department of Energy (DOE) and LANL to handle the alarming amount of up to a quarter of a million pounds of chemical and radioactive, and therefore highly toxic, hazardous waste material each year during a 10-year permit period: 1. We very strongly endorse and support NMED's prior denial of LANL's permit applications for the open air burning of such hazardous waste. For over 20 years, the lab at Los Alamos and the DOE have received ample notice and indications that the citizens and residents of New Mexico most definitely DO NOT the LANL facility -- or any other entity -- to be allowed to use our air for the dangerous and harmful open burning disposal of hazardous waste! In the very worst case scenario, and only if no other choice is possible, any such incineration program should only be considered if alternative methods can be used to adequately protect the public health, and, equally	See the Department's responses, regarding open burning, the information repository, public participation, seismic hazards, financial assurance, and emergency preparedness in the document titled General Response to Comments.	Yes

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		important, the environment as a whole. Such much less dangerous alternatives might include the use of confined burn facilities designed to capture the emissions, and prevent the atmospheric release of harmful incineration by-products. However, any permit which might be granted for tightly controlled (and state monitored) confined burned facilities must also include carefully calculated limits on the amount and types of waste which could be burned, and to further protect our air quality, strict limits should be imposed on the frequency of such burns. Accordingly, before any permit is finalized, at the very least, NMED should absolutely require that LANL must install appropriate and effective confined burn facilities, preapproved by NMED, as the only allowable alternative to open burning. Again, such permit must also include limits as to the type, amount of waste, and frequency of burns. 2. We further must strongly demand ONGOING AND TIMELY public participation in all phases of the decision-making process regarding disposal and management of the hazardous materials currently under the supervision of LANL. As you know, the Environmental Protection Agency (EPA) has already issued mandates about the cleanup of the numerous, highly contaminated dump sites now placed under LANL, including the requirement that public participation must occur early in all decision-making processes, AND that such participation and information dissemination must also be meaningful, and continuous. Specifically, the (EPA) has issued enhanced public participation requirements for early, often, meaningful and continuous contact with the public about the cleanup of the 25 dumpsites now under control of LANL. These dumps contain the so-called "legacy waste," which is comprised of highly dangerous admixtures of waste contaminated with both chemicals and radiation. To date, unfortunately, DOE and LANL have been very lax in fulfilling these public participation requirements, such as holding public meetings, providing documents, and informing the public of opportunities for input into decision-making, and the NMED has not as yet put sufficient pressure to bear to make this happen. Therefore, ANY PERMIT TO BE ISSUED MUST INCLUDE specific, detailed, and mandatory requirements for NMED, DOE, and LANL consistently and without fail to provide enhanced participation -- as already required by EPA -- for timely, continuous,		

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		and meaningful contact with the public about both the Compliance Order on Consent (Consent Order) and the Final LANL Permit. 3. It is our understanding that DOE and LANL are obligated to establish an Information Repository where permit documents are readily available for public review. At present, it appears that NMED is only requiring LANL to create a virtual (electronic) repository. Previous drafts of the permit required both a virtual and physical repository, which the EPA supports, and which we endorse as well. Therefore, in order to make certain all members of the public, including residents of directly urban and rural communities, those without computers, and the present and future generations who might be deprived of information in the event electronic data were to be lost or altered, can have physical access to the information vital to protect public and environmental health and take informed action as needed, we must demand that NMED require DOE and LANL establish both a physical Information Repository in the Espanola Valley, as well as a virtual (electronic) Information Repository before the permit is finalized. 4. In regard to the issue of "Emergency Management, Planning, Preparedness and Response", we understand that over the past 10 years, very serious deficiencies in the DOE/LANL Emergency Management and Response Division have been found by several government auditing agencies, including the DOE's own Inspector General, the Government Accountability Office, and the Defense Nuclear Facility Safety Board. The reports previously issued have described serious problems with LANL fire protection, even *before* the nearly catastrophic Cerro Grande Fire of 2000. Even more alarming is the fact that the most recent reports continue to cite describe the ongoing failure to provide fail-safe fire protection. I strongly object to NMED allowing DOF/LANL to continue hazardous waste operations without meeting the emergency management, planning, preparedness and response requirements. NMED must conduct a full investigation into the recommendations of the expert reports and require their implementation before the permit is finalized. 5. We are also very concerned about seismic hazards on the volcanic Pajarito Plateau. A report described a 50% increase in the seismic hazard at LANL. It identified many deficiencies in the knowledge of the seismic hazard and made recommendations for		

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		further field studies. It also identified the failure of DOE/LANL to install and operate a reliable network of seismic instruments (seismometers) to accurately monitor the seismic hazard from ground motions. The current network consists of only seismometers at three locations that are not kept in calibration. Therefore, I also strongly object to NMED allowing DOF/LANL to continue ANY hazardous waste operations without the necessary field studies, and absent a reliable network of seismometers. NMED must conduct a full investigation into the recommendations of these seismic reviews before the permit is finalized. 6. Financial Assurance Requirements. DOE/LANL and its contractor do not want to provide the financial documents to ensure that funding is available to cleanup the contaminated facilities at LANL when they are done using them. I fully support NMED's requirements in the revised draft permit that DOF/LANL must meet all of the financial assurance requirements for each of the 24 hazardous waste management units. In conclusion, I must beseech you in the strongest possible terms to think FIRST about the public health and safety, and the protection and preservation of our air quality, water sources, and the health and viability of all the other life forms that inhabit the affected New Mexico ecosystems, when your department makes any and all of its decisions regarding the handling of toxic wastes in our state.		
263	Gen.	As a statewide river conservation organization based in Taos and Albuquerque, Amigos Bravos, Friends of the Wild Rivers, works to protect the ecological and cultural richness of the Rio Grande and other rivers in New Mexico. Amigos Bravos is committed to the use of state and federal regulatory processes to stop ground and surface water pollution migrating from LANL facilities into our state's water resources. Amigos Bravos has specifically been working to protect and restore water quality and quantity in White Rock Canyon. Amigos Bravos believes that by preventing additional pollution from being released from LANL, and by requiring clean up of historic releases, the public's right to clean water will be protected. Amigos Bravos, Friends of the Wild Rivers submits the following comments on the *2/2/10* revised draft Hazardous Waste Permit for Los Alamos National Laboratory (LANL):	See the Department's responses regarding the RLWTF, open burning, the information repository, public participation, and financial assurance in the document titled General Response to Comments. Regarding tritium contaminated water at TA-50; the Department has no regulatory authority over radionuclides.	Yes

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		1. Amigos Bravos strongly supports section 4.6 of the proposed permit. We are concerned about the revelations in testimony yesterday from Tony Griggs about recent transfers of tritium contaminated waters from TA-50 to TA-53. We are particularly concerned that LANL has not found the source of the tritium contamination in the water collection system for TA-50, which has necessitated trucking elevated levels of tritium contaminated water from TA-50 to the evaporation ponds at TA-53. The October 30, 2009 notice to the Environmental Protection Agency (EPA) indicates that LANL has or plans to transport 200,000 gallons of tritium contaminated water, at levels above the drinking water standard of 20,000 picoCuries per gram (piC/L), to TA-53. This may constitute a change of the location of the discharge under the Clean Water Act, requiring a permit modification request and opportunity for public review and comment and request for hearing. 2. Amigos Bravos strongly supports the denial of open air burning of hazardous waste at LANL and supports NMED's proposed requirement to install confined burn facilities. 3. Amigos Bravos urges NMED to include additional public participation components in the permit to ensure that the public is kept informed. These additional components must include requirements to notify the public of all draft documents and reports, requirements to hold public meetings on a regular basis and requirements to notify the public about opportunities for input into the decision making process. In addition, to ensure that all New Mexicans are able to participate in the process, both an electronic and physical Information Repository must be required. Amigos Bravos supports the financial assurance requirements in the draft permit. Adequate financial assurance will ensure that the public and the state of New Mexico are not left footing a cleanup bill at LANL.		
264	Gen.	I am very concerned as a downwind/downstream citizen of the public health impact from what the U.S. Department of Energy and LANL are proposing in this 10 year permit at this final hearing. My concerns center mostly around air and water quality. Not only must we deal with the clean up from the unsafe storage from 1943 and the repeated delays in even the	Comment noted. See the Department's responses regarding the regulated units/alternative requirements, open burning, the information	Yes

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		authorized clean up, but current and future contamination from proposed open burning of toxic waste. The effects of contamination in daily inhaled toxic air and from daily ingestion of toxic water may not be immediate and dramatic but are nonetheless dangerous to the health of individuals and communities. This weakens the capability of New Mexico to sustain a viable economic base since much of that depends on services, industries and tourism. It also is a long-term effect. Clean up must deal with over 21 million cubic feet of radioactive, hazardous and toxic wastes. These rest in unlined pits, trenches and shafts dug into the volcanic tuff subject to erosion and drainage into the water supply for the most fertile and populated area of the state. I have attended environmental hearings for the last 15 years. Now it is difficult to find credibility in the repeated technical presentations I have heard since so much is promised (fixes, remedies, and excuses) and yet there is persistent bypassing of those who urge safety for their communities and their peoples. Groundwater monitoring that is promised is not to be trusted for the installation, capability and reliability since 1998 does not meet the promises. The Rio Grande River will be more and more polluted with waste from LANL just as more and more communities will be drawing from it. The long range view is very threatening. Protests of the open air burning have been consistent for years yet the alternatives to this process (notably confined burn facilities) are not seriously considered. Human health must be viewed as a natural resource for the state and the nation. When our environment is wasted, human health suffers. And, all this at great cost because it was not sufficiently valued in the first place. I have two overreaching concerns. One is the lack of transparency and accountability of both DOE and LANL. I see this particularly in the limited involvement of those affected by these decisions. Participation has indeed improved somewhat in the last 15 years and this hearing is more comprehensive and open than most. But, it still is nowhere enough. Solid participation relies on good information readily available. Without a print repository of documents as well as online, involvement is limited by geography and access. Earlier drafts indicated the value of this, but now it is missing.	repository, and emergency preparedness in the document titled General Response to Comments.	

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		The second overreaching concern is the need for better emergency preparedness. With everything from the changing climate to attack possible, LANL must have better systems in place than it did during the Cerro Gordo fire. Media reports did not reveal all that was missing in the response to that and to the many "incidents" that have been reported as safety and security issues. Again, accountability is diminished in the background. I urge you please to address the various issues raised in these hearings. We live here and deserve acknowledgement and response.		
265	Gen.	On behalf of the members of the Embudo Valley Environmental Monitoring Group (EVEMG) and all those residing downwind and down stream from the Los Alamos National Laboratory (LANL) that are concerned with ongoing public health and safety issues generated by nuclear weapons production in the past, present and future at LANL, EVEMG offers the following comments on the New Mexico Environment Department draft Hazardous Waste Permit for Los Alamos National Laboratory. EVEMG is a non-governmental organization that formed in 2003 to address community concerns about the risks generated by the Cerro Grande Fire. As downwind neighbors to Los Alamos National Laboratory (LANL), EVEMG focuses on air emissions generated by LANL activities and their relationship to public and environmental health and safety. Located throughout the Embudo watershed are traditional land-based communities that are both culturally and economically dependent on a watershed that is free of contamination. Many families throughout our watershed area depend on small, family farms and kitchen gardens for both income and sustenance. We view healthy air, land and water as critical in providing local stability and security. EVEMG has been involved in issues of Emergency Management, Preparedness and Response (EMP&R) for over half of a decade. Beginning in 2002, one and a half years after the Cerro Grande Fire of 2000, we have been on a path of studying, investigating, questioning and educating and informing our communities and government agencies about EMP&R at LANL and the actions and lessons learned from this devastating event. In November 2004 EVEMG and the Community Radiation Monitoring Group co-sponsored the Emergency Management and Preparedness Forum in Dixon, New Mexico. Over 100 people participated in the forum, which consisted of presentations by federal, state, county and local emergency managers and responders and tribal and local	Comment noted. See the Department's responses regarding open burning, the information repository, and emergency preparedness in the document titled General Response to Comments.	Yes

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		leadership about what they learned from the fire and what they have done to improve on their preparedness. This is what we learned through the forum: • Agencies were no more prepared for an emergency at LANL after the fire than before the fire; • Lessons learned were not being addressed at any governmental level; and • Local leadership and community members were very concerned, angry and had very little trust around EM&R in the event any kind of accident at LANL. This was the outcome of the forum: • NMED, EVEMG and CCNS began working together with our communities and agencies putting together a regional Homeland Security emergency exercise to evaluate the capacity of all local, state and federal in response to an emergency at LANL; • Increased community education interest and involvement in safety issues at LANL; and • Increased interagency involvement in issues of EM&R. Please submit as public comments the following comments on the July 6, 2009 draft NMED, LANL Hazardous Waste Permit hearing. 1. EVEMG supports the New Mexico Environment Department (NMED) in denying the Open Burn Application for LANL. EVEMG objects to the open air burning of hazardous waste. EVEMG fully supports the alternative of a Confined Burn Facility in order to facilitate eliminating the reactive component of High Explosives. We see this as an invaluable tool that can be used over the term of the permit to reduce the footprint at LANL. 2. As part of Restorative Justice to communities impacted by 65 years of LANL operations, EVEMG supports a Physical Information Repository to be located in an institute of higher learning in the Espanola Valley. 3. While EVEMG supports the language of the Emergency Preparedness and		

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		Management and the Contingency Plan in the draft permit, we have little faith that LANL is capable of carrying out the terms of the permit. This comment is based on many reports, some that are attached to our comments, that provide substantial on-going evidence that LANL cannot meet the requirements of emergency management and preparedness set forth in the permit. The culmination of reports is provided in the document The Fire Protection Deficiencies at Los Alamos National Laboratory, which you will find attached to this email. Further, attached are two recent letters dated October 16, 2007 and December 8, 2008 letter from the Defense Nuclear Safety Facility Board (DNFSB) that identify on-going problems with LANL's fire protection; staffing shortages, funding shortfalls, implementation of the Baseline Needs Assessment, achievement of fire and emergency response capabilities, and overall lack of progress with respect to safety improvements at LANL. We understand that the DNFSB deals with LANL as a nuclear facility, however LANL's hazardous waste operations are in many cases intricately tied to nuclear operations. Some hazardous waste storage units are located inside of buildings with plutonium operations and in the case of Area G and TA-54 there are operations that include a radioactive component. These reports also serve to accentuate the broader implication of a systemic problem with the entire facility, which in the eyes of the public makes it far more serious. In the interest of protecting surrounding communities from the consequences of inadequate emergency preparedness and fire protection by ongoing operations and units covered under the proposed permit, EVEMG recommends that hazardous operations be suspended and that the requested permit be denied until deficiencies are fully and completely addressed to satisfy what our communities see as homeland security. Homeland security to land-based communities means protecting the air, land, and water from the consequences of an accident at LANL.		
266	Gen.	EVEMG supports the New Mexico Environment Department (NMED) in denying the Open Burn Application for LANL. EVEMG objects to the open air burning of hazardous waste. EVEMG fully supports the alternative of a Confined Burn Facility in order to facilitate eliminating the reactive component of High Explosives. We see this as an invaluable tool that can be used over the term of the permit to reduce the footprint at	Comment noted. See the Department's responses regarding open burning, the information repository, and emergency preparedness in the	Yes

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		from the consequences of an accident at LANL		
267	Gen.	In 2007, after being approached by Faithful Security: The National Religious Partnership on the Nuclear Weapons Danger, the NMCC board of directors adopted nonproliferation of nuclear weapons and waste as one of its top priorities. Since then we have worked closely with the "Interested Parties" who have participated in this hearing on behalf of the people of New Mexico, especially Concerned Citizens for Nuclear Safety and Honor Our Pueblo Existence. I would like to take this opportunity to express our appreciation to Bob Gilkeson, Don Hancock, Scott Kovac, Dave McCoy, Marian Naranjo and Joni Arends for the extraordinary service they and their organizations provide to all of us. We are deeply grateful for your brilliant and effective work. I am reminded of the refrain from a Bob Dylan song: Well, it may be the devil or it may be the Lord But you're gonna have to serve somebody. Indeed, we all are gonna serve somebody. Clearly, these six and their organizations serve people rather than profits, and therefore serve the best interests of God's creatures and creation. Which brings us to the issue of profits. We understand that LANL is currently operated by for-profit corporations that are committed to protecting and increasing those profits. That is the nature of for-profit corporations. However, we are witnessing the devastating consequences of allowing such corporations to compromise safety standards, most notably the decision by British Petroleum to not install a turn-off valve on their oil rig in the Gulf of Mexico presumably to save the $500,000 cost. Their decision was supported by the regulatory agencies at the time, persuaded by BP that public concerns were unwarranted. The damage inflicted by LANL since 1943 on the environment and surrounding communities of New Mexico is not so dramatic but it is arguably even more insidious. Only eleven lives have tragically been lost in the latest oil rig explosion in the Gulf of Mexico. There is, however, reliable documentation that shows the alarming number of cancer and autoimmune disease related deaths at LANL, and the Trinity site where an	Comment noted. See the Department's responses regarding open burning, regulated units/alternative requirements, and the information repository in the document titled General Response to Comments.	Yes

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		estimated 19,000 men, women and children were living when the first atomic bomb was detonated in 1945. Science can be manipulated to support just about any position one wishes (as can theology). Therefore, we are not persuaded by LANL's testimony that open burning is safe any more than we are persuaded by Philip Moms that second hand smoke from cigarettes is safe to those down-wind. We are not persuaded that our groundwater is safe from the 21 million cubic feet of radioactive, hazardous and toxic waste buried in unlined pits, trenches and shafts in and around Pajarito Plateau. We are inclined to trust Dr. Barcelona's testimony that the monitoring wells are ineffective and that LANL needs to start over. We are not persuaded that the physical repository at Northern New Mexico College is unnecessary, and continue to believe that it is a reasonable and affordable request. We trust that LANL will consider it a worthy investment and offer it as a gift to the community that has suffered so much, for so long by living in the shadow of the lab. In the event that the NMED draft Hazardous Waste permit is compromised by the efforts of the applicant, the NMCC will continue to work with the "Interested Parties" until health and safety regulations are put in place at LANL and clean-up is complete. We do not share the opinion of some that New Mexico and the world would better off if the Los Alamos National Laboratory was shut down. We believe that the brilliant minds and expertise at LANL have a vital role to play in achieving our vision for a nuclear weapons free world. This is a vision shared by a growing number of citizens, government officials, national and world leaders, people of faith and people of conscience. On September 21, 2009, the National Council of Churches issued a statement entitled: Nuclear Disarmament: The Time is Now. I will provide a copy of that resolution (see NMED's LANL administrative record) and a copy of the Spring 2009 issue of Reflections published by Yale Divinity School, entitled: The Fire Next Time: Faith and the Future of Nuclear Weapons. I would like to share a quote from that document: As Jonathan Granoff (president of the Global Security Institute) puts it,		

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		"Nuclear weapons are of no value against terrorists, they're suicidal to use against a country that has them, and it's patently immoral to use them against a country that doesn't have them. So why do we have them?" But what about "rogue states," such as North Korea and Iran, which have recently acquired or may soon develop their own atomic bombs? Here, we must rely on the diplomatic weight of the entire rest of the world coming down on them, peaceably, in order to induce change. This will not happen, however, until the United States takes the lead. … we cannot compel the rest of humankind to do our will based solely on the sheer magnitude of our military power. I would like to close on a positive note from another song. This time from the song "Imagine" composed by John Lennon. Imagine that LANL stops producing and designing new nuclear weapons and commits their collective intellect, innovation and resources to leading the global campaign for nuclear disarmament, a goal that will require decades of work....and profits".. Imagine that instead of working to defend questionable safety practices LANL commits itself to designing the highest safety standards, and embarks on research into the handling and storage of nuclear waste, and demonstrates its efficacy by using it to restore the Pajarito Plateau. Imagine that instead of opposing the physical information repository at Northern.NM College, LANL becomes its benefactor and helps to educate the next generation of scientists dedicated to nuclear disarmament, clean-up and restorative justice. For over sixty years, the United States has relied on the possession of an arsenal of nuclear weapons in order to impose world peace and deter attack. It has accomplished neither. Rather, it has siphoned off untold billions of dollars that could have been spent on far more just and productive means of ensuring global "security" through economic and cultural development and cooperation. It has poisoned our air, our water, and our children. It has produced toxic waste products that will remain radioactive for millions of years. Many believe it has also engendered a false sense of security coupled with inordinate pride much resented by other nations. This has only served to degrade the		

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		status and esteem accorded to the U.S. by other peoples of the world, not to maintain or improve them. The same might be said of other nations that possess nuclear weapons. It is understandable that conventional wisdom would dictate that this is not the time for the United States to eliminate its nuclear shield. Rather, we should maintain a strong nuclear arsenal as a deterrent to attack. This reasoning breaks down for a number of reasons. Is it possible to put the genie back in the bottle? Yes, because, once the current worldwide stockpile of weapons is eliminated, it will become extremely difficult to assemble the raw materials to make a new one without the rest of the world taking notice and forcing an end to such efforts. This would require continued support for the U.N.'s international inspection system. This would also keep nuclear devices out of the hands of terrorist organizations-the technology and construction of a nuclear device is so extremely complicated and energy intensive that it is not feasible to imagine that a terrorist group could actually make and employ one on their own successfully. The prospect for what might happen if we do not act is too terrible to contemplate: nuclear winter, the end of all human life on earth, and the transformation of much or all of our planet into a radioactive hell. This far outstrips the potential damage that could be done by any other environmental threat. The end of the Cold War did not make the world safer; quite the opposite. It is time to finish what Ronald Reagan and Mikhail Gorbachev began in Reykjavik. It is time to realize that we cannot ensure our own security by force of arms, even if they be the most powerful weapons ever created. Imagine if the history of LANL became a new chapter in *every* history book read by our children's children, and their children for your decision to end your 67 year service to weapons of death and in the interests of national security turn your efforts to disarming, containing, controlling, and eliminating every one of the thousands and thousands of nuclear warheads that are scattered around the world before one of them falls into the hands of a terrorist organization. Imagine if the staff of LANL became the first national laboratory to win the Nobel Peace Prize for its contribution to achieving a nuclear weapons free world.		
268	Gen.	I'm speaking from my history as the chair of Concerned Citizens for Nuclear Safety from 1991 to 2004, as the organizational coordinator for CCNS from1995 to 1998.	Comment noted.	Yes

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		During that time, a number of things took place. I have worked with many of the people in this room, along with CCNS. When I was organizational coordinator, we won the Clean Air Act consent decree against LANL for being out of compliance with the Clean Air Act Radionuclide Standards. Judge Mechem found 31 of the 33 stacks, emission stacks, were out of compliance at that time. This was in 1996, '97. Part of what happened during that time with the radionuclides and the air emissions was that LANL didn't really have -- didn't seem to have the capabilities to keep accurate records; and so Dr. Arjun Makhijani and the risk assessment manager, who did the audit of this whole consent decree, went through all of the records and instructed them how to keep records and how to be in compliance. This consent decree lasted until 2002, at least, and it was public participation, it was -- it was an avenue for the public to actually really be in compliance or be in participation with this whole process. It was the first of its kind of audits of LANL. It made LANL more in compliance. You know, our air is cleaner because of the consent decree and because of Judge Mechem bringing this judgment. The second thing that happened under my watch as chair, once I became chair of Concerned Citizens, is the Cerro Grande fire happened, and I felt an extreme call to action by numerous, numerous people in the community. They came to me, they asked me, "Anna, what is happening to our air? Look at the smoke and the dirt that's coming out of here." I had friends visiting with small children. I told them to leave town. We are all downwind from Los Alamos, and we are affected by what happens up there. So air emissions are extremely important. So this is another instance. So out of that concern, I organized a conference on the Cerro Grande fire and the aftermath, where over 450 people turned up to talk, to be informed, to find out what was happening to their environment, with the air, with the water. At that moment, our Governor, Bill Richardson, was Secretary of Energy. He wrote me a personal letter. He supported the whole process. He had DOE at the table, many of the people in this room were at that table. Along with the New Mexico Environment Department, LANL was at the table. We all -- we had a conference. We discussed people's concerns. We worked out a solution. We talked about different things that could be done to mitigate the run-off into the Rio Grande.	See the Department's responses regarding the information repository, contractor documents, and open burning in the document titled General Response to Comments.	

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		There was -- it was a really important moment in this community. Now, the woman before me was concerned that a lot of people haven't shown up here, and part -- I would say there are a number of reasons why people have not shown up here. One, it is way out of town. Almost all of our other hearings that have happened have been right in the center of town, making it much more convenient for people to get there. That might be one reason. But I also think they are disenchanted, you know. But I, myself, as somebody who has run for public office, has a large constituency, I know that I am here speaking for them and on their behalf, to protect the public. I am here to support 100 percent what the -- that the Environment Department has denied LANL's application for open air burning, and I feel that I represent a large constituency. During the Cerro Grande fire, we were all -- we were concerned about many things, but the plume was one of the biggest things that was of major concern to people. But also the official record said one thing about what happened, but the citizens and other activist groups had different records and different concerns. I find that some of the secret records that are just now being released about the Cerro Grande fire do confirm some of the people's concerns. Also, in 2002, the first run-off after the fire, the amount of radionuclides, the amount of contaminants, perchlorate, different poisons that Los Alamos produces from their weapons manufacturing, were in the water and entered into the water stream. That is a big concern to me that, you know, different things have -- are migrating, you know. In the beginning, LANL said 600 years before anything gets into the Rio Grande. We already know today that there are things -- 60 years, there are things in the Rio Grande. There is plutonium in the Rio Grande. That is a fact. So those are some of the things that happened under my watch. I really pushed CCNS to become involved in doing water contaminants. One of the pieces of information that has been put into the record is the "New Mexico Right to Know, the Potential for Groundwater Contaminants from Los Alamos National Laboratory." This was produced, and there was other booklets produced under my watch as chair that were about health contaminants. Since that time -- since my chairmanship ended in 2004, I was also the -- I have also been the chair of the New Mexico State Acupuncture and Oriental Medicine Board for the State of New Mexico. That term has also ended. So I feel that I have credibility in making these statements. The other thing that I wanted to comment on is that there was a fire that was generated		

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		by LANL's operation in 2008, and it burned over 15 acres at one of the open detonation sites. So there is like a number of things that continually happen at LANL that are making all of us concerned about their ability to protect the public, and that is the New Mexico Environment Department, Concerned Citizens for Nuclear Safety, they are the people who are protecting the people, and so, therefore, I support what they are doing. One other thing I would like to request is that this -- that there be established and maintained a physical information repository, to be located in the Espanola Valley, as a matter of restorative justice for the citizens of New Mexico. So LANL has been on notice about public concern and air emissions for the past 20 years. These are some of the examples that I stated. I just felt that, since I came last time and read the secret documents, that I needed to come and present myself as a professional in the community so that you would understand my grave concern about this open air burning permit, and that it really needs to not happen, and that we, the citizens of New Mexico, need to be protected.		
269	Gen.	I'm going to read selected sections of what was, until recently, a secret document, which is now identified as Administrative Record Number 32470. The document is dated February 18th, 2004. It is from June Dreith, Program Manager of TechLaw, Incorporated, to Mr. David Cobrain of the New Mexico Environment Department. The document refers to "Review Comments on LANL's Ecorisk Database, Release 2.0," dated November, 2003. Mine is a Spanish last name, which is actually a Jewish convenso last name, and so somewhere in my father's family there were Jews named Casias, who hid and came to this country. I was born in Southern Colorado, but only was there for a couple of days, until my parents came home with me here to the Espanola Valley. I've lived here in New Mexico all of my life, and all but seven years here in this valley. My parents are first-generation Espanola residents. They came from Southern Colorado. My mother's family, they were sheep ranchers, now cattle ranchers. My father's family comes from an area near Mora called Rainsville, and they -- his people were miners. They were relatively poor. But both of my parents were college educated, and I feel very blessed for that fact. I have been able to participate in a group of women who have been working on these issues, some of them over 20 years, and although I don't understand the technical	Comment noted. See the Department's responses regarding contractor documents, open burning, and the information repository in the document titled General Response to Comments.	Yes

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		portions of a lot of what they do, my part has been to help bring the community to many events, including public hearings, such as this one. I would like to thank my parents for being the activists and being the intelligent people that they were, who gave me a mind to think on my own and not necessarily listen to what people who might be telling lies had to say. What I have to say about that is that I can remember growing up and being told to hide my head under a desk just in case Los Alamos was attacked. Of course, hearing that all the things that were coming down the canyons from Los Alamos, they weren't toxic, there were no problems, it was supposed to be a happy life, but, in fact, a life that my grandparents lived and their parents before them, and all the generations, since my great, great-grandmothers, who were from Picuris and Ohkay Ohwingeh Pueblos, had lived, has been taken away from me, from my two children for the generations to come, unless I do something about this. So I'm here today to tell the people who work at LANL, who live in Los Alamos, that you have defiled one of the most sacred parts of Northern New Mexico, and I would like for you to stop. So burning chemicals in the air, that come here to my home, that get into my water, get into the water of my children, into our soil, into the food that we grow, as we've always grown it, is not okay. I don't want the New Mexico Environment Department -- I love Secretary Curry, I think he's fantastic. I don't want him to issue this permit. I respect the people whom I've met through the -- who work at the Environment Department, and I'm asking them -- through our short relationship with each other, you know that I speak my mind, and that I speak for a lot of people who live in this valley who are too scared to be here today because it would pose great financial threat to their families, and to those working-class families whose parents weren't educated and who working at LANL is a first chance for them to have any success in their family, in this world of greed and consumerism, which they have learned to participate in, thanks to the oppression brought on by LANL being our neighbor. So, again, I'd like for the permit to – if it's going to be issued, to follow all the things that our wise and brave women who have been here, Marian Naranjo and Joni Arends and Senora Martinez, all of our people here who represent us, our voice, you need to take those things into consideration and really take care of this, because we're coming		

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		into a time where what corporations have to say, and the greed that's represented there, are not so important anymore. Some of our children -- I worked at Northern for the last two years as a program coordinator for the Science Technology Engineering and Math Programs. Over two years, I had 150 of the brightest students in all of the valleys in this area, and this summer, out of 100 students, only two of them said they wanted to work at LANL. Some of them said that they might if they had to, but only two of them said they wanted to. So I think you've got to change your mission, I think you've got to do something that supports this planet, and I know that our students and people from this area are ready to support that, because it reflects our way of life and our true values, and we're tired of being oppressed. We may not rise up against you in riots and in violence, because that's not our way, but we are rising up in other ways, by educating our children and having them do something else. I'd really like to talk about the physical information repository. I have some statistics here. I was the public -- the Espanola Public Library Board president for two years and on the board for four years, thanks to my sister, former City Councilor Danielle Duran. There are only 12 computers at the Espanola Public Library. Out of those 12, often only 10 work, and, yes, intermittently the connection does go down. I know, because I've spent lots of afternoons there supporting the staff who works there and our wonderful library director. I'd like to tell you that the library at Northern is the only place for the public to use computers on that campus, and there are only 29 computers. Out of those 29 computers, if the students need to do their homework, then the community members are asked to release those computers, which we do. So we don't have a lot of access to computers. Yes, Northern has now become wireless, but how many people have laptops to go and use the internet on campus? Not very many people, really. You say that the students have access to that, well, I would challenge you there, too, because I worked in the Engineering Department, and some of those students -- you know, they are probably some of our brightest students, and people with scholarships and a few with financial aid, but maybe 10 to 20 percent of them had laptops. There weren't a whole lot of students who had that available to them. A lot of them were just trying to make it through school. Most of them had families.		

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		So I want to tell you about what this community is really like and why we need this repository. We need it because we're a traditional community that has oral story-telling as our way of communicating with each other. Word of mouth means more than anything here. If you go to a meeting in a city, maybe one person represents 20 people out of that community, but if a person goes to a meeting here, it's probably double that, or even more, because most people really just don't get out to these kind of things. So when you see me, think of at least 50 people, the people who couldn't be here today because they had to work. They might be here this evening, but most of them will be at home with their families. They need a place. When they hear from me and they hear from other people in our community that there is a repository, that there is a place where they can learn about what LANL is really doing, they need to go to a place where someone who has some expertise can help them, because -- again, I'm one of those people, my degree is in social work, but if you ask me to read the burn permit, I probably wouldn't know what most of it said, unless I asked for my -- for help from my friends. So how would people who may be -- I know there are a lot of people – some of the parents of my students in the STEM programs had only finished junior high, hadn't gotten their GEDS, hadn't gone on to college. How would they understand the burn permit? Who would help them? If I was the person that told them about it, could I help them? No. So there needs to be someone there to help them. Someone needs to be available to our community to talk to them about what -- why we are feeling the effects that we feel, what these chemicals actually do to people, and what they do to our environment. So the other thing that's part of this permit is homeland security. It seems like a big rider to me. You know, you hear about that a lot in Congress, about how people tack on these riders and they can get anything through. I think using homeland security to train the military at Los Alamos is not okay. So I'd like for you to stop that, because the military has a big enough budget, let them train on their own bases, stay out of my backyard, thank you very much. I'd like to say that the people of our community have been deeply affected by the creation and establishment of LANL, and we, therefore, deserve the right to learn about all that is taking place in an institution which continues to adversely affect our ability to		

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		live our traditional life. We deserve to learn about this information, not through technology, which is still unavailable and foreign to a significant portion of our community, but in a setting familiar to community members, Northern New Mexico College. We have meaningful involvement in this laboratory, we're your workers, and if you want a good work force, then you should treat us well.		
270	Gen.	I'm an individual citizen and community activist. And I had a couple of suggestions and comments. First of all, I want to thank whoever is organizing these hearings, to give serious attention to the question. I think they're important questions, and they deserve maximum attention so that the public interest is protected and the health of the public is protected. I want to speak particularly about this idea of burning wastes. The State of New Mexico passed legislation which stopped people from burning leaves and burning garbage, and it seems to be counterintuitive that a place like Los Alamos, which has a history of – of questionable behavior in terms of dealing with hazardous materials, particularly atomic materials, but generally, and deals with chemicals that are toxic and – and conceivably a threat to the public health, that they would want to burn -- open burning for wastes that they have. I think that those of us who live in Santa Fe, who are privileged to live in Santa Fe, and in this area particularly, are very proud of the quality of air. According to the newspaper, we're one of the most clean air in the country. And -- and like I say, there are all these other cases where there are questions about what's being thrown into the water, the quality of the water and how that's impacting our health in the long run and the short run. And those are questions that are very complex and difficult. But at the same time, there isn't a day in the newspaper where there's something like that comes forth, and those of us who are concerned about our health and our community are worried about what's going on. But -- but I think that I would say that any policy that -- that encourages public burning is not a good policy and is a policy that should not be established. Two other comments, I think. One comment that many of us in the public have is that we have begun to lose our trust in scientists. We're always reading reports, many times generated by scientists, and sometimes generated by private interests, telling us don't worry, and then three, four years, five years, six years later, we find out that what we	Comment noted. See the Department's responses regarding open burning in the document titled General Response to Comments.	Yes

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		weren't supposed to worry about is now having a deleterious effect on our lives and our property, people's health. And I think that there is a public weariness about the credibility of scientists and the credibility of scientists who work on behalf of corporations and businesses that seek to sell products. And I don't know what the product there is to do with burning, but what I'm saying is I read the articles in the paper where their complaints against burning were sort of summarily dismissed. And frankly, I was not persuaded. The other thing I would say, and I asked your clerk about this, that those of us who are in the public are not full-time lobbyists. We come to these hearings because we have something to say, and hopefully intelligent. But it would be useful and helpful at the beginning of each of these hearings, looking at those documents there -- I'm sure you've all read them – I wouldn't -- even if I went to read them, it would take me two, three, five days to read them and understand them, without questions. It would seem to me that the Hearing Officer or whoever is running these public hearings should spend approximately 10 minutes explaining the critical issues that are involved in this particular hearing and the process as to what happens, what has happened – there apparently have been certain hearings -- what will happen in the rest of the hearings and what will happen after the hearings are finished, because we need a quick course. And as public people, we're entitled to it, because you're professionals, and you get paid. We're citizens, and we don't have the resources necessarily to do this. And I'm disappointed that this was only done at the first meeting. Well, how many of us can go to 10 meetings? In other words, we're interested, and we want to make an intelligent contribution. How much do we have to read in order to be intelligent participants in this process? And I'm rather disappointed that with all the expertise here and all these wonderful people from the state and others who understand this issue -- that at least those of us who come to this hearing are given at least a 10-minute introduction where we're told what are the three or four or five areas that are being considered and what is the process that will take place, so that we understand it.		
271	Gen.	I'm a private citizen and a resident of Espanola. They are being presented here at the hazardous waste permit hearing. I'm a PhD physicist, retired for the last four years, following 20 years of continuous employment at the Los Alamos National Lab. I	Comment noted. See the Department's responses	Yes

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		worked in the Applied Physics Division, which is X Division, which is where they design the nucs. Prior to my years at LANL, I worked as a research associate professor of physics at the University of Connecticut for seven years. During the past two years, I volunteered my time to do service with the DOE's Northern New Mexico Citizens Advisory Board; and during that two years, I became familiar with many of the issues that you're discussing here today -- hazardous waste generation, storage, and treatment at the lab. I also learned about the sometimes difficult relations between the present regulator, the Hazardous Waste Bureau of NMED, and the lab's present owner, NNSA, and its present management contractor, LANS, LLC. I also learned about the role that's played in these relations by the citizens groups, CCNS and Nuclear Watch of Northern New Mexico, Citizen Action of Albuquerque, and also the role played by the local pueblos. It was with much interest that I heard some of the testimony here. I've been attending sporadically. It's also -- it was also with much interest that I listened to the comments by public citizens during the last two weeks now. I was particularly struck by the emphasis placed by several private citizens on the call for an information repository to be located at Northern New Mexico College. As conceived, it seems this repository would be for the purpose of accumulating and making available to local residents information relating to the history of the generation, treatment, and storage of hazardous wastes at LANL, as well as to the history of the relations between local governments and the DOE, the NNSA, LANS, LLC, and the University of California. It appears from the material that's been presented at the hearing that NMED is well aware of the desire on the part of local citizens for such an information repository. In fact, Mr. Bearzi addressed this issue in Section IV.D of his written testimony. However, he said in that testimony that it is the opinion of NMED that the electronic information repository should be sufficient. But even so, he goes on to say in his written testimony, in Section IV.C, that NMED is attempting to adhere to EPA concerns for the promotion of environmental justice along local communities. Such concerns do require that local communities be provided with all possible opportunities to participate in the decisions related to the local environmental matters -- that is to say, matters resulting from the actions of government, in particular, the federal government here in New Mexico. In this regard, environmental justice concerns would be better met, in my opinion, by the	regarding environmental justice and the information repository in the document titled General Response to Comments.	

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		establishment of a permanent information repository at Northern New Mexico College, than with a simple electronic repository. In my view, if such an information repository were to serve the purpose for which it seems to be intended, it must have an on-site staff, trained in the maintenance of that repository, and able to assist local citizens in their quest for information. Mr. Bearzi also refers in his written testimony to the RACER database, in Section IV.G. He points out that RACER is an existing compendium, in electronic form, of environmental data that are recorded in and around the Pajarito Plateau. He notes, too, that the database is already fully accessible to the general public, or at least that part of the general public that has access to a PC or a Mac and a high-speed data link, and that it's being maintained now by the Los Alamos Community Foundation, in a very good way, I might say, too. I'm quite familiar with RACER and the staff that maintains it. He does not mention, however, that it is currently a part of the RACER plan -- long-range plan that RACER should eventually become a database maintained at Northern New Mexico College. I would also like to recall, on a different topic, another critical public comment made here at this hearing this past Tuesday, in fact, at the Ohkay Owingeh Conference Center, and that's regarding the influence of LANL on the local economy. In this remark that was made on Tuesday, it was suggested that an unfortunate dependency had been created in the local economy on the economic benefits that have been brought here by Los Alamos National Laboratory over the last 60 years. It's in this context that I would like to speak briefly about the last few months of my two-year term of service on the Northern New Mexico Citizens Advisory Board, which is a DOE advisory board. It was during this time that I first recognized the presence of tensions between board members, who are somewhat representative of the local communities, of board members who believed that economic benefits brought here by LANL were always of paramount concern when matters came up which had to do with regulation, and there were other board members who felt that health matters were much more important. So in an attempt to quantify the strength of those opposing opinions -- you know, being a physicist, I think about numbers and what can be measured and what can be verified -- I conducted a public opinion survey. I did this in the fall of last year, in the towns of Santa Fe and Espanola, and I		

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		accumulated responses from 225 persons. Now, the questions in the survey were written and the survey was administered and the results were accumulated and analyzed all by myself. However, in an effort to obtain some technical guidance about a matter concerning which I perhaps had no real expertise, other than being a technical person, I consulted briefly with the Research and Polling in Albuquerque. The results of the survey can be perused in an attachment I have, and I have a stack of them here. In quick summary, what was revealed to me in this survey was that there are principally two strong attitudes that exist among the local residents regarding Los Alamos National Laboratory. One attitude is of an appreciation for the economic benefits brought here by Los Alamos National Laboratory, and the other attitude is one of a worry about possible environmental hazards arising from the type of work being done at LANL. The second attitude, the attitude of worry, is combined with an uneasiness about the nature of the work done there; that is to say, the R&D nuclear weapons. So to talk about the results of the survey in a little bit more detail, but simplifying still greatly, approximately 25 percent of respondents -- and, remember, there is 225 respondents -- about 25 percent of those felt -- or it was my interpretations, based on their answers to the questions in the survey, they felt that economic benefits brought here by LANL were great, while environmental hazards were of little concern, and uneasiness about nuclear weapons R&D was simply not a factor. At the same time, approximately 25 percent of respondents felt just the opposite; that is, while the economic benefits didn't impress them, the threat arising from environmental hazard was felt to be great, and the culture of nuclear weapons was rejected strongly by that 25 percent. But then, interestingly, approximately half of all the respondents displayed both of these attitudes simultaneously. For these conflicted individuals, there was an awareness of a clear economic benefit brought by LANL to the local community, but at the same time, there was a strong worry about possible environmental hazards due to LANL's business, and an uneasiness about the nature of that business; that is to say, the nuclear weapons industry. So in closing, I make the claim here that it is the effect of LANL's business on the local community which should be the subject of some further study. Evidently, this affect is perceived to be wholly positive by some and wholly negative by others, but generally		

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		both positive and negative at the same time.		
272	Gen.	I heard all the explosions going on which turns out to be from the base, and the city for those years told me they didn't know what it was, and the one time they did say, "call the base," the guy down there said he didn't know. And it wasn't until Janet Greenwald had the information published in the Peace and Justice newsletter that I found out what it was. And when I spoke to the military man this time, he said I didn't know what I was talking about. And I said, "Well, this time I do." And I understand that the burning here in Albuquerque -- I think it's going to be stopping. It should stop. And I'm here to -- to address specifically the open air burning of hazardous waste up there in Los Alamos. And I support the New Mexico Environment Department in their intent to deny a permit for LANL to continue burning hazardous waste in the open air. LANL claims they need financial security training. There are alternatives such as burning in a confined unit and shipping the waste to a safer place for treatment and disposal. Some of this waste, for the record, is lead, mercury, chromium, cadmium, silver, barium, high explosives. Now, I am not in the science field. I do have a degree from Syracuse University, and I'm married to someone who has a doctorate from the University of Michigan. And it's difficult when you don't have that background, but I do know the health effects are nothing but bad. And I don't see how you can sacrifice the people of New Mexico for the continuing making of what are -- of what are weapons and equipment. I think enough is enough. I don't see why we have to make all those plutonium pits. I mean, they -- it's just -- it's immoral, it's illegal, and it's killing the people of -- of this state. And I don't understand why if our NMED knows. And I heard Bearzi say this morning he knows that some of these wells don't work. So what is he waiting for? We need a higher level of -- of monitoring. We have to get the -- those wells to actually know what -- what's going on and clean it up. And the bottom line is stop it. You cannot continue to do this if you are poisoning the people of New Mexico, and poisoning the future. You know, in 20 years, 30 years,	Comment noted. See the Department's responses regarding open burning and groundwater protection in the document titled General Response to Comments.	Yes

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		I'll be dead. You're poisoning the children. You're affecting their genes, their chromosomes. This is despicable. And for what - to make money. Well, yeah, to make money. My husband could have worked down there at -- out there in Sandia, and we are morally opposed to that. So we didn't even try to -- to look into that. I would not do that. I would not live -- I mean, I had no idea how bad it was here. And if we had to do it again, I would not have raised my daughter in this filthy town, city and state. And I'm ashamed that we have a newspaper that doesn't even print it. This last Friday, they – they gave information -- it was -- John Fleck was reporting how the NMED -- the -- I think it was the DOE office in -- in Dallas, Texas, wanted to hide the information. So what they would do, they would have telephone conversations. They didn't want anything in writing. It's the US government, the EPA.		
273	Gen.	The trouble with the defense industry, nuclear industry is that they're notorious liars, and they do this by obfuscation and not coming up with -- with what the real truth of what they're doing. I went to this air quality board a couple weeks ago, maybe it was a month ago, and they had a thing where, yeah, we can't burn waste in open air. They're going to blow it up. And I pointed out to these Bozos that blowing up is just a rapid burning. And of course, there's a concomitant shockwave which just scatters the stuff that doesn't all blow up. So you never have a complete -- you know, like -- well, these guys slept through junior high school science or something. And the stuff that they try to put forth to you is just ridiculous. And here we've got all the waste in uncovered pits, and you don't know what's in these pits and all this. And it's hard to find out information on just where the wells are located and, you know, what is -- what they're looking for. Your best friend is transparency. If you don't want to be considered a bunch of liars and people who have basically screwed entire populaces, entirely on dropping radiation on them, nerve gas and the entire thing for the last 50, 70 years, you got to be out there. This is our plan, this is what the – the sites are. This is what they consist of, public accessible databases, online webs reporting what they're seeing on a regular, timely basis. It's not really that difficult. You know, like get rid of the – the encumbrances you have toward being open. You know, like this is the responsibility we've accepted, this is how we're trying to cope with it. Now, unless you're doing a scientific layout of wells to	Comment noted. See the Department's responses regarding open burning and groundwater protection in the document titled General Response to Comments.	Yes

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		monitor for toxic plumes, you know, which can be clearly evaluated by educational institutions across America, then you're going to end up with another Hanford waste site, where all the water -- you have this big plutonium plume that's going down to the Columbia River with all the nice salmon and everything else. This is what we're fighting against. It is the ignorance-making machine of the defense industry and their by-products. And if you want to be considered the good guys, start accepting responsibility, be transparent. Tell the Governor, you know, and all your supervisors that New Mexico has got to stop being satisfied with being the asshole of America. And when it comes to developing nuclear weapons, handling all the heavy metals necessary to make all these nuclear weapons and all the chemical wastes and -- of the propellants and the nuclear weapons, that's us. And the Rio Grande is the poop shoot that it all goes shooting down eventually. So this is where -- you can use this as a leverage point when dealing with the feds and these contractors to say, you know, "We're kind of tired of all this. We can't let you do this right here at least until you do this, this, this and this," the basic minimums that our people here are talking about. "If they don't do this, this and this, no, we're not even going to talk about all this other stuff here." And God bless you, which will be jobs involved in that. You know, actually, we could have a first class industry in processing all the waste that we have right now, if it's properly funded.		
274	Gen.	I do have some major concerns about the process that's going on for this permitting. It seems like some of the things I've -- I'm going to say have already been said by other people, I imagine, during both the afternoon and evening -- this evening's session. First, water quality is a very important thing to all of the citizens affected by any possible runoffs or leakage and runoffs into the Rio Grande or leakage into aquifers that are around our state. And a lot of us are affected by potential runoffs from LANL, including any that may come in contact with Rio Grande River water and -- and aquifer water that we have that might be affected by contamination. For these and other reasons, it seems like monitoring of the -- of the sites that are being permitted should at least comply with CFR 264.90-100, and possibly stricter. Some of these federal standards that were -- we talk about at times are actually weak standards. So I think the compliance with a Code of Federal Regulations standard is just minimal, and we should really consider even stricter standards than are being talked	Comment noted. See the Department's responses regarding groundwater protection and the information repository in the document titled General Response to Comments.	Yes

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		about as being standards that NMED may ask for compliance levels. Our groundwater is just so important. It's our life. Without water, we don't exist for very long as human beings. Next, it seems like we need stricter even enforcements of regulations that exist and that may exist if this permit is allowed. If we don't have enforcement, there's really not much sense in having regulations. And I don't know if transparency is one thing that might make that more apparent that it's happening, but it seems like some things aren't very easily found out about what's going on. And review of regulations that are in place, I believe, should be done on a regular basis. There can be things found out -- there are scientific discoveries happening, you know, as time goes on, different things are found out about – about various things, and it could affect what are – could make what are current standards really be – become known as -- as weak standards and needing much better enforcement. I know Colorado's standards for water is fairly high compared with some other parts of the country, and there's other states probably that have very good standards, too. But some, I guess, government entities accept fairly low standards, and others require high standards. I think New Mexico should be a state that requires high standards. I don't think we should treat water as something that we can just pick the lowest standards possible to let compliance be easy for – for whoever is in need of complying with the regulations. In addition, I mentioned transparency a little bit earlier, but I believe transparency and the availability of information is real important. The lady before me, Sofia, mentioned that she'd like to see a physical repository. I think even -- I think that would be great, but even if we don't have a physical repository, I think it's very important that we have a repository on the web part of the Internet. We could put all of the documentation on the Internet. I know it's a huge -- thousands and -- tens of thousands and hundreds of thousands, possibly, of pages, but I think it's important to let people know what you're looking at. There are enough meetings that aren't happening with public involvement and we need to know what you're doing. We need to have more trust in this organization. And without transparency, we don't have that. I mean, a lot of us feel that things are happening behind our back or aren't happening behind our back that should be maybe, or some things that should be and some things that shouldn't be. So I implore you to		

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		really provide us with more transparency about your actions and -- and that type of thing. I know recently I've heard that Citizen Action finally got some information released, and it was apparently several thousand pages of information that got released after not being provided to the public for years. I think it was something like 10 years that it's been denied the public. And it seems to me that you should have extremely good reasons not to provide information to the public. The public wants to trust you, I do believe. I know I do. And if we don't have openness of information, how in the world are we supposed to be expected to trust any of your actions? It just seems very important to me. We shouldn't just have to pry information from any agency that's supposed to provide -- provide the information without any prodding. And basically because of these and other dangers related to the issuance of this permit, I request that you deny the permit.		
275	Gen.	I want to preface my remarks by reading NMED's mission statement. > Our mission is to provide the highest quality of life throughout the state by promoting a safe, clean, and productive environment. We are committed to providing clear articulation of our goals, standards, and expectations in a professional manner so that the citizens of New Mexico can make informed decisions about the environment and their community. I want to contrast that mission statement with some of the patterns and practices of NMED, as well as the Department of the Environment, in not safeguarding the citizens of New Mexico. I want to show the real culture. *Secrecy* - There was a TechLaw report, January 31st, 2006, there was a computer model called the black box that cast serious doubts on the safety of open pits at Sandia Labs, and I mention that because we have the same situation at LANL. The black box calculated the probability that contaminants would travel below the dump to the regional aquifer by Sandia scientists. The secret TechLaw report described important mistakes of the design of the dirt cover, and those mistakes were not fixed and the badly flawed cover installed over the mixed waste dump. NMED hid this document for four years. And at a meeting between NMED and the public, the report about concerns about this model, which was in May of 2006, were not revealed. Their remedy was to	Comment noted. See the Department's responses regarding contractor documents, open burning, regulated units/alternative requirements, and groundwater protection in the document titled General Response to Comments.	Yes

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		cover the dump and leave the waste in place. An organization called Citizens Action had to request public records by the FOIA documents, and a ruling by the Attorney General, Gary King, who ruled that the report is a public record and not subject to executive privilege, as NMED insisted. NMED spent $100,000 plus fighting off Citizen Action's request, and they lost. This is money that the public spent. In the Albuquerque Journal news editorial last week, dated 5/1/2010, the article exposes the pattern of secrecy, lack of protection, and deceptive practices beginning in 1991. And beginning in 1991, the EPA, the DOE and NMED knew all about defective monitoring wells, so in 1998, NMED issued a deficiency notice -- this was at Sandia Labs at the time -- for the defective wells. When Mr. Bearzi became the new bureau chief, he did not pursue those violations, or inform the hearing officer, the judge, or the public or the work expert panel about the false monitoring data. So we have a dirt cover that does not provide long-term protection, and we have a defective monitoring network as of now. In another article by the Albuquerque Journal, on April 10th, 2010, the EPA Dallas office stated there was accurate groundwater monitoring over Sandia landfill, but, internally, the staff expressed serious doubts and did not discuss the issues in writing. They did not do this because they wanted to hold information from the public, according to the EPA's Office of Inspector General. And yet, NMED believes that the wells are adequate in spite of this internal report. NMED allows open detonation of rocket motors and weapons at Kirtland Air Force Base, which releases dangerous chemicals and heavy metals into the ground -- about six pages of that -- releases perchlorates, and according to the National Academy of Science report, perchlorates inhibit thyroid function, birth defects and they lower IQ. A letter from NMED Secretary Ron Curry to the EPA describes perchlorates from Kirtland and Sandia entering the water in 2008, and yet the practice continues. Bob Gilkeson, the former chief hydrogeologist at LANL, who was an expert witness, stated that rocket motors and weapons detonation releases other poisonous -- poisons to the soil, such as organic solvents, arsenic, lead, mercury, beryllium, barium -- we're all familiar with barium enemas, but when barium enters through the water, it has a much more insidious effect -- chromium, selenium, and radionuclides -- substances noted to cause cancer, respiratory diseases, brain damage, and fetal injury.		

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		Now NMED wants to revoke open pit burning at LANL, which will remove dioxins, and that is good, but it is also a diversion from the real environmental challenge of cleanup and removal of 21 million cubic feet -- cubic yards of hazardous, radioactive and mixed hazardous waste. It's like swatting flies while an 800-pound gorilla sits in the center of the living room. NMED never completed -- never required completion of a closure plan, as required by federal law under regulation 40 CFR 265.112, for the 21 million cubic feet of hazardous waste in unlined trenches and shafts since 1985 when the code of regulation became law. This is at LANL. There are three areas, they are called material disposal areas, pits -- Area G, which has 63 acres of radioactive nuclides; Area L, which has 25 acres of mixed hazardous waste; and Area H, which has six-tenths of an acre. They are allowing these contaminants to follow the pathways down canyons, by fires, by groundwater run-off, by winds, erosion, and gravity to municipal wells in Los Alamos, Santa Fe, and the Rio Grande. The groundwater requirements of these open pits have never met the legal requirements under federal law 40 CFR 264.91 through 100 at these disposal areas. Bob Gilkeson, the hydrogeologist, told NMED of defective monitoring wells, because drilling agents, such as organic foam and bentonite clay, contaminate the upper aquifer by creating a new chemistry that absorbs these contaminants, thereby preventing detection of wastes. These foams and other agents, they hide contaminants of radionuclides in the aquifer. The scientific literature confirms Gilkeson's testimony that these organic agents set up a new chemistry to prevent detection. They are worthless. LANL and NMED talked about it in their annual report, and they indicated there was a minor impact to foam and other organic agents, but they would go away in a few years. That's hogwash. The National Academy of Sciences, in 2007, and the EPA Kerr Research Laboratory, refuted this unscientific claim in four reports. Yet, NMED still allows LANL to use these incorrect methods to prevent detection data and accurate data. If the data is worthless, then it should – it would appear that we should install new monitoring wells that can detect contaminants before it's too late. I think any mindful and concerned citizen would demand at least this kind of protection. Even Mr. Bearzi stated in his approval letter, which I have here, and I would like to submit as part of the record, for faulty well monitoring of contaminants, dated May 25th, 2007, and I quote, "NMED is concerned about the uncertainty with respect to		

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		monitoring certain potential contaminants of concern, such as the highly adsorptive radionuclides. NMED, therefore" -- and this is the term -- "therefore, suggests that the permittees' monitoring wells installed as the monitoring network are capable of providing reliable data to monitor potential releases of highly adsorptive radionuclides from operations at LANL -- of the laboratory to groundwater," end of quote. Since when is a watchdog agency allowed to use the term "suggest"? That doesn't -- "suggest" is not an enforcement term. Mr. Cobrain, senior staff over the corrective action process, stated at the RCRA public meeting on April 26th, 2010, like this meeting, that it would be too difficult to remove incorrect monitoring data from the monitoring wells. If that is the case, Mr. Cobrain, why don't we have new monitoring wells that work? Where is the enforcement and the plan to take corrective action, Mr. Bearzi? Is this the best we can hope for, in an agency that's mandated to safeguard our water and air quality from deadly contamination? Is this how the public is protected, by approving a defective well monitoring system to detect and intercept deadly contaminants? Is this the type of watchdog agency that allows eight million gallons of jet fuel to contaminate the Albuquerque drinking water? That's in yesterday's Albuquerque Journal. Is this the kind of regulatory agency willing to leave massive quantities of radioactive hazardous waste under dirt covers at Sandia and LANL? This is the agency that approved the improper drilling methods and signed off on the well completion report for nearly ten years. Consequently, our water quality and health have been sacrificed, as I see it, because of this cozy relationship between NMED, DOE, and the labs. If the past gives us a window into the future, should we, the public, assume that a dirt cover will be placed over the 21 million cubic feet of nuclear and hazardous waste at LANL? If so, we have a future crisis that will eclipse the gulf oil disaster threatening five states. This is the agency that never included the public when the plans were altered for groundwater monitoring of these toxic dumps, as required by federal law 40 CFR 270.42. This is an agency that greases the skids for billions of dollars to keep coming into the state by maintaining loose, ineffectual regulatory standards for cleanup and		

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		management of hazardous waste. The plan to use the consent order of cleanup at sites G, H and L at LANL is a plan to use lesser standards of protection than those required by law. This is a long-standing record of being soft on polluters. They are still doing it by allowing foaming agents to enter the aquifer. This is useless data for detection. I can't believe that the world's greatest scientists at LANL can't correctly install effective monitoring wells, and NMED continually violates their mission by allowing this. The result is that we have waste in the municipal wells of Santa Fe, Los Alamos, and the Rio Grande, radioactive nuclides and hazardous waste. And I want to ask this other question to NMED and to Mr. Bearzi. Where is the closure plan for all the radioactive and hazardous sites at LANL that's -- and Sandia, as required by law? The closure plan for the removal of the 21 million cubic feet of waste -- I want this to be part of the public record that a lack of a closure plan is a serious violation of federal law that I pray will be presented as one of the many violations of public trust in a class action suit against NMED as a state agency who continually violates its mission statement and those individuals who have jurisdiction to enforce the law. Is Attorney Domenici here today representing LANL? I did want to mention this if he was here, but I'll mention it anyway. He's a candidate for governor and he has a -- he has stated -- I listened to one of his broadcasts -- that he is a protector of the environment; he's concerned about the environment. So I would ask him, as a citizen who shares this vision for ironclad environment controls, that he would advise his client, LANL, to obey the law by putting effective monitoring wells in place and by following the law by preparing and implementing a closure plan at Los Alamos. Our most precious resource of New Mexico, the Rio Grande, must be protected, or else future generations will wonder why we were remiss by not passing on the legacy of affording clean water, air and soil for posterity. We have had 60 years of deferring to the hired experts. As a result, New Mexico has -- we're sitting on quite a few tons of unprotected pits oozing into our drinking water. We have rather poor and compromising air quality, and no effective monitoring and safeguarding of our environment. The experts have found rather compromising ways to make New Mexico the premier dumping ground of nuclear and other hazardous wastes in the nation. It's time to no longer defer to these experts, these hired experts, who do not have our best interests in mind, and defer to the citizens and citizen action groups who want clean water, air and		

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		soil. I will finish by quoting NMED's mission statement again, to remind them of their mandate that they have violated in the most egregious manner. > Our mission is to provide the highest quality of life throughout the state by promoting a safe, clean, and productive environment. We are committed to providing clear articulation of our goals, standards, and expectations in a professional manner, so that the citizens of New Mexico can make informed decisions about the environment and their community. Informed decisions (?) The word "safety" is used; "safe," to me, means being able to drink water and breathe air free of harmful contaminants. The term "clean and productive," that means ongoing monitoring and proven scientific measures to ensure safety. "Clear articulation of goals, standards, and expectations," that means transparency and timely release of all documents, or how are we -- the citizens of New Mexico, how will we be able to make -- to make informed decisions about the environment and our community, as stated in your last sentence of the mission statement. I'd like to present a petition from the citizens of this state to Mr. Kieling, Program Manager of the Hazardous Waste Bureau, which requires NMED to honor its mission by being the enforcement agency it was designed to be. And this petition statement is as follows. This is addressed to Mr. Kieling: > I provide the following public comments about the lack of groundwater protection requirements in the proposed hazardous waste permit for Los Alamos National Laboratory. The EPA has designated the Espanola Basin as a sole source aquifer, meaning that the Espanola Basin is the sole drinking water source for the area between the Jemez and Sangre de Cristo Mountains, running from Tres Piedras, to the north, to almost Galisteo, to the south. > Since operations began in 1943, LANL has buried over 21 million cubic feet of radioactive, hazardous and toxic wastes in unlined pits, trenches and shafts dug into the volcanic tuff." That's ash, and it absorbs water readily. "The LANL		

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		groundwater monitoring network has been under development since 1998 and has yet to provide reliable and representative samples of groundwater from the regional aquifer. I am particularly concerned about the lack of detection and compliance groundwater monitoring for the 'regulated units'" -- these are the pits -- "Areas G, H and L" -- over 65 -- 80-some acres of radioactive and hazardous wastes -- "at Technical Area 54," known as TA-54, that is. I quote the March 19th, 2010, written testimony by James Bearzi, Bureau Chief of the NMED." 'Groundwater contamination has already been detected beneath the regulated units at TA-54.' Groundwater beneath LANL discharges to the springs of the Rio Grande. Albuquerque residents are already drinking water from the Rio Grande and Santa Fe residents will begin next spring. It is time to get back to basics. NMED must require LANL to install wells drilled only with air. These wells must be able to detect contamination and provide the necessary information in order to implement corrective action, or 'cleanup,' in an efficient and cost-effective manner. Already too much taxpayer money has been wasted drilling defective wells, collecting and analyzing samples from defective wells and reporting data to the public that is unreliable.		
276	Gen.	First of all, just I wanted to just like let you guys know that here -- I mean, I'm here, I'm speaking from the heart, you know, from my heart, and I want to, you know, talk about my feelings. I'm not super, you know, involved on the whole technical nature of the proceedings. Sometimes some of these like big things, to be honest, go over my head. I see that there is like a huge amount of documents lined up on this table. I assume they are about these proceedings. I'm a graduate of the University of California, Berkeley, and to be honest, these things still go over my head and a lot of these like acronyms and terms are a little too much. I think the time for like deference to these like technical proceedings is over, and we really need to understand the real human aspects of what's going on at the labs and, you know, how that relates to really the environment of the	Comment noted. See the Department's responses regarding environmental justice and open burning in the document titled General Response to Comments.	Yes

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		land. Just speaking off of my feelings, I feel that there is a little bit of a travesty in these proceedings. I get the impression from being here that this is already decided, that this is almost already a done deal. That's the feeling that I get, that basically that Los Alamos is going to get this permit. Maybe they have this draft permit, and they are going to these public proceedings, and they are going to say like, "Oh, well, we're going to make these concessions," which have probably already been determined by the permit, and then go through this. This is almost that, just the necessary bureaucratic proceedings just to get this done, because this is the format that you guys have to do it, and it's just -- it seems to be like a big travesty and that we're just going through the steps and going through the processes. That being said, I welcome any kind of, you know, comments or questions after my speech, and, you know, please tell me that I'm wrong, please tell me that there is actually some democracy in all of this, and I would love to know that. First of all, I want to talk about the environmental devastations of the Los Alamos National Laboratories that have already gone on. The biggest one that I can talk about is this big fire in 1999, which, in my mind, that none of this should be happening. New Mexico Environmental Department should have dealt with that first. I mean, we have like this big fire that goes off -- it starts off as a forest fire and then goes into the city, burns down a bunch of houses that are built in the '50s that have asbestos, you know, the power lines burn and the telephone lines and the PCBs and those transistors, and all of that, you know, going into the air. Not even -- not -- that's -- none of that is mentioning the -- you know, what I've heard of Area G burning for three days during this. That's like this is a big smoke cloud that's going over the valley that's -- I heard went all the way through Texas, you know. In my livings in the Espanola Valley and staying in Chimayo, I've learned a lot from the community directly about how this has affected people, you know, young children immediately getting like strange chemical pneumonias as this is happening. I think this is something that like really should be addressed by the New Mexico Environmental Department, and what's really going on with, you know, the toxicity of what's going on at LANL, and really what's -- what is LANL doing, you know, why is – like that should be addressed by the New Mexico Environmental Department. How is the mission of LANL against the environment? I mean, this isn't -- I mean, it's Department of Energy,		

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		but this is a weapons facility. They build nuclear bombs, and they test -- they had the first test of these here in New Mexico. I mean, that's – these are all like big issues. To me, it's like none of this is real. I mean, we have all these proceedings, we have these technical things, with all these acronyms, and talking about why, you know, we're moving forward, why we're working with the Environmental Department, but I don't really see any change, you know. I mean, it begs the question -- in my mind it begs the question, really, about what is environmental justice? What is justice to the environment? In my mind, there is this interconnected nature of this environment. It's not just the sovereign borders of Los Alamos Labs and what they do there; it's connected through the water and air. So everything that they do there has this interconnected nature with the environment of the planet. I mean -- and it's really -- and it's -- and to me, what really needs to be addressed is the mission by the New Mexico Environment, the mission of what LANL is doing, not whether or not that we can allow them to have open burnings, or, no, we shouldn't allow open burnings, instead it's safer to do open detonations, and whether or not -- and these little small aspects of the procedures of what Los Alamos National Laboratories is doing. It should be like, what the heck are they doing? What are they doing there? It's not just nuclear weapons, I hear all these like, you know, weird wave guns and other types of like weapons and weapons of mass destruction that is being perpetrated at these labs. Really, I think that is what needs to be addressed, you know. When we were talking about open burning or open detonation, this thing is like – you know, it's going up into the air, and that's – you know, it's going to go out and go into like this area right here, and this is -- and it brings up another concept of this like environmental racism of that, okay, well, we'll just kind of forget what happens to the Espanola Valley, we'll just kind of overlook the travesties, the environmental injustice that is going on here because of those labs, because, you know, whatever these -- you know, these are like poor affected people who can't come in in the middle of a day to a meeting and talk about, you know, their lives and how – how cancer is just like such an epidemic in this land. So like it's really -- I mean, the question of what is environmental justice and what should NMED -- which I think is a very interesting acronym when we take the letters apart, New Mexico Environmental Department, when we think about N-M-E-D -- and		

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		what should they be doing instead. I think one thing that they should do, and maybe they have -- in May, we have this thing coming up, the biennial review of the Nuclear Nonproliferation Treaty. I think that's something that maybe this Environmental Department should be focusing on and actually enforcing. You know, we're not -- this treaty that we've signed since the '70s says that we're not supposed to be building new nuclear weapons, and in my mind -- I mean, I've been told by many people in the labs that, no, we're not building nuclear weapons, what we're doing is we're just replacing these old ones with like new parts. In my mind, that's not -- that's still building new nuclear weapons. You know, maybe we're like just taking all the parts out of the old one and putting in new ones and still building these plutonium pits, and now we have, you know, billions of dollars going to Los Alamos Labs to renovate the plutonium pit production, which is what I'm talking about, the Chemistry and Metallurgy Research Replacement Building, another long acronym that kind of seems to go over my head, until like we actually -- or I sit down with people and actually figure out what that means. It's like we're going to streamline the capabilities of producing triggers for nuclear weapons. That's what it means in my mind. So, yeah, we need to enforce the Nuclear Nonproliferation Treaty. We need to start enforcing these treaties. And moreover than that, I think what we need to do is work on shifting the mission of the labs. That's, I think, what we need to do, as far as if we really care about our environment, if we really care about the health and safety of the people here in New Mexico, we need to shift the mission of the labs. We need to shift away from militarism in our research, our -- that's what's got me here, is that I come from the University of California, Berkeley, and it was really upsetting to me -- I was attending that, and I came into UC-Berkeley, because it was like I was good at math, and it was like that's what like got me into the prestigious university, and I always did well in math in high school, and I came into this school and find it's like the best minds, the best -- you know, the most successful -- you know, they are going to get the highest GPA, you take the most honored classes in math as a math major. The jobs that you have -- the most like economic success that you have is working at a place like this, building a new, more powerful bomb, and that was upsetting to me. So I want to shift the mission of the labs from militarism to environmentalism, from talking about, you know, economic dominance of the world, through our military might, through caring about the environment, and caring about and not destroying the environment with like – you		

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		know, like the depleted uranium that is being used, that's a byproduct of these weapons production that we have been using all around the world, you know, and with our tank shells and radiating the word. I mean, that's something that needs to stop. You know, we need to shift from this mission of destruction to this mission of sustainability. We need to realize that we have a limited resource here on the planet, and we need to stop with destroying and taking, and we need to start to research the mission of sustaining a planet, being able to continue into the future, because, you know, here I believe that I'm -- I'm one of the people that is representing the youth here and representing the future. There is this saying that I've heard that I really enjoy, is that we don't inherent -- we don't inherent the planet from our ancestors, we are borrowing it from our children. So I think that's a really big issue, when we're talking about transforming the missions of the labs from this destruction to sustainability. I'm not talking about like having, you know, like five percent into, you know, sustainable and renewable energy when we're still doing 65 percent of the budgets on nuclear weapons. That's not what I'm talking about. I'm talking about a real shift. We need to shift from toxifying -- from poisoning the planet – the mission of the research labs needs to shift from poisoning the earth to cleaning up the earth. We need to stop with the toxic things that the lab is doing. We shouldn't even be having this permit hearing in the first place. We shouldn't even be dealing with whether or not they can do these things -- whether or not they should be allowed to do this. We should -- this seems so clear in my mind that this is just a crime; this is criminal what they are doing to our planet, and we need to focus our energies in stopping -- we need to stop and we need to look back into what we have done in the past, to the fires, to the water spills, to the burning of the waste. I heard that the waste that was burned – that was created from the bombs dropped on Hiroshima and Nagasaki, that that will burn -- that's what I was told, that that waste that was created in Area G, that was burned up and went up into the air. We need to stop the mission that is – that has been going on for almost 65 years. We need to transform that into looking back to what we have done and cleaning that up. That's what I think that the minds, and the young minds that are trained at my university, my almamater, need to shift into doing that kind of research. So we need to -- and that's why I'm here and that's what I'm here talking about, and I think that the time for like this technical debate about, you know, how many -- how		

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		much -- like how much radiation are they doing or, you know, what are the safe levels of radiation, and all these things, I think we need to stop, and we need to say no, we need to stop all levels of toxifying the environment, we need to stop all levels of this environmental devastation going on at the Los Alamos National Laboratories and we need to start doing the positive. We need to shift the spectrum from the negative into the healing space.		
277	Gen.	I'm 33 years old. I'm originally from San Ildefonso, just north of Ojo Caliente. I currently reside in the Santa Clara Pueblo with my wife and two children. I'm a husband, a father, a son, a brother, and an uncle. The reason I'm here is on behalf of future generations and out of respect to my pasados, which is Spanish for my ancestors. I'm here to speak on behalf of air quality, water, which includes the rivers and the acequia system, as well as the soil and the food which grows from it. The first point I will touch on is the public information repository. I feel that the need for a public information repository in hard copy is a necessity due to the fact that there are limited fiber-optic resources in our area. As an information technology specialist, I can tell you that the existing fiber-optic infrastructure in Northern New Mexico is extremely limited. What exists currently is overtaxed. Also, I can speak to the state of the majority of computers in most of the public areas, such as the libraries. With the new virus malware and spyware threats emerging on a weekly basis, the majority of the computers and libraries and other public areas are basically nonfunctional. Most of these institutions do not have a full-time IT person and usually rely on volunteers. So a physical repository is of the utmost importance. I'm also in support of the New Mexico Environmental Department's denial of LANL's permit application for open air burning. I'm in support of the need for more public participation in the cleanup decision making at LANL. I will be reading selected sections from Plans and Practices for Groundwater Protection at Los Alamos National Laboratory, Final Report, so that it may be submitted for public comment. Summary - The world's first nuclear bomb was developed in 1943 at a site near	Comment noted. See the Department's responses regarding the information repository, open burning, public participation, regulated units/alternative requirements, and groundwater protection in the document titled General Response to Comments.	Yes

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		the Town of Los Alamos, New Mexico. Designated as the Los Alamos National Laboratory in 1981, the 40 -square-mile site is today operated by Los Alamos National Security, LLC, under contract to the National Nuclear Security Administration and the US Department of Energy. Like other sites in the nation's nuclear weapons complex, the LANL site harbors a legacy of radioactive waste and environmental contamination.Radioactive materials and chemical contaminants have been detected in some portions of the groundwater beneath the site. Groundwater protection is an important issue because water resources in the LANL area of north central New Mexico are limited. Seven of Los Alamos County's 12 drinking water supply wells are located on the LANL site. Los Alamos County and the County and City of Santa Fe have water supply wells located along the projected flow path of groundwater leaving the LANL site. The Pueblo de San Ildefonso also lies on the pathways of the groundwater and the few surface streams that flow from the site to the Rio Grande, which supplies water to much of the state. Under authority of the US Environmental Protection Agency, the State of New Mexico regulates protection of its water resources through the New Mexico Environment Department. In 1995, NMED found LANL's groundwater monitoring program to be inadequate. Consequently, LANL conducted a detailed workplan to characterize the site's hydrology in order to develop an effective monitoring program. A legally binding consent order issued by NMED in 2005 establishes requirements and schedules for the monitoring program, which LANL is now developing, as well as a schedule for completing future medial actions by 2015. The study described in this report was initially requested by NNSA, which turned to the National Academies for technical advice and recommendations regarding several aspects of LANL's groundwater protection program. The DOE Office of Environmental Management funded the study. The study came approximately at the juncture between completion of LANL's hydrogeologic workplan and initial development of a site-wide monitoring plan.		

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		In addressing its statement of task, which is given at Sidebar 1.1, the committee considered LANL's groundwater protection program to be work in progress. The committee's findings are necessarily a snapshot in time, reflecting publicly available information through about April, 2007. Successful completion of the groundwater protection program will not be easy. The program is challenged by scientific and technical problems in understanding and quantifying LANL's sources of contamination and the migration of contaminants from those sources. Because groundwater is an important resource in the area, citizens are concerned about the dangers of its pollution by LANL. Some citizens groups seek assurances of essentially zero contamination. Reflecting citizens' concerns, state officials and regulators have imposed strict schedules and detailed regulations (for example, the consent order) on the program. Regardless of the difficulties that lie ahead, prudence and the law require that a groundwater monitoring system be established. In deliberating on the issues in its task statement, the committee came to the conclusion that it is technically feasible for LANL to establish a monitoring system that meets the groundwater protection requirements of the consent order. The findings and recommendations presented in this report are intended to help ensure the efficacy of LANL's work. There are four overarching findings that arose from the committee's study and that have relevance to essentially all parts of the task statement. Geochemistry - LANL demonstrated substantial progress in site characterization under the hydrogeological workplan. However, LANL's work in geochemistry has not kept pace with the work in hydrogeology. Geochemistry is central to understanding the extent to which contaminants move with groundwater; it is a tool for better understanding hydrogeological pathways; and it is essential for determining the degree to which groundwater monitoring samples are representative of actual groundwater.		

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		Mass balance - LANL needs better ways to demonstrate its considerable understanding – and eventually its mastery - of potential threats to the regional aquifer arising from site contamination. Specifically this means knowing the site's inventory of contaminants and where they are. Most contaminants are evidently still in or near the sources; a sizable fraction of some of them migrated into the vadose zone; and a small fraction are in the regional aquifer. This information can be quantified and presented succinctly by the method referred to as mass balance, which is introduced in Chapter 3. Uncertainty - LANL's groundwater protection program is proceeding in the face of substantial technical uncertainty - about the contamination sources themselves, pathways by which contaminants might reach potable water, and how contaminants can reliably be detected at near-background levels. Uncertainty is inherit in scientific knowledge, and work to address uncertainty can improve knowledge. LANL needs to do a better job of describing the uncertainties in its groundwater protection program to both scientific and public audiences. This includes fundamental conceptual uncertainty - things that are simply not known, such as the nature of some groundwater pathways - and measurement uncertainty, such as the viability variable of laboratory results for contaminants detected at very low levels. Peer review - The committee was not hesitant to accept LANL's motto: 'The World's Greatest Scientists Protecting America' at face value. However, like many publications from DOE laboratories, LANL reports typically fall in the area of non-peer-reviewed literature. LANL has produced massive amounts of report material in its groundwater investigations. The additional step of summarizing and publishing key portions as authoritative contributions to peer-reviewed scientific journals, as done with some information from the hydrogeological workplan, can demonstrate the scientific merit of the program. This in turn can help allay public concerns about LANL's ability to protect their groundwater." And just on a personal note, I'm here in support of the sustainable future in Northern		

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		New Mexico, I'm in support of nonnuclear proliferation, and I will continue to dedicate significant time and resources towards the opposition.		
278	Gen.	I'll start by continuing where Mr. Luis Pena left off, reading the Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory, so that it could be submitted in the public comment. *Findings and Recommendations to Address the Task Statement.* The task statement and the outline of this report generally follow the sequence of issues one would consider in developing a groundwater protection program. The first set of questions to be addressed asked the committee to judge LANL's understanding of its major source of groundwater contamination and whether these sources have been controlled. The second set asked the committee to judge the scientific basis and scope of LANL's current (interim) groundwater monitoring program and, in particular, if it is adequate to provide early warning and response to potential groundwater contamination from LANL operations. The third set dealt with practicalities of conducting a monitoring program, including whether LANL is using sound scientific practices in assessing the quality of its groundwater monitoring data and if the date are properly qualified so that they can be interpreted correctly. In several instances, the committee's short answers to these questions were negative. Such findings do not necessarily indicate major deficiencies in LANL's groundwater protection program, but rather that the program is incomplete. Work remains to be done in order to satisfy completely the conditions questioned in the task statement. The committee's recommendations are intended to help LANL increase its effectiveness in completing its groundwater protection program. Chapter 6 of this report provides a complete summary of all of the committee's findings and recommendations, which are developed and described in details in Chapters 3, 4 and 5.	Comment noted. See the Department's responses regarding regulated units/alternative requirements, contractor documents, open burning, the information repository, environmental justice, and groundwater protection in the document titled General Response to Comments.	Yes

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		Sources and Source Controls. Radioactive or chemically hazardous wastes disposed of on site at LANL are the sources from which contaminants enter the soils, rocks, and water that comprise the hydrogeologic environment beneath the site. The laboratory has practiced on-site disposal of its wastes since the early 1940s. Disposal methods include the discharge of liquid effluents into canyons and the emplacement of solid wastes, mainly on mesa tops. In responding to its task statement, the committee found that liquid waste discharges, which LANL considers to be the source of the contamination currently detected in groundwater, are generally eliminated or controlled. Solid wastes in contaminants deemed by LANL to have less near-term potential to impact groundwater have received much less attention - the committee found that they are not well inventoried or controlled. *Recommendations:* LANL should complete the characterization of major contaminant disposal sites and their inventories, for example, complete the investigation of historical information about these disposal sites with emphasis on radionuclides and chemicals likely to impact human health and the environment. Selected sites should be characterized by field analysis when historical information is insufficient to determine quantities of major contaminants disposed and to confirm the degree of transport that has occurred. LANL should devote greater effort to characterizing sources with significant inventories of contaminants (especially plutonium) that usually are considered to be practically mobile but still have the long-term potential to migrate in the presence of water. These and other findings and recommendations related to sources and their control are described in Chapter 3. *Contaminant Pathways and the Interim Monitoring Program.* LANL carried out its hydrogeologic workplan from 1998 to 2004 to better characterize the site's hydrogeology and potential pathways for contaminant transport in order to develop the basis for a site-wide groundwater monitoring		

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		plan. The committee found that the hydrogeologic workplan was effective in improving characterization of the site's hydrogeology. The task statement directed the committee to review LANL's current (interim) monitoring plan. In doing so, the committee found that the knowledge gained through the hydrogeologic workplan does not appear to have been used effectively in the development of the interim monitoring plan," cited LANL, 2006, a and c. The workplan is mentioned only in the introduction of the monitoring plan, and rationale for the siting of new wells in the monitoring plan is not grounded in the scientific understanding of the site evident in the Synthesis Report," cited as LANL, 2005a, "which summarized results from the workplan. *Recommendation:* LANL should demonstrate better use of its current understanding of contaminant transport pathways in the design of its groundwater monitoring program. Tables in the monitoring plan that give the rationale for locating monitoring wells should include at least the general linkage between the proposed locations and the site's hydrology, or a section discussing the relation between well locations and pathway conceptualization should be added. The committee found that LANL's current conceptualization of the site's groundwater system into alluvial, intermediate-perched, and regional components, along with the importance of these components for understanding the flow system within and below wet canyons, is a major accomplishment. However, there is a lack of understanding of the inter-connectiveness of subsurface pathways between watersheds. While there is a general understanding that perched waters are probably redirecting contaminants from areas directly below canyons where they originally infiltrate to submesa areas and to other nearby canyons, the detailed knowledge to predict subsurface flow paths does not exist. *Recommendation:* LANL should add a site-wide perspective to its future groundwater monitoring plans. This would include the following: Design		

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		additional characterization, modeling, and geochemical investigations to better understand potential fast pathways between watersheds. Increase the area of the regional aquifer that is monitored by drilling more wells to sample the intercanyon areas underneath the mesas as well as more wells in the canyons. Provide additional monitoring locations in the southern area of the site and on Pueblo de San Ildefonso lands. These and other findings and recommendations related to contaminants pathways and LANL's current plan for monitoring are described in Chapter 4. *Monitoring and Data Quality.* Implementing a monitoring plan involves the practicalities of constructing groundwater wells and analyzing samples from the wells. Any monitoring activity faces a conundrum: If little or no contamination is found, does this mean that there is in fact little or no contamination, or that the monitoring itself is flawed? *Sources and Source Controls.* Radioactive or chemically hazardous wastes disposed of onsite at LANL are the sources from which contaminants enter the soils" In responding to the questions asked in the statement of task, which dealt with data quality issues, the committee found that LANL is using good practices in terms of having the proper quality assurance and quality control plans and documentation in place, but falls short of consistently carrying out all the procedures cited in the plans. Results of analyzing groundwater samples often do not carry the proper qualifiers according to good QA/QC practices. This especially applies to analytical results near or below the limits of practical quantitation and detection, near the natural background, or both. The difficulty here is that reported detection of contamination that is not statistically significant may be taken as real by regulators and other stakeholders - with concomitant and concerns and calls for remedial actions.		

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		Recommendations: LANL should ensure that measurements of contaminants at concentrations that are at or near background levels or near analytical detection limits (i.e., method detection limits and practical quantitation levels) are performed and reported in ways that are sound. The LANL site office of DOE should take steps to ensure that LANL and site regulators agree on how all such data are to be handled, compiled, and reported. LANL should make more effort to ensure that data uncertainties are made clear to public stakeholders. During the study the committee was presented with information suggesting that many wells into the regional aquifer at LANL (R-wells) are flawed for the purpose of monitoring. The committee did not disagree, but rather found a lack of basic scientific understanding of the subsurface geochemistry that could help ensure future success. Evidence about the conditions prevalent around the sampling points (screens) in the compromised wells is indirect - relying on plausible but unproven chemical interactions around the screens, general literature data, analyses of surrogates, and apparent trends in sampling data that may not be statistically valid. The committee received little scientific information - for example, on a par with LANL's publications about vadose zone pathways," cited as VSG, 2005, “regarding the geochemical behavior of contaminants in the subsurface or effects of non-native materials (drilling fluids, additives, construction materials) on the geologic media to be sampled. Data from scientifically vetted (peer-reviewed) studies are necessary to authoritatively address concerns and uncertainties about how drilling and well completion processes might alter the native conditions around well screens and to ensure reliable monitoring activities in the future. *Recommendation*: LANL should plan and carry out geochemical research on the interactive behavior of contaminants, materials introduced in drilling and well completion, and the geologic media.		

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		As a part of LANL's future plans for site-wide monitoring, laboratory and field work would include: Determining the nature of interactions among materials proposed for use in constructing monitoring wells and the types of geological media that LANL intends to monitor. Quantitative measurement of sorption or precipitation of contaminants onto the natural, added, and possibly altered constituents that would constitute the sampling environment of a monitoring well; and publication of results in peer-reviewed literature. The committee is not recommending open-ended research. Rather the work would underpin plans for future monitoring of specific areas of the site; contaminants of greatest concern in the area; geologic media expected to be sampled; and drilling fluids, additives, and other materials intended to be used in constructing the monitoring wells. These and other findings and recommendations related to the implementation of groundwater monitoring at LANL are described in Chapter 5. *Closing Comments.* LANL's groundwater protection program is at about its temporal midpoint, continuing for another eight years until 2015. The consent order establishes an enforceable process and schedule for the program. The committee hopes that the assessments, findings, and recommendations presented in this report will be useful in informing future technical decisions that will be made within the consent order process." I'd like to just comment about another chart that was recently released in December, which was before a secret document. It is titled "Generalized Hydrogeologic Cross Section for TA-54." It shows a direct fissure at the salt vent into the aquifer of our water. Why this was deemed as necessary to be secret, I don't know, except that maybe they didn't want people to know that. I live in Santa Clara Pueblo, which is directly adjacent to Los Alamos National Laboratories. I have two daughters, who I love dearly, many nieces and nephews, sisters and brothers, grandparents, aunties and uncles, elders of the community. It is very, very concerning to me that anything is allowed to be released into the environment without first being known the effects on human population, particularly the elderly and children		

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		and infants and women. We know that a lot of these chemicals released into the environment target reproductive organs. To me, this is also a matter of reproductive justice and my right to bear children in a healthy environment, the right for me to pass on knowledge to the future generations and not have to be concerned about birthing healthy babies. That comes as a given for a lot of people, but for us it's not the case. I have a garden that I work in in the summer. My daughters play in the ditch while I tend to the garden. I know this water comes from up in the mountains, from the Jemez, like three miles away from potential release sites. If I were to ask LANL what levels of tritium are safe for my three-year-old to be exposed to, for my five-year-old to be exposed to, would they be able to tell me? This goes with the hundreds of other chemicals and toxins being released into the environment presently. Why is it that my children, when they go to school, have to listen to bombs being detonated while they are at the playground when there is not a rain cloud in sight? Why is it that when I go walk in the mornings, at 5:00 in the morning watching the sun rise, I have to hear bombs being detonated? It's bad enough that I have to listen to them, I can't imagine being on the receiving end of them when they are trying to kill you. A lot of current standards for nuclear facilities across the nation, what they base their acceptable standards of exposure to workers is based on a 135-pound white adult male, sometimes known as the reference man. These standards do not protect women and children or elderly or people of color. Why is that, when it is these people that are the most vulnerable populations to begin with? I'm against any kind of releases into the environment without first studies being done about a broad range of safety issues, health risk assessments, but because of the national security umbrella, I think that they are allowed to do production on weapons without first determining this; whereas, any other corporation would need to determine these safety issues first. I'm in support of the New Mexico Environment Department's denial of LANL's permit application for opening air burning of hazardous wastes, especially since there is no -- I don't know how they determined that these -- that there is no environmental danger and it is not required for them to do air monitoring of these sites. They do soil samplings, is		

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		my understanding, but they don't do any air monitoring. So how do they even know what's going into the air if they are not doing that? I think there needs to be more community trainings. I've been educating myself on these issues for a year, and I feel like I maybe breathe the dust off some of those documents that are on the table. I'm also in support of a physical information repository. I'm a student of Northern New Mexico College, I'm in the elementary education program, and I'm also involved with the community organization Tewa Women United, which is working to help educate some of the youth in the area on some of these issues, and to have such a place would be extremely helpful in facilitating that, someone that's trained in looking up documents. As we saw this morning, there is a list of documents that maybe don't even specifically list what it is you're trying to look for, but if I had a question, and someone was at this repository and could tell me, "Oh, you need to look here," that would save me probably hours. I'm in the process of doing an independent survey of local libraries, and I can tell you what I've found just since I've been doing this, is at the Santa Clara Pueblo Community Library, I have gone on three different occasions and have been unable to open a lot of these attachments, the computer will freeze up and I'll have to start all over again, kind of what we saw this morning. When I go in the afternoons after 4:00 PM, which is when a lot of people get out of work, every single computer is used by a young person, either for their homework or pleasure or whatever they – whatever they want to be on the computer for, and I would probably have to wait, I don't know how long, to use one of those computers in after-school hours, which is also a conflict when other people get off work and we want to have access to this information. It feels -- the comments made this morning that everything -- alluding to the fact that everything is accessible virtually comes from the voice of someone with an elitist and has a highly privileged background, who does not know what it's like to live in a rural community. There were some places that just until recently just got internet access, as far as recently they got hooked up to the internet last year. It doesn't address how people with physical limitations, who cannot travel to these places, are able -- are going to be able to access these documents, short of a librarian downloading it for them. It just makes a lot of sense to have a physical and virtual one; it's just accessible to a lot more people, and to have a fully staffed person that would be		

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		able to explain some of these things for people that didn't know a lot about it. There needs to be a closer look at groundwater protection at LANL. The draft permit does not include a point of compliance for monitoring for groundwater contamination. Again, that goes back to my fear of what my girls are playing in the acequias and the ditches, and there needs to be some cleanup happening. According to the CDC biohazard report, we're the most contaminated site in the nation, more than the other top three combined. This information alone, to me, is enough to justify immediate cleanup instead of further prediction.		
279	Gen.	There is the contradiction of what is and what isn't, as far as how to be well financially or how to be well in your health and what's happening with both presences being there. As a sense of the detonations and things that are happening, a lot of it is -- I'd like to just symbolize that by this actual shattering that happens to us and who we are as a native people and how our culture is also broken into fragments. So here it goes. (Demonstrates with plate.) I hope it woke some people up. That's just to show that when we're cooking, baking, cleaning, doing our daily tasks, we hear these detonations, and we swallow air, we swallow our fears, and we say, "What's happening? Was it an accident? Was it a test?" They don't tell us. That's part of the secrecy of so-called national security, of a terrorist coming and knowing when they were going to be doing stuff or stuff might happen. So I guess what I'm also saying is that I'm tired of being a homeland war casualty, I'm a casualty of war because all of the things that are happening at the lab, the business that's going on up there. People really don't want to know. On one hand, they know they are getting paid to go up there, it's like a metal snake with metal coffins driving up there and driving back down. I can't get on the road, because there have been so many deaths and accidents on State Road 30 where I live, because of the traffic and how they zoom in and zoom out, like zombies, going to work and coming down and all the contaminants that are coming We have perspectives of that. In about 2006, '7, they did some sampling of the dust that accumulates outside and inside our homes, and it showed that inside our homes, there is an intensity -- a concentration of radionuclides that accumulate, and we breathe it, and only -- a lot of the radionuclide materials that are coming down from the lab, because of the nuclear business that's there, they are like -- they like have little tag marks of what's	Comment noted. Regarding open detonation, the subject in not addressed in the Renewal Permit other than to require the Permittees to submit the documentation necessary to address associated regulatory requirements See the Department's responses regarding open burning, seismic hazards, and the information repository in the document titled General Response to Comments.	Yes

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		created and what are manmade creations up there, because of the work they do and the chemicals they use, and that leads back to that detonations of open burning. We did a site visit up there, and talk about state-of-the-art high technology that's up there. They took us to the -- to the pad, the site where they do the detonations or the burns, and it was just like that, a metal -- I mean, a cement slab. They hoist the things up there and, wham, they drop it down, and they test it, and then they wash down the pad with water that comes back into our system. That's supposed to be state-of-the-art high tech. Yet, they don't want to be told now to do the cleanup, how to maintain the arsenal, and it's just crazy. So I was told to ask where are the minds and heads of people, where are they in what they do, and I -- and I think there was supposed to be a person here called Richard in the audience that could answer my questions about where the minds and heads of peoples are that do this type of work and not think about us people that are downwind from there and our children, the things that are happening. I'm a potter, I do pottery, and we have six generations that have actively done pottery, and the dust sampling test that happened, they also told us all the contaminants that are accumulated in the soils, we also come in greater contact with it, and a lot of the special-color clays that were up in our sacred areas in Los Alamos is not accessible, or they are highly contaminated, and we're not supposed to be in there getting them. So a lot of the cultural identities of who we are is being tested or eliminated, or we're made to feel invincible. I had a lot of documents here that follow up on that dust sampling test, I have that here, and then I also have declarations of women -- as a woman, Tewa woman being here, as a mother, and as a grandmother, and an aunt, a sister, and all our relations that are down here, how women are sacred. So the perspective that I'm giving today is coming as a woman in the area, and knowing that a lot of the chemicals, the biohazards, or just chemicals hazards that are coming down can pass our placenta, if we're carrying children in our wombs, our children to be, it can cause a lot of birth defects, and knock on wood, I guess, we haven't seen a lot of jellyfish babies yet in the area, but I did do a lot of visits in Russia with women in the Chernobyl area, our indigenous people there, and their death rates have already exceeded their birth rates.		

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		Here in the valley, we see a lot of the cancers of -- the ovarian cancers, prostate cancers, reproductive health systems, stillbirths, and miscarriages that are happening, and I just don't want to see a continuing of that. The detonations and the open burns that are just putting everything in the air and then coming back down, landing on us again, all the down-winders, and all the people as far north as Taos. The dust at Picuris was also -- it also found a lot of plutonium contaminants and the -- a lot of other chemicals that only come with the nuclear business, and things that are happening all in the name of those two contradictions of for your health or for your money. It's scary that money talks, and right now we're hearing the news that 5.5 million – not million -- billion dollars are going into upgrading and beefing up the nuclear business at Los Alamos. Here I thought getting into this struggle to make LANL accountable and clean up and getting them out of there and out of our sacred area, and they are ending up -- and Obama's administration is giving them three or four times the amount more -- more than the amount of money they requested. And they are like, who is benefiting? Who are the profiteers from what the lab is doing up there? They are surely not just research and development for commercial use in communities, like in our homes. I know they devised a little nuclear reactor that we could have in our homes, just like the microwave ovens, so I wouldn't put them past being created in the guise of stockpile stewardship and replenishing the supplies, keeping it safe, but a lot of the plutonium pits that are being produced up there, it's increasing, and so is the contamination, and it behooves us downwinders to really think about where the cancers are coming from and where the asthmas are coming from and where the -- all the tiredness and all of the diabetes. Nobody mentions the connection between the nuclear industrial and diabetes, but it's there, and yet they say it's our diet, it's the way of -- it's how we're living, what we're doing and stuff, but there has been research that has shown that diabetes is related to the chemicals and biohazards and all the hazardous materials that are being created and released around in the areas. Also about education being the key to unlocking the wisdom of the people, I think it's -- it's good that what the ages -- that the supercomputer is up there at the lab and that the -- I think they are thinking of even creating a fourth tower so that the broadband and all		

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		those other systems can be down in the area, but it also comes with the contradictions of what kind of health is impacted with that. There are people that can't even sit near a computer screen and they get sick or diseased. I think we need a repository at Northern, with a staff to help us to read through documents. I noticed an uneasiness of when people stand up here and read the documents, some people like roll their eyes, that that's too much, just hand them the paper, and yet those stacks of data that we, as lay people, have to go through – I mean, you can't just download that and expect to read all that and know that. So I think we do need to get to the reality of having that paper, having the repository up -- up at the Northern College. So that would -- I would recommend that. Also, my recommendation -- and also speaking about -- speaking with Tewa women, is that we should deny that permit to open detonations and burns in the tech areas that we're talking about, Tech Area 16-388 and Tech Area 16-399. Like I said, I've done some preliminary trips up there, and on our trips, they even told us, "Don't get off the pavement, stay on the walk, wipe your shoes before you get back into the bus, don't touch that." That was our friendly tour of the facility. So I can imagine how many people are not told what is there and what's coming down, what we're breathing. So I think, as public people that are coming forward and telling our stories, I know I've buried a lot of people with cancers, I've had my great-aunts working up there as maids, cleaning the houses of the scientists, and the scientists thinking, "Oh, these are dumb Indians, they are not going to read the documents, they are not going to know, we don't have to give them precautionary gloves, suits, masks," when they are cleaning the wastes and things. And, yeah, again, money talks, when a tribe can apply for cleaning the facilities, have contracts, big money rolling in to do the janitorial services, and yet the people that are in those service fields aren't told that you're in the most highly contaminated building, you're breathing it, or to use precautionary masks, gloves, clothes, take them off before you go home. Like I said, those fine dust particles are coming in because of people that are tracking it from up there down. I guess I could go on and on in all the different years of seeing, knowing and feeling, and the fear that goes with knowing that what is being done up there is an upgrading of the business of 65 years of just being careless, just being wasteful, just being arrogant of the men thinking -- thinking that – the scientists are thinking that they have a right to be arrogant, because no one can test their ability to know the stuff, to know what they are		

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		doing. I think, as Tewa people, we have our human rights, our rights to be healthy, safe, and not full of fear of one day that the nuclear facility, the lab, is sitting and doing its four levels of chemical, biological, nuclear, laser, and everything up there, on the rims of a dormant volcano. The Jemez Mountains, when we went up there, there is a lot of construction happening up at Los Alamos, and all that digging is bringing up volcanic ash, basalt. You know, there is a volcano that's sleeping up there dormant, and the magma is moving, or else we wouldn't have geothermal activities up there, and all the shaking, all the seismic activities, the rumbling, the detonations, the Rio Grande fault line, all those things have to be considered when you're talking about giving permission for an upgrading of a nuclear war weapons production facility. I thank the New Mexico Environment Department for really taking to heart the task of trying to have oversight and accountability to a facility that has just been arrogantly going on their own and laughing at people for trying to put reigns on them when they declare national security as an issue, and here we are a homeland casualty of war.		
280	Gen.	And as a -- just to establish a pattern and practice of behavior with the Department of the Environment, as well as the DOE, last week, 4/16/2010, in the Albuquerque Journal, there was an article about the EPA. They had concerns over the Sandia radioactive and hazardous waste landfill. And what happened was that publicly – the groundwater monitoring network was inadequate, that was hidden from -- from the public, according to the EPA internal documents. They had doubts as to the efficacy of the groundwater monitoring system. The record-keeping was discontinued between EPA and the Environment Department. An NMED spokesperson, Marissa Stone Bardino, talked about openness and transparency. And that's what I'd like to bring right now, as opposed to the lack of openness and the lack of transparency between the Department of the Environment, the EPA and, in this particular venue, Los Alamos. Los Alamos has 21 million cubic feet of hazardous and radioactive waste from their nuclear weapons production. This is called legacy waste. They want to increase production to 80 pits a year. They have no closure date for these pits as it currently stands. That's in violation of the law. They were supposed to have those closure dates 25 years ago. And there was supposed to have been a plan in place. They're engaged in open burning that releases dioxins into the atmosphere. And this is	Comment noted. See the Department's responses regarding regulated units/alternative requirements, open burning, environmental justice, contractor documents, the information repository, emergency preparedness, and financial assurance in the document titled General Response to Comments.	Yes

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		caused – and dioxins are directly related to thyroid dysfunction. They have a contamination pathway, for instance, liquid waste from outfalls into the canyons, causing surface contamination in the streams that enter the Rio Grande. This is occurring currently, and it has for the pits at Los Alamos. The question is -- is what are these requirements? The public does not know. To me, this is bureaucratic stonewalling at its very least. They never included the public when they altered the plans for groundwater monitoring as required by law under the -- the law is 40 CFR 270.42. Are we a banana republic whose government agencies can injure and endanger the citizens of New Mexico? The result is an ineffectual, inadequate monitoring in place and significant contamination. Thankfully, we have people who have alerted the public to these concerns, watchdog groups who will not allow the wolves to guard the henhouse. Bob Gilkeson, a hydrologist, who would not sign off on well monitoring at LANL because he knew they were faulty when he was contracted with LANL. And subsequently, his reputation -- they attempted to smear his reputation. He challenged the LANL to follow the guidelines under the RCRA, the Resource Conservation and Recovery Act, and they refused. This is a violation of law. Citizens Action director, attorney Dave McCoy, he fought for the release of all secret documents and is an expert witness whose objective is to stop open pit burning, detonation of weaponry and to clean up the nuclear waste sites. Doctor Michael Barcelona testified last week or two weeks ago in Santa Fe. A hydrogeochemist, he said there's a total lack of safeguards at these sites and the RCRA law should apply and they need to scrap their guidelines and start from scratch. We've had 60 years of deferring to the nuclear arms industry and their independent and wrong interpretation of the law. The time is over to defer it to the experts. It is now time to defer to the citizens of the State of New Mexico. What do we have to show by deferring to these experts over the past 60 years -growing contamination of our air, water and soil for eons? This is generational genocide, as it was stated at another testimony by Dave McCoy a week ago. I want to conclude by -- by quoting some thoughts that President Eisenhower mentioned as he was leaving office in 1961. He said, "We must guard against the acquisition of		

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		unwarranted influence, whether sought or unsought by the military industry complex." He stated, "Only an alert and knowledgeable citizenry can compel the proper meshing of the huge industrial and military machinery of defense without peaceful methods and goals or that security and liberty may -- so that security and liberty may prosper together." This has been prevented by the Department of the Environment, the DOE and the labs. They have not allowed the public to be fully informed, to be fully engaged. He also stated, "The prospect of domination of the nation's scholars by federal employment, project allocation and the power of money is ever present and is to be gravely" -- I can't quite read this. But I would assume he meant gravely monitored. And to paraphrase President Eisenhower, public policy should not be captive of a scientific technological elite, as it has become with the labs and the military in the state. And I listened to the testimony that was given earlier by the witnesses, particularly Mr. Cobrain from the NMED. And I've listened to the public testimony, which is extremely sobering, very enlightening. Terms like "environmental racism" come to mind. The mother who spoke with her child spoke very eloquently about her concerns. The lady who just spoke recently just now and her daughter spoke from the heart about what is happening to the people of this state. To me, it is not only unconscionable, but it is criminal to allow Los Alamos, the Department of the Environment, Sandia Labs and the military to continue business as usual. This is insanity. It's global insanity. It affects us and future generations indefinitely. The amount of plutonium, tritium and other radioactive substances in our water is – is mind-boggling at this point. I have been here for four years, from the state of Massachusetts, and I thought I wanted to live here. I no longer feel comfortable living in this city, because of what I have learned and witnessed. When Mr. Coburn spoke -- Cobrain, excuse me -- what I heard from his testimony was that there is no reliable groundwater monitoring network that meets the federal requirements. I also heard that it is totally unclear what requirements, if any, LANL or NMED is following. Totally vague. The alternative requirements are not only vague, and it appears that -- as though, to me, that there's a cover-up for LANL not to provide reliable groundwater monitoring, and the Department of the Environment's failure to -- to impose this groundwater monitoring. This has been going on for 25 years. And by law, this should be in place. How can we trust the state agency who has not protected us up to this point?		

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		And it's obvious to me from the testimony and the cross-examination by Mr. Gilkeson, the hydrologist, that there are dangerous contaminants and plumes moving towards the drinking wells. While LANL and NMED dither about, more and more contaminants are being released without an ongoing program for cleanup. This is unconscionable. The public comments are very sobering. They're very accurate. This is the testimony that we should be adhering to. We have had 30 years of obfuscation, lies, misrepresentation and lack of transparency/secrecy. They cannot be trusted. A public -- the public and the watchdog groups make sense. They're the ones that should set the agenda. This is called the land of enchantment. To me, it seems like the land of entrapment. For three years now, NMED has not protected our citizenry. They have colluded with Sandia Labs, Los Alamos, and Kirtland Air Force Base at the expense of the people. The term used -- bantered about, environmental racism, is so appropriate. Lack of transparency is so real. The public, as Eisenhower said in 1961, as he was leaving office, is captive to a scientific technological elite, in this case, LANL, NMED, the DOE and the military. I support NMED's denial of LANL's permit application for open air burning and hazardous waste. They've been on notice for 21 years that the public does not want them to use our air for disposal of these wastes. If LANL needs to continue to do this, they need to have confined burn facilities to capture these emissions that are infecting our population. LANL -- they have been lax in protecting the citizenry. LANL has been lax in enforcing. The DOE and LANL have been lax in installing these burn facilities before the final permit -- before the permit is finalized. NMED, DOE and LANL have been lax in allowing for public participation and public awareness by the use of secrecy, hiding of data, holding of public meetings, the lack of that. The DOE and LANL are required to establish an information repository where documents are readily available. They have not done this. I do object to NMED allowing the DOE and LANL to continue hazardous waste operations without an emergency management plan in place. They should also be, as the		

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		gentleman spoke earlier, a Superfund. LANL should be required to provide financial documents to ensure that funding is available to clean up these contaminated facilities. I support NMED's requirements that they meet all the financial assurance requirements for each of the 24 hazardous waste man The DOE, NMED have not been stewards of the environment. They have hid documents from the public. This TechLaw document, which was obtained under the Freedom of Information Act -- the NMED tried to hide this from the public. This was a document that was very critical of Sandia Labs and their open pits. But it was hidden from -- from the public for three years. NMED -- when Citizens Action tried to obtain these documents, they sued the Citizens Action. They spent $100,000 in legal fees instead of going after the polluters. How can they be trusted? They had this declared -- the DOE had this declared as a national security document. And that was proved to be bogus. It was done to hide it from the public. They have also hidden 3,700 pages from the public. They hid this document so that Sandia Labs could cover their open pits, they could cover them with an earthen cover. And it took three years for that to be done. Totally inadequate, but they wanted to -- they wanted to prevent the public awareness and the hazards that this represented, in preventing safeguarding of our aquifer. This is what we're up against. The public is up against the military industrial community. And that represents our government, as well. They are not safeguarding us. And the best thing is to have the public participate, the public to respond, to listen to the public, because they have the information. They will not obfuscate, they will not lie, they will not deceive, because our health, our livelihood, our citizenry is at stake.		
281	Gen.	I grew up in Los Alamos. My family moved there in 1957. And while we were growing up in Los Alamos, we heard pretty much all the time on a monthly basis, whatever, that Los Alamos would never become a nuclear bomb manufacturing facility, that there would be nothing ever done there besides research and development. And now, of course, it is diametrically opposite of that. They are building nuclear weapons there. They're building components for nuclear weapons. So back when I was growing up there, their approach toward waste was "The hotter it is, the further out on the mesa we take it before we dump it." Well, now, we, obviously, have a copious stream of waste of all different varieties. And they're -- I find it	Comment noted. See the Department's responses regarding open burning, financial assurance, groundwater protection, and the information repository in the document titled General Response to Comments.	Yes

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		unconscionable that they are even asking for an open burn permit when there are definitely alternative technologies available to deal with that waste. I find it unconscionable that they want to truck that waste from one place to another. That's like a shell game. They're just moving it over here so that then they can move it over there and move it over somewhere else. When you get out on the highway and you encounter one of these nuclear waste hauling trucks, it makes me cringe to think what would happen if there were an accident. You know, why are we trucking this stuff when we have the -- when they have the technology to deal with it where it is? And go ahead and do it that way. I definitely support the New Mexico Environmental Department for -- for at least currently denying this permit. One of the things that -- one of the reasons that they say they've denied it is because they have no financial assurance that -- that anything could ever be done if there were a problem. I think that the folks that run the Los Alamos Lab shouldn't be allowed to leave any problems to the taxpayer to pay for. I think they should be forced to take some of the money that they are taking from us taxpayers in their for-profit venture and use it to create something like the Superfund. You know, shouldn't there be a fund out there that -- that can be tapped immediately if there's an accident, if there's a spill, if there's some kind of waste that gets loose? I feel like there should be. I think the Environment Department is absolutely correct in telling them that they need some kind of financial assurance. Okay. An example of -- of what I'm trying to get at is I have -- I've been living in this area for my whole life, basically, and I have gotten to know quite a number of Native Americans folks quite well, and I have been around them a great deal. And as a child, I did a lot of hiking, exploring around Los Alamos. We ran across all the time what was – what were obviously some kind of ceremonial or sacred place that Native Americans had occupied or used at some point in time. And we -- we learned -- we learned about those things, and we learned to respect them, and we learned not to go out there and start digging things up and looking for artifacts and that kind of stuff. We learned to -- you know, when we ran across one of these sites, we were to just let it be, you know. It's not your stuff. It's not your place. So let it -- let it lie. And yet now, just in very recent history, I found out that they -- that Los Alamos dug up one of the largest ceremonial spots -- sites, and it's now Area G, and they're burying		

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		contaminated waste there. What? You know, why? How does that work? You know, what does that do for anybody? It -- you know, if they -- I -- I don't – I just don't understand. The -- I'm sorry. That makes me very emotional, because I've been all over those mountains. I've been to -- in more places than you can even imagine. And I have a great deal of respect for the Native Americans who are the primary recipients of everything that comes down the hill from Los Alamos. And they are being damaged. They have been damaged. They are continuing to be damaged. They will be damaged in the future. The waste products and the general contamination from Los Alamos has to be contained. The -- I just feel like that we should divert all these funds from building more nuclear weapons and facilities to build more nuclear weapons to cleaning up the mess that's already there. Why can't we clean this up, you know? I mean, we have the technology to do it. We've got a whole town full of scientists who can help us out with more, newer, better technology to clean up this mess that they've created, that we've created, we've allowed them to create. I have -- as part of my background; I've been in the plumbing business. I am a solar contractor. I have a passion for the environment. I -- my mother was appointed to the first ever Clean Water Commission in Washington. So from my childhood on, I've learned about the environment and the need to protect it and the need to keep things, you know, as clean as we can. And I have been doing a little bit of research on the groundwater monitoring situation in Los Alamos, and the -- you know, from what I -- I was on the board of a water co-op, et cetera, et cetera. So I know something about wells, I know something about how they work, what they're -- what they should be doing. And it just totally blew me away when I discovered that in the process of drilling these monitoring wells in Los Alamos they've been using bentonite clay, which is designed -- which is used strictly for the purpose of sealing off aquifers. Well, how can you seal off an aquifer when you're trying to monitor it? Come on, folks. Let's wake up, you know. That's ridiculous. Then the other thing is I wanted to back Sofia in the -- the fact that an Internet or E-mail repository of information and ongoing information about what's going on with respect to this permit, which is – my understanding it's to be issued for 10 years -- it has to be a		

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		physical repository. You can't exclude half of the general public, you know. And you're -- and by making it an Internet computer thing, you're excluding half of the general public. And that's the general public that is being affected -- directly affected by these waste products and by the potential open burning, and by everything that runs down the hill. And when I say runs down the hill, geologically, volcanoes contain some of the most porous rock formations known on the face of this planet, and Los Alamos -- you know, the Jemez Mountains is – used to be considered the largest volcano on the planet, but it's not anymore, but it's a huge volcano. The rock formations underlying it are extremely porous. So literally everything they put on the ground in Los Alamos ends up down in the Rio Grande or down in the -- the Santa Clara or San Ildefonso or Ohkay Owingeh Pueblos. I mean, it just comes right on down. And I think that needs to be very, very well addressed, because you just can't put the stuff out on the ground and expect it to go nowhere and disappear. It ain't going to happen. And so I -- in conclusion, I just want to beg, plead with the New Mexico Environment Department to deny this permit for open burning. There have to be other ways. There are other ways. There -- you must deny this permit. I got off track when I got so emotional about my Native American friends. It's rare that a month goes by that I don't get notified of somebody dying in one of the pueblos. But my comment is this. I have lived off-grid for 30 years. I have collected my water off of the roof. If they're allowed to burn openly contaminated hazardous nuclear wastes, what am I going to do? Where am I going to get my water? I live in the East Mountains, and our water is very scarce out there. I do have a well that I supplement my rain catchment with, but it's -- it's very sketchy. I don't get much water out of it at all. So am I going to have to put up with contaminated water coming out of the sky, for crying out loud? Come on, folks. You got to stop this.		
282	Gen.	I'm commenting on behalf of the Loretto Community of Sisters and co-members. I will speak about the open-air burning of hazardous waste at the lab. First, some of the public comments in Albuquerque referred to radioactive contaminants. While the hazardous waste that is involved in the open-air burning is not radioactive, radionuclides	Comment noted. See the Department's responses regarding open burning, public participation, emergency	Yes

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		have been detected in the Rio Grande and on produce in gardens, so citizens are concerned about the cumulative effect of the operations at the lab. I hope that their comments will not be dismissed, but understood in the context of we've had enough. Many of the people who spoke in Los Alamos in favor of continuing the open-air burning are understandably fighting for their jobs, but LANL can train them for other cleanup jobs. Those of us who are fighting for better protection of our air, soil and water, are fighting for our health and for the health of future generations. The Loretto Community collected 587 signatures in New Mexico on the *Petition for Confined Burning Facilities at Los Alamos National Laboratory*. [It states] We, the undersigned, state: 1. All people, plants and animals are intricately tied to the health of our air. 2. Historic and ongoing operations at Los Alamos National Laboratory threaten our cultural, spiritual and ecological survival. 3. Our local, state and federal government agencies have a duty to protect the public health and welfare by setting and enforcing laws and regulations that protect our air. 4. Healthy communities and ecosystems require clean, innovative and life-affirming science and technology that will benefit the economy, the future and the health of all. 5. We recognize and respect that air does not seek or uphold political, social, cultural or economic boundaries. To ensure the good health of our air, we demand that in 2009 LANL stop all open burning of hazardous waste and install confined burn facilities that will limit hazardous air emissions. The Loretto Community also collected 182 signed comment letters about the draft hazardous waste permit for LANL. [The letters state] Dear Mr. Kieling: I make the following public comments about the February 2nd, 2010, revised draft hazardous waste permit for Los Alamos National Laboratory, which will	preparedness, seismic hazards, and financial assurance in the document titled General Response to Comments.	

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		allow the Department of Energy and LANL to handle one-quarter million pounds of hazardous waste each year during the ten-year permit. I support the NMED denial of LANL's permit applications for the open air burning of hazardous waste. I support NMED requiring DOE/LANL to install confined burn facilities before the permit is finalized as an alternative to open burning. The permit must include limits as to the type and amount of waste and the frequency of burns. Public participation must be early, often, meaningful, and continuous. The permit must include prescriptive requirements for NMED and DOE/LANL to provide enhanced participation as required by EPA for early, often, continuous, and meaningful contact with the public about both the compliance order on consent and the final LANL permit. I object to NMED allowing DOE/LANL to continue hazardous waste operations without meeting the emergency management, planning, preparedness and response requirements. NMED must conduct a full investigation into the recommendations of the expert reports and require their implementation before the permit is finalized. I object to NMED allowing DOE/LANL to continue hazardous waste operations without the necessary field studies and without a reliable network of seismometers. NMED must conduct a full investigation into the recommendations of these seismic reviews before the permit is finalized. I support NMED requirements in the revised draft permit that DOE/LANL must meet all of the financial assurance requirements for each of the 24 hazardous waste management units. There were more letters that were mailed or e-mailed directly to the New Mexico Environment Department from Loretto Sisters and co-members around the United States who are concerned about the open burning of hazardous waste at LANL, given the Loretto Community's 158-year history in New Mexico. I delivered the petitions and letters to the Environment Department on September 3rd, 2009. During this hearing, we have collected 80 more signatures so far on the petition for confined burning.		

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		In 2004, New Mexico prohibited its residents from burning trash in burn barrels because trash burning is far more harmful to our health than previously thought. The pollutants produced by backyard trash burning can increase the risk of heart disease; aggravate respiratory ailments, such as asthma and emphysema, and cause rashes, nausea and headaches. Most of the waste burned in the open air at LANL is far more dangerous than what most people have been burning in their backyards. When I asked local citizens if they would like to sign the petition, many were appalled that open air burning is still taking place. LANL's reason for not using confined burning is that it takes time to get the permit for that. However, they have known for some time now that confined burning is preferred by the public and that they could have begun the process long ago. The Loretto Community recommends that LANL begin right away to request a permit for confined burning, beginning with the mobile unit, such as those provided by El Dorado Engineering. The mobile unit could be operational as soon as the permit is obtained. If a permanent confined unit is desired, the mobile unit can be utilized until a permanent unit is built. Northern New Mexico has already borne more than its share of contamination. Therefore, the Loretto Community requests NMED to require the hazardous waste to be transported to another site that can dispose of it safely, without exposing the public to toxins, until LANL obtains a permit for confined burning. We also request NMED to require that, after a permit for confined burning is granted, LANL continue shipping the very small amount of high explosive waste that cannot be burned in a confined unit. In his article for the Journal North, dated April 11th, 2010, Mr. Rees stated that there is some waste that cannot be shipped, but in the part of the testimony that I heard, none of the witnesses could answer questions about which wastes could not be shipped. If it is true that some cannot be shipped, then it should be kept at LANL until the permit for confined burning is granted. Mr. Rees also stated that emissions from open air burning is less toxic than a wood-burning fireplace, but emissions from wood burning is so toxic that burning is forbidden under certain weather conditions, so it is not a valid comparison. In the testimony given during these hearings, Ms. Vigil-Holterman stated that it would not be safe to transport some of the high explosive waste. However, under cross-		

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		examination, she changed her statement to say that it would be less safe, because the standard includes minimizing potential exposure to the minimum number of people. However, in considering the potential exposure to the minimum number of people, the downwind citizen population that could potentially be exposed to airborne toxins should also be considered, as well as the number of citizens not living downwind who buy the produce from downwind farmers and gardeners. The tray with the ash after burning is not covered for a period of time until it cools. Therefore, there is the real possibility of some of that ash blowing off the trays and eventually migrating to downwind communities. Some of the ash can contain lead, mercury, arsenic, barium, silver or cadmium. The definition of national security needs to include having clean air, soil and water, as well as good health. We want the security of knowing that we are not being poisoned.		
283	Gen.	Public Participation must be "early, often, meaningful and continuous." NMED must require DOE/LANL to meet the enhanced participation requirements for early, often, continuous and meaningful contact with the public as specified by the EPA for both the Consent Order and the Final LANL Permit. This includes requiring DOE/LANL to establish both a physical Information Repository in the Espanola Valley as well as a virtual Information Repository in order that permit documents can be readily available to the public.	See the Department's responses regarding public participation and information repository in the document titled General Response to Comments.	Yes
284	Gen.	Emergency Management, Planning, Preparedness and Response. Over the past 10 years, serious deficiencies in the DOE/LANL Emergency Management and Response Division have been found by several government auditing agencies, including the DOE Inspector General, the Government Accountability Office and the Defense Nuclear Facility Safety Board. The expert reports described serious problems with LANL fire protection before the Cerro Grande Fire of 2000. Now new expert reports describe the ongoing failure to provide fire protection. I object to NMED allowing DOE/LANL to continue to manage hazardous waste without meeting the emergency management, planning, preparedness and response requirements. NMED must conduct a full investigation into the recommendations of the expert reports and require their implementation before the permit is finalized for the 26 hazardous waste	See the Department's responses regarding emergency preparedness in the document titled General Response to Comments.	Yes

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		management units.		
285	Gen.	Need better Emergency Management, Planning, Preparedness and Response. Over the past 10 years, serious deficiencies in the DOEILANL Emergency Management and Response Division have been found by several government auditing agencies, including the DOE Inspector General, the Government Accountability Office and the Defense Nuclear Facility Safety Board. The expert reports described serious problems with LANL fire protection before the Cerro Grande Fire of 2000. Now new expert reports describe the ongoing failure to provide fire protection. We object to NMED allowing DOE/LANL to continue to manage hazardous waste without meeting the emergency management, planning, preparedness and response requirements. NMED must conduct a full investigation into the recommendations of the expert reports and require their implementation before the permit is finalized for the 26 hazardous waste management units.	See the Department's response regarding emergency preparedness in the document titled General Response to Comments.	Yes
286	Gen.	This has been an issue that has received a great deal of attention due to audits done on the Los Alamos Fire Department and LANL's response capability. It is apparent that there is a lack of understanding of what the regulations require. The Fire Department is a separate entity from the Laboratory. The DOE/Laboratory has an agreement with them to provide assistance in a time of need. Training is provided to the Fire Department to better enable them to be safely responsive to any emergencies anywhere within the Laboratory. The waste management operations represent only a very small component of that responsibility. The regulations at 264.37 require the facility to "attempt" to make arrangements with fire, police and local medical facilities. It is incumbent upon the facility to familiarize those entities with"...layout, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes." LANL has done all these things and maintains a constant training and familiarization program for the Fire Department to maintain a high level of facility awareness. That is facility wide. The waste management portions of the Laboratory represent only a small percentage of the buildings and areas occupied by the Laboratory. These waste storage and treatment areas are the focus of this permit and should not be confused with operations that are outside the scope of it.	See the Department's response regarding emergency preparedness in the document titled General Response to Comments.	Yes
287	Gen.	Seismic Hazard on the Seismically Active Volcanic Pajarito Plateau. A 2007 report	See the Department's response	No

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		described a 50% increase in the seismic hazard at LANL. The 2007 report identified many deficiencies in the knowledge of the seismic hazard but the necessary studies are not being performed. The 2007 report identified the failure of DOE/LANL to install and operate a reliable network of seismic instruments (seismometers) to accurately monitor the seismic hazard from ground motions. The current network consists of only seismometers at three locations that are not kept in calibration. I object to NMED allowing DOE/LANL to continue to manage hazardous waste without the necessary studies of the seismic hazard and without a reliable network of seismometers. NMED must conduct a full investigation into the recommendations from these seismic reviews before the permit is finalized for the hazardous waste management units.	regarding seismic hazards in the document titled General Response to Comments.	
288	Gen.	Need study of Seismic Hazard. We object to NMED allowing DOE/LANL to continue to manage hazardous waste without the necessary studies of the seismic hazard and without a reliable network of seismometers. A 2007 report described a 50% increase in the seismic hazard at LANL. The 2007 report identified many deficiencies in the knowledge of the seismic hazard but the necessary studies are not being performed. The 2007 report identified the failure of DOE/LANL to install and operate a reliable network of seismic instruments (seismometers) to accurately monitor the seismic hazard from ground motions. The current network consists of only seismometers at three locations that are not kept in calibration. NMED must conduct a full investigation into the recommendations from these seismic reviews before the permit is finalized for the hazardous waste management units.	See the Department's response regarding seismic hazards in the document titled General Response to Comments.	No
289	Gen.	Please install a reliable calibrated network of seismometers at the LANL hazardous waste management units as part of the final permit requirements.	See the Department's response regarding seismic hazards in the document titled General Response to Comments.	No
290	Gen.	NMED needs to set forward the testing and experimental regulations upon which it relies in the permit. NMED is interpreting those regulations too broadly in excluding hazardous waste left after projects at RCRA facilities.	Comment noted	No
291	Gen.	Interface of the Permit with the Consent Order. In Part 11.1 the statement is made that	See the Department's response	No

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		"Nothing in this permit Part shall be construed to constitute a change to the Consent order." Additionally, 11.2.1 states "If any additional SWMUs or AOCs are discovered while the Consent Order is in effect, corrective action for such units shall be conducted under the Consent Order." Under alternative closure requirements in subpart 264.11O(c), those RCRA regulated disposal units that were in operation after the date of regulation can be rolled into the CME/CMI process for corrective action. It is the intention of the NMED and LANL to combine all of the underground regulated units and SWMUs at TA-54 Area G for a comprehensive cleanup/closure of the site. A great deal of time and effort has been expended on this issue and since no permit is being applied for or issued for these units, the issue should be left to corrective action under the Consent Order. When the Consent Order expires then the future monitoring and any other activities tied to those units should be rolled into a post closure care permit that can be worked out at that time and amended to the current permit. With the corrective action yet undecided and the full investigation yet incomplete it is non productive to consider post closure care at this point. It would appear to be more productive for NMED to develop a technical guidance document that provides facilities an outline of how the regulator will apply corrective action to those sites where it is applicable. If the Consent Order is a good example then it could be used as boiler plate for such an endeavor. The document could be tailored to meet specific sites with unique circumstances but it would go a long ways to making this process consistent. It would also have the benefit of making it possible to refer to sections in that document rather than putting in long sections in a permit. Since the permit can not change the Consent Order, there are no units in the permit that require corrective action, and the public is unable to alter the language that comes from the Consent Order (prohibits public input as required for permitting activities), I submit that this section should be removed from the permit and maintained in the Consent Order.	regarding the relationship between the Permit and the Consent Order in the document titled General Response to Comments.	
292	Gen.	Based on these experiences and other observations, I find it necessary to oppose issuing the current draft and ask that the New Mexico Environment Department [NMED] convene a public meeting to answer the fundamental question, "Does NMED have the capability to administer this permit in a fair, impartial, effective and efficient manner?" Until this question is satisfactorily answered, the permit should not be issued. NMED's performance over the past 13 years in attempting to deal with this renewal suggests that the agency has failed to act fairly, impartially, effectively or efficiently in this regard.	#1 – The Department's management has acted no differently with regard to the LANL Permit than any other hazardous waste permit issued by the agency. A number of Department managers have left	No

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		Since NMED chose not to respond to my previous questions, I think it is vitally necessary that these issues be addressed to better serve all involved. Points that should be covered in such a hearing include but are not limited to: 1. Are there any past associations of NMED management with LANL, the Department of Energy [DOE], and/or public interest groups that might affect their impartiality? 2. Can NMED demonstrate regulatory consistency between what it expects of LANL and of other NMED-regulated entities within the state? 3. NMED has legal obligations to respond within a reasonable time to documents provided to it by LANL. What is the NMED record on responding to LANL in a timely manner? It is my understanding that the signing of the consent order resulted in the clock being "reset" to zero for those items that LANL had previously provided to NMED but upon which no action had been taken. Is this correct and has the clock been reset at other times to improve NMED's timeliness record? 4. It has been 13 years since LANL started submitting documents to NMED for this permit renewal, which was to have been completed by NMED 10 years ago. How does NMED justify this time lag? Would NMED allow a permittee to be 10 years late on a submission? 5. What are the criteria for including documents in the administrative record? 6. How is cost effectiveness factored into NMED's requests? 7. The more complicated documents become, the more room there is for error and misunderstanding by both state inspectors and permittees. How does NMED strive for clarity in the permit? 8. What have the costs been to date for LANL, DOE, and NMED in getting the permit to the current status? 9. What resources are required for NMED to administer the permit and how are they funded? 10. Has NMED considered turning RCRA permitting back to the Environmental Protection Agency? If not, why not? 11. With the delays and other problems associated with the current permit renewal,	the agency to work for LANL. The Department is not aware of any management that have worked or associated with public interest groups. The Permit is distinguishable in the amount of its public interest. #2 – While LANL is unique in many respects, the Renewal Permit is consistent with all other hazardous waste permits issued by the agency. #3 – The Consent Order has notice dates to which the Department has agreed to. In the past five years the Department has achieved 90% of the notice dates. This is a performance measure of the Department reported to the State legislature. Also, the Hazardous Waste Fee Regulations have review times which the Department has met since the implementation of the regulations in August 2006. These are the only environmental regulations that have such requirements. #4 – The length of time it has taken the Department to finalize the Renewal Permit is due to numerous factors, including; the	

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		what are NMED's plans for improving the permitting process? 12. What were the results of the 35-40 closed meetings over five months with those who had requested a hearing on the previous permit draft? 13. I was specifically told I could not participate in the meetings on the draft permit because I had not requested a public hearing. However, San Ildefonso Pueblo, which did not request a public hearing, was involved in those meetings. What is the reason for the discrepancy in allowed participation? 14. The participants in the closed meetings considered the meetings to be negotiations on the permit. What qualifies a person or group to be a party to the permit so that they can be involved in negotiations of the actual language of the permit?	complex nature of the hazardous waste activities at LANL, inadequate permit applications, the changes to those activities in the last ten years, the technically inadequate responses provided by LANL, the numerous LANL permit modifications that the Department has processed over that period, the extraordinary amount of public interest in the LANL permit and corrective action activities, the approximately 2,200 corrective action sites at LANL being addressed by the Department, the focus on corrective action and issuance of the Consent Order, and LANL has 26 hazardous waste activities or permitted units addressed by the revised draft Permit. In the past ten years the Department has processed the closure of TA-16-88 Container Storage Unit (CSU), TA-16-387 Open Detonation Unit, TA-16-394 Open Burn/Open Detonation Unit, TA-16-401 Open Burn/Open Detonation Unit, TA-16-406 Open Burn/Open Detonation Unit, TA-16 Incinerator, TA-16 Material	

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			Disposal Area P, TA-21-61 CSU, TA-50-1 Room 59 CSU, TA-50-37 Controlled Air Incinerator, TA-50-37 Room 115 CSU, TA-50-37 Room 117 CSU, TA-50-37 Room 118 CSU, TA-50-114 CSU, TA-54 Area L Treatment Tanks, and TA-55-4 B38 CSU. #5 - The administrative record includes all correspondence and submittals associated with the facility. This also includes comments made by the public. #6 - The Resource Conservation and Recovery Act and the New Mexico Hazardous Waste Act do not authorize us to consider cost effectiveness. #7 - The more detail and specificity provided in the permit provides for less interpretation and makes it clear as to the requirements the permittee must follow. Clear requirements ensure that both the Permittee and the Department understand the requirements and will cause no or less uncertainty of the requirement. #8 - The Department can only address the costs that it has incurred to process the Renewal	

No.	Loc.	Comment	NMED Response	Δ
			Permit. The Department keeps financial records for the previous three years. #9 - The Department annual provides an invoice to LANL that show actual costs through fees incurred by the Permittees. #10 - The Department is authorized to adminster the hazardous waste program by EPA. In a March 4, 2009 letter, EPA stated that its reviews have found that NMED is implementing a program consistent with its authorization. In addition, EPA reviews the program through mid-year and end-of year reviews and has found it to be consistent with the Departments authorization. The Department is not considering giving the program back to EPA. The Deparment administers the program and is meeting the requirements as provided through EPA authorization. #11 - The Department does not plan to alter the permitting process as it follows the regulatory requirements and is consistent with the authorization	

No.	Loc.	Comment	NMED Response	Δ
			provided by EPA. Also see #4 above. #12 - The results are a revised draft permit that was issued for public comment on July 7, 2009. #13 - San Ildefonso is a sovereign government located adjacent to LANL which can be directly impacted by activities at LANL. Their standing is different than the public. In addition, Executive Order 2005-004, *Statewide Adoption of Pilot Tribal Consulation Plans*, requires executive agencies to engage with the tribes on issues. Also, the Department has a standing MOU with San Ildefonso regarding environmental issues. #14 - The participants in the meetings for the LANL permit were parties that requested a public hearing and opposed the permit as provided for in 20.4.1.901.A(4) NMAC.	
293	Gen.	The fundamental question in the permitting process for a Resource Conservation and Recovery Act [RCRA] permit for the Los Alamos National Laboratory [LANL] is "Is the New Mexico Environment Department [NMED] capable of upholding its obligations under the delegation of RCRA authority to NMED from the Environmental Protection Agency [EPA]?" Based on past performance, the answer is "No!" Without a fundamental change in how NMED evaluates, reviews, and issues permits for federal facilities, NMED should voluntarily turn back its authority to the EPA for its	Comment noted. See the response to Comment 292 above.	No

No.	Loc.	Comment	NMED Response	Δ
		management of RCRA permitting for federal facilities. The basis for these concerns follows: 1. The draft permit was issued for public comment on August 27, 2007 or about NINE years late. The re-permitting process began in 1996 for a permit set to expire in November 1999. A draft permit for comment should have been issued in 1998 to give time for public comment and drafting of the permit for issuance in 1999. Update: *It took NMED nearly* 2 *years to come out with a revised permit. Should a final permit ever be issued, it will be over 10 years late.* 2. The eleven-year [so far] permitting process involved 1.5 MILLION pages of administrative record to date with more to come. NMED must be incredibly risk averse to spend so much time requiring so much of an applicant and then reviewing all this material in order to make a decision. Such risk aversion and subsequent information requirements are sure to cause confusion in any applicant. Update: *NMED 's permitting process is now at thirteen years and counting.* 3. For self-inflicted burdens such as 1.5 million pages of material [500 boxes if put into binders], NMED does not have the staff to properly review and write permits in a timely manner nor is NMED likely to get State funding to have the huge staff required for such a permitting process. Update: *The administrative record must now be at* 1.6 *to* 1.7 *million pages and is still growing.* 4. The costs to LANL and the State for such a process are likely to be in the tens to hundreds of million dollars - mostly wasted taxpayer money. Update: *The costs continue to mount.* Please provide what NMED considers to be staffing needs to properly manage permits in this manner, what would the costs be and where this funding would come from. Please provide what the costs have been for this permit for both LANL and NMED. The NMED effort for writing the RCRA permit for Sandia National Laboratory Albuquerque [SNLA] should be compared to that for the LANL permit and made public. Since SNLA and LANL are similar institutions as far as complexity of hazardous waste permitting, there should not be a huge discrepancy in permitting effort. If there is, then why is one federal institution singled out over the other?		

No.	Loc.	Comment	NMED Response	Δ
		Please provide any plans for changes to the RCRA permitting process for federal facilities for future permitting efforts. Additionally, on page 17 of the NMED fact sheet announcing this public comment period, NMED "requires the Permittees to close MDAs G, H, and in their entirety under this permit." Since Area G is primarily devoted to radioactive waste, what is the NMED's authority to make such a requirement? Has the Nuclear Regulatory Commission delegated such authority to the State? Please provide under which authority such a requirement can be put on the permit. Provide NMED's proposed solution to radioactive waste disposal at LANL if Area G were closed and an evaluation of the impacts of such a decision. Update: *I will not pursue this item any further at this time.* In summary, without a fundamental change in the RCRA permitting process by NMED for federal facilities, NMED should voluntarily turn back RCRA permitting authority to the EPA. NMED would still have a strong advisory role but would be relieved of the burden of permitting which has caused great anxiety, anguish and expense to both NMED and LANL. The public would benefit from improved timeliness, better clarity of the process and likely a higher quality permit to protect the employees and public. Update: *Since these comments were not addressed in writing during this round of the permitting process, which is in violation of NMED's stated policy, and rendered moot by NMED when the July 6, 2009 draft was issued, it becomes clear that a public hearing is required to determine if NMED is capable of administering RCRA, as it applies to LANL. Therefore, I formally request that a public hearing be held to discuss whether NMED is able to administer RCRA permitting at LANL in a fair, impartial, effective, and efficient manner.*		
294	Gen.	The fact sheet, which is 111 pages long with a 570-page addendum, indicates failure to focus on what's important and prioritize. Whether planned or not, a fact sheet of 681 pages is guaranteed to confuse and obfuscate what is happening. It does not clearly communicate.	Comment noted	No
295	Gen.	On pages 7-18 of the fact sheet addendum, there is a lot of discussion over abandoned or removed sanitary septic tanks that served primarily residential units and other low risk facilities. NMED is concerned that there might be RCRA constituents present, and the	Comment noted. Each of the sites described in the Addendum of the Fact Sheet are	No

No.	Loc.	Comment	NMED Response	Δ
		permittees must demonstrate that they are not there or are in such low concentrations as to be of no concern. However, one could have the same concern over the many thousands of current, abandoned, and removed sanitary septic tanks in New Mexico. It is quite likely that virtually all have received household chemicals, paint thinners, and paints from normal usage and thus could show RCRA constituents in their drain fields. Has NMED exhibited the same zeal in requiring owners at all other sanitary septic tanks to determine there are no RCRA constituents in or near their tanks? NMED should demonstrate that they have required the same rigor of all owners of sanitary septic tanks to ensure regulatory consistency throughout the state. If NMED cannot do that, they should reduce their requirements to those they expect of the rest of the state.	Areas of Concern (AOCs) not identified in the existing LANL Permit. The intent of the Addendum was to provide justification for inclusion of these AOCs in the list of sites that require corrective action (Attachment K). However, the list is for tracking purposes only. All corrective actions are covered under the March 1, 2005 Order on Consent. RCRA and New Mexico's Hazardous Waste Act require comprehensive environmental protection at hazardous waste facilities large enough to require a permit. The Hazardous Waste Bureau does not issue permits or regulate household septic tanks. The Department has other programs responsible for household septic tanks that strive for comprehensive environmental protection.	
296	Gen.	On pages 21 and 22 of the addendum [to the fact sheet], NMED requires the permittees to investigate a 1940s borrow pit location and a concrete block manufacturing site for RCRA constituent contamination. Again, in the name of regulatory consistency, NMED should demonstrate they require the same level of investigation at all borrow pit locations and places where concrete has been made in the State of New Mexico or reduce the requirements in the permit to those they place on the rest of the state. It appears NMED is unwilling or unable to consider cost benefit when it comes to	Comment noted. RCRA and New Mexico's Hazardous Waste Act require comprehensive environmental protection at hazardous waste facilities large enough to require a permit. The Department or other	No

No.	Loc.	Comment	NMED Response	Δ
		investigations at LANL.	departments within the State have other programs responsible for borrow pit locations and places where concrete has been made that strive for comprehensive environmental protection.	
297	Gen.	The draft permit has numerous inconsistencies requiring correction, particularly in the use of character fonts, numeral notation, regulatory citations, cross references, date notation, paragraph numbering, formatting, and the use of italics.	The Department concurs.	Yes
298	Gen.	The draft permit has numerous references to figures (particularly in Attachment A) and other sections of the permit requiring correction.	The Department concurs	Yes
299	Gen.	The draft permit has numerous typographical errors requiring correction.	The Department concurs	Yes
300	Gen.	Request for Public Hearing and Negotiations - SRIC and NRDC request a public hearing on the Revised Draft Permit. Further, and prior to any notice of public hearing, pursuant to 20.4.1.901. A.4 NMAC, SRIC and NRDC request that NMED, the Permittees, and other parties conduct negotiations to attempt to resolve issues related to the Revised Draft Permit.	Comment noted	No
301	Gen.	Nuclear Watch New Mexico opposes the draft Permit as currently formulated for the reasons described in its comments (but not necessarily limited to just those comments). Nuclear Watch requests a public hearing on the July 6, 2009 draft LANL RCRA permit.	Comment noted	No
302	Gen.	Request a public hearing.	Comment noted	No
303	Gen.	I am requesting a public hearing as described in my letter, and I consider this subject of the highest concern to the citizens of New Mexico.	Comment noted	No

No.	Loc.	Comment	NMED Response	Δ
304	Gen.	As a 30+ year resident of Northern New Mexico, I have been following the renewal process as administered by the New Mexico Environment Department (NMED) for some time, and frankly, I have grave concerns about NMED's performance in the process. I am aware that LANL's submittal of renewal documentation to NMED dates back 13 years, and NMED was to have completed the permit renewal process 10 years ago. I find it incomprehensible that the administrative record now includes over a million pages yet the permit renewal remains incomplete. The cost of NMED's performance failure both to the US taxpayer in terms of the total LANL effort required to respond to NMED to date, as well as to the New Mexico taxpayer in terms of NMED's lack of timeliness, ~~is unconscionable~~ and inexcusable. I hereby request a public hearing to discuss the NMED permitting process and NMED's ability to administer RCRA permitting for LANL and similarly complex facilities in this state. The people of New Mexico and all interested parties deserve the opportunity to determine whether NMED is serving them well in managing RCRA permitting and whether they would be better served were NMED to relinquish the RCRA permitting authority to the Environmental Protection Agency. I am a retiree from the University of California and a concerned private citizen of the state of New Mexico. Thank you for your consideration of this request for a public meeting. I look forward to your prompt response.	Comment noted	No
305	Gen.	Thank you for the opportunity to comment on the July 6, 2009 version of the revised draft Resource Conservation and Recovery Act [RCRA] permit for renewal of the current Los Alamos Scientific Laboratory [LANL] RCRA permit. In reviewing the timeline for this permit as provided in your fact sheets, it seems quite apparent that there is something fundamentally wrong with the New Mexico Environment Department [NMED] permitting process that allows a permit renewal to be 10 years behind schedule. If this were a new permit, I can understand that some delay might be inevitable as something new was being created. However, this is a renewal of an existing permit which, by extension, has been valid for 20 years or 10 years beyond its expiration date and 3 years beyond the change of the operating	Comment noted	No

No.	Loc.	Comment	NMED Response	Δ
		contractor. This delay calls into question NMED's ability to properly manage RCRA permitting for large facilities in New Mexico. Therefore, I request that a public hearing be held to discuss NMED's permitting process in order to assess NMED's ability to successfully manage RCRA permitting for complex facilities. The permit should not be issued until NMED can successfully demonstrate its ability to manage the permit. No matter how good or bad the permit may be, if the regulator is incapable of managing it properly, the permittees and the citizens of New Mexico will be poorly served. Items to be discussed include but are not limited to: 1. Why the delay has been so long to renew an existing permit? 2. What is needed to effectively manage the permit? 3. What resources are needed to manage the permit? 4. NMED's ability to get the needed resources. 5. Should NMED relinquish its authority to manage RCRA and give the authority back to the Environmental Protection Agency? For the record, I am retired and I live at the address listed on this letter. I represent myself as a private citizen as I no longer have any professional affiliation with Los Alamos National Lab, or the Department of Energy. My interest in this subject comes from a career of more than forty years in research and development of materials and in the management of large and complex facilities and operations involving hazardous as well as special nuclear materials. My work experience at the Laboratory and on special assignments at the request of the DOE at the Rocky Flats Plant were always conducted in a manner that minimized risk to people, property, and the environment while adhering to all applicable laws and regulations. My experience also convinced me that positive interaction between the Laboratory and the regulators leads to positive cost effective results. It is my great hope that issues involving the renewal of the LANL RCRA Permit can be resolved and all parties can proceed in a safe and efficient manner.		
306	Gen.	I did not receive the mailed notice of these hearing until Saturday, April 5th. The notice	Comment noted	No

No.	Loc.	Comment	NMED Response	Δ
		was mailed on April 4th. This is not OK!		
307	Gen.	Citizen Action requested on September 3, 2009 that a time extension for public comment be granted for review of the Draft Permit as reissued.	Comment noted	No
308	Gen.	Citizen Action is requesting an extension of the public comment period for the Los Alamos National Laboratory Resource Conservation and Recovery Act (RCRA) Draft Part B Permit (LANL draft permit). CA has participated in numerous technical and administrative proceedings before the NMED involving the Sandia National Laboratories (SNL) Resource Conservation and Recovery Act (RCRA) Draft Part B Permit and the SNL Chemical Waste Landfill (CWL) post closure permit. CA is very interested in the substantive requirements of the LANL draft permit and the post-closure care of the hazardous waste units at LANL in comparison to the SNL RCRA Draft Part B Permit (SNL draft permit) and also for the cumulative potential for impacts on public health and the environment from both permits. The importance of the LANL draft permit to CA constituents and affiliated environmental organizations is underscored by reports in the popular media and scientific literature revealing the existence of large plumes of hexavalent chromium and high explosives contamination traveling in the groundwater from LANL toward municipal wells of the cities of Los Alamos and Santa Fe. There is contamination flowing from LANL to the Rio Grande River that is a source of drinking water for residents of Albuquerque, New Mexico. During the first submission of the LANL permit and subsequent negotiations, CA was involved in time-consuming analyses of both the CWL and the SNL draft permit that reduced available time for full review of the LANL draft permit. CA currently has a scheduled meeting with the NMED regarding the cross-comparison of the 2 permits and that comparison will affect the CA comments for both the LANL and SNL draft permits especially with respect to consistency of application of the requirements of RCRA at both LANL and the SNL. The meeting will provide important information for comment on the LANL draft permit but the meeting is scheduled for after the September 5, 2009 closure date for submission of public comments for the LANL draft permit. Because of the volume and complexity and the changes made to the revised and reissued LANL draft permit; the issuance of a new 570 page addendum to a revised and reissued	Comment noted See the Department's response regarding groundwater protection in the document titled General Response to Comments.	No

No.	Loc.	Comment	NMED Response	Δ
		NMED Fact Sheet that is 108 pages in length; and records that are not included in the Administrative Record, the Department needs to recognize that an extension of the public comment period is necessary and appropriate.		
309	Gen.	"Alternative Requirements" Do Not Protect Groundwater. Many reports over the past five years have described the overall failure of the DOE/LANL to protect the precious groundwater resources from contamination by LANL sources of chemical and nuclear wastes. The Environmental Protection Agency (EPA), the DOE Inspector General and the National Academy of Sciences (NAS) have written detailed reports that describe the major problems in the DOE/LANL groundwater protection practices and lack of compliance with the regulations. I object to the revised LANL draft permit that relies on "alternative requirements" for groundwater protection. The NAS Final Report described the" alternative requirements" in the March 1, 2005 NMED/LANL Consent Order as an important example of the failure of the LANL groundwater protection practices. The use of "alternative requirements" has not worked. For example, dangerous and fast-moving hexavalent chromium was discovered in the regional aquifer over 5 1/2 years ago in wells directly west of the Buckman wells. Santa Fe pumps over 40% of its drinking water from the Buckman wells. No one knows the extent or direction of the Hexavalent chromium plume - work done under" alternative requirements" in the Consent Order. In order to protect our precious drinking water, NMED must require DOF/LANL to strictly comply with the groundwater requirements of 40 CFR 264, Sections 90 through 101.	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
310	Gen.	Do not allow "Alternative Requirements." The NAS Final Report described the "alternative requirements" in the March 1, 2005 NMED/LANL Consent Order as an important example of the failure of the LANL groundwater protection practices. In order to protect our precious drinking water, NMED must require DOE/LANL to strictly comply with the groundwater requirements of 40 CFR 264, Sections 90 through 101 and not use "alternative requirements."	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
311	Gen.	The unsettled state of the LANL well monitoring network is a reason for an extension of public comment. The public was informed that federal stimulus money would be available for 17 new monitoring wells to be placed at LANL. Seven (7) other LANL unidentified monitoring wells at LANL are planned for plugging and abandonment. CA and the public will require sufficient time, *after public notice and opportunity for review*	See the Department's responses regarding regulated units/alternative requirements and groundwater protection in the document titled General Response	No

No.	Loc.	Comment	NMED Response	Δ
		and comment for the new location and depths of the LANL monitoring wells (see 40 CFR 270.42 Appendix I) to consider the new monitoring wells in relation to the LANL draft permit sections for ground water monitoring and long term monitoring and maintenance for post closure care and corrective action.	to Comments. The public comment period ended at the conclusion of the Permit hearing. There will be opportunity for public comment associated with the remedy selections for sites at the Facility where the remedy may be different than complete removal of waste and contaminated media at the site.	
312	Gen.	I (we) provide the following public comments about the lack of groundwater protection requirements in the proposed Hazardous Waste Permit for Los Alamos National Laboratory (LANL). The Environmental Protection Agency (EPA) has designated the Espanola Basin as a sole source aquifer, meaning that the Espanola Basin is the sole drinking water source for the area between the Jemez and Sangre de Cristo Mountains, running from Tres Piedras to the north, to almost Galisteo to the south. Since operations began in 1943, LANL has buried over 21 million cubic feet of radioactive, hazardous and toxic wastes in unlined pits, trenches and shafts dug into the volcanic tuff. The LANL groundwater monitoring network has been under development since 1998 and has yet to provide reliable and representative samples of groundwater from the regional aquifer. I am particularly concerned about the lack of detection and compliance groundwater monitoring for the "regulated units," Areas G, Hand L, at Technical Area 54 (TA-54). I quote the March 19, 2010 written testimony by James Bearzi, Bureau Chief of the NMED Hazardous Waste Bureau: "... groundwater contamination has already been detected beneath the regulated units at TA-54 ...." p. 62. Groundwater beneath LANL discharges to the springs at the Rio Grande. Albuquerque residents are already drinking water from the Rio Grande and Santa Fe residents will begin next spring. It is time to get back to basics. NMED must require LANL to install wells drilled only	See the Department's responses regarding groundwater protection in the document titled General Response to Comments.	No

No.	Loc.	Comment	NMED Response	Δ
		with air. These wells must be able to detect contamination and provide the necessary information in order to implement corrective action, or "cleanup," in an efficient and cost effective manner. Already too much taxpayer money has been wasted drilling defective wells, collecting and analyzing samples from defective wells and reporting data to the public that is unreliable. I urge you to protect the NM groundwater for us now and for all who come after us!		
313	Gen.	I request that Judge Alarid, the Hearing Officer for the proposed LANL RCRA Part B Permit make the following findings: -The air-rotary drilling method used for the LANL monitoring wells shall not use organic foam drilling additives for any part of the borehole unless temporary or permanent casing is installed to prevent the organic foam from 1). leaking into the regional aquifer and 2). leaking into any perched zones of saturation where well screens are installed. -The drilling record shows that organic foam and water may prevent the detection of perched zones of saturation and possibly, even the water table of the regional aquifer. Therefore, the preferred drilling method is air rotary with only the use of air as a drilling fluid. The use of organic foam or polymer drilling additives shall be only in borehole intervals where drilling only with air is not possible. -The findings in reports of the National Research Council (AR 30802) and the Environmental Protection Agency (AR 14175 and Sept 30,2009 report with no AR) The network of monitoring wells installed or proposed for the regional aquifer at Technical Area 54 (TA-54) at Los Alamos National Laboratory (LANL) are shown in the attached Figure 4 from the Katzman Testimony Exhibit 4 at the public hearing for the LANL proposed Part B Permit. Except for well R-23i, all of the monitoring wells displayed on Figure 4 are installed in the regional aquifer. Well R-23i is a well with two screens that are installed in perched zones of saturation. The first regional aquifer monitoring wells at TA-54(e.g., wells R-20, R-21, R-22, R-23 and R-32) were installed as an activity of the LANL Hydrogeologic Workplan. Well R-23i was also installed as an activity of the LANL Hydrogeologic Workplan. The drilling methods used for all of the Hydrogeologic Workplan monitoring wells allowed large	Comment noted. See the Department's responses regarding regulated units/alternative requirements and groundwater protection in the document titled General Response to Comments.	No

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		quantities of organic and/or bentonite clay drilling muds to flow into the geologic formations where the well screens were installed. The organic and bentonite clay drilling muds were used with the approval of the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB). Wells R-20, R-22 and R-32 were a multiple-screen design where no-purge water samples were collected with a Westbay sampling system. The proposed LANL Part B Permit does not allow the Westbay no-purge sampling systems in monitoring wells installed for the Permit. The NMED required the rehabilitation of monitoring wells R-20, R-22 and R-32. The rehabilitation required the removal of the Westbay sampling systems and installation of pumps to purge water samples from one or two screened intervals. During cross-examination at the Part B Permit Hearing, Mr. James Bearzi, Chief of the NMED HWB admitted that the attempt to rehabilitate wells R-20 and R-32 was not successful and the only use for the two wells was the measurement of water levels. In fact, the attempt to rehabilitate wells R-20 and R-32 was a mistake because the information existed that the two wells could not be rehabilitated before the rehabilitation was attempted. The expensive and unsuccessful rehabilitation activities for wells R-20 and R-32 were a misspending of tax payer money. In 2009, a field study was performed to investigate the feasibility to rehabilitate well R-22. The rehab activities are described in LANL report LA-UR-09-4936 (August 2009). The Westbay sampling system was removed from the multiple-screen well so that the source of the persistent measurement of tritium contamination in the no-purge water samples collected from the deepest screen (screen #5) could be determined. Pumping a large volume of water from screen #5 determined that the tritium contamination persistently detected in the no-purge water samples was because of the cross-flow of tritium contaminated groundwater during the drilling and construction of the multiple screen well. In addition to tritium, the no-purge water samples collected from screen #5 also contained a large number of RCRA hazardous organic constituents over a period of several years. The detected organic contaminants were listed in Table A-40 in the LANL *Characterization Well R-22 Geochemistry Report* (LA-13986-MS, September 2002). Table A-40 is attached to this public comment. The RCRA hazardous		

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		constituents detected in screen #5 were also from cross-flow of contaminated groundwater during the drilling and well construction activities. The aquifer zone(s) at the location of well R-22 that are contaminated with tritium and organic contaminants are not known but must be investigated by the installation of additional monitoring wells. The attached figure from LANL Report LA-UR-04-677 (September 2004) is a summary of the Schlumberger geophysics for well R-22. The figure shows two aquifer zones with high permeability that are not monitored by well R-22. The two zones are located below screen #2 and above screen #3 in the approximate depth intervals of approximately 1030 -1065 feet below ground surface (ft bgs) and 1085 -1135 ft bgs. In addition, the lithologic log in the LANL Well R-22 Completion Report (LA-13893-MS, February 2002) describes an aquifer zone with high permeability in the depth interval of 1188 -1237 ft bgs. The three aquifer zones described in this paragraph must be investigated for the presence of contaminated groundwater by the installation of monitoring wells. The 2009 field study determined that actively pumping water from screen #1 in well R-22 resulted in water samples that more closely resembled the expected chemistry of formation groundwater than the water samples produced over the period of nearly nine years from the Westbay no-purge sampling system. The improvement was no surprise. Also, the improvement from an arbitrary score of 44% in 2007 for no-purge samples to an arbitrary score of 88% in 2009 for samples collected after purging does not prove that the water samples collected in 2009 are reliable and representative for the detection of contamination from MDA G to the regional aquifer. The scores are arbitrary because they were derived from the badly flawed assessment methodology in the LANL *Well Screen Analysis Report-Revision* 2 (WSAR-2) (LA-UR-07-2852, May 2007). The great uncertainty in the assessment methodology in the WSAR-2 was the finding of 1). the National Research Council in the 2007 Final Report *Plans and Practices for Groundwater Protection atthe Los Alamos National Laboratory* and of 2) the four reports written over the years from 2005 to 2009 by the Environmental Protection Agency National Risk Management Research Laboratory in Ada, Oklahoma (EPA Kerr Lab). The pertinent excerpts from the EPA Kerr Lab report about the poor reliability of the WSAR-2 to determine LANL monitoring wells produced reliable and		

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		representative water samples are pasted below: Using criteria established in this report [i.e., the WSAR-2], an undesirable component of uncertainty will persist regarding screen impacts because it is not possible to understand all possible mineral-contaminant interactions solely by evaluating water chemistry (p.4). Recommendations to Reduce Uncertainty Due to uncertainties in the mineralogical alterations induced by the drilling additives, uncertainty in the utility of aqueous chemistry assessments for the determination of whether samples are fully representative of aquifer conditions, and the lack of appropriate data for the assessment of water quality immediately upgradient of the impacted characterization wells, it is recommended that additional laboratory/field studies be designed to reduce uncertainty and validate the results of the WSAR [Le., the WSAR-2] (p. 5). The NMED approval letter for the WSAR-2 also described the great uncertainty for the badly flawed assessment methodology in the WSAR-2. The pertinent excerpt from the approval letter is pasted below: NMED notes that the conclusions obtained in the Report [i.e., the WSAR-2] were derived mainly from analysis of extent data in the literature, possibly under conditions different from the Los Alamos National Laboratory's site (the site). The absence of critical site-specific data, such as adsorption properties, reaction kinetics and microbial activities, implies that there would be uncertainties and limitations in using the methodology developed in the Report to assess the quality of groundwater samples collected from monitoring wells installed at this site. NMED is especially concerned about the uncertainty with respect to monitoring certain potential contaminants of concern, such as the highly adsorptive radionuclides. NMED therefore suggests that the Permittees consider conducting proper laboratory and field studies to address the uncertainty regarding whether or not the monitoring wells installed as the monitoring network are capable of providing reliable data to monitor potential releases of the highly adsorptive radionuclides from operation of the Laboratory to groundwater (p.1-2). The proper laboratory and field studies to address the uncertainty in the assessment		

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		methodology in the WSAR-2 were never performed. First, the NMED made a mistake to approve the WSAR-2 given the great uncertainty in the assessment methodology. Second, the NMED made a mistake to *"suggest"* LANL perform the proper laboratory and field studies to reduce the uncertainty. Instead, the NMED should have ordered LANL to perform the proper laboratory and field studies. In fact, now it is very important for the NMED to order LANL to perform the proper laboratory and field studies for the entire network of monitoring wells displayed on Katzman Testimony Exhibit 4 because the NMED has not required LANL to use drilling methods that prevent organic drilling foam from flowing into the sampling zones of any of the monitoring wells. The well completion reports for monitoring wells R-37, R-39 and R40 show that organic drilling fluids were allowed to flow into the sampling zones in the three wells. Allowing the organic foams to contaminate the sampling zones is a serious mistake that can be prevented by temporarily or permanently installing steel casing to seal off the part of the borehole above the regional aquifer that was drilled with organic foam. The 2005 EPA Kerr Lab Report on the LANL well drilling practices described the need to install casing to seal off the zones in the borehole that were drilled with foam. The pertinent excerpt from the 2005 report is pasted below: > Drill boreholes using no bentonite or organic additives within screened intervals. Additives may be used in intervals above the target monitoring zone if a telescoping construction is used and the hole is adequately cleaned before drilling the final footage within the interval to be screened. Although this may require the use of significant quantities of water to control heaving in the saturated zone, the effects of potable water are minimal and can be mitigated during well development. This will likely necessitate the use of single-screen well completions. Such constructions allow for more effective development and greater confidence in both the chemical data and estimates of hydrogeologic parameters (p.10). In addition, the EPA Kerr Lab recommended for LANL to install monitoring wells with only one well screen. The NAS Final Report also recommended for LANL to install monitoring wells with one screened interval and to prevent drilling additives		

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		from being present in the monitoring zone. The pertinent excerpt from the NAS report is pasted below: *Recommendation: LANL should design and install new monitoring wells with the following attributes:* • *A borehole drilled through the monitoring zone without the introduction of drilling muds or additives (i.e., use air or water),* • *One screened interval that targets* a *single saturated zone, and* • *A carefully planned design (length and depth) of the well screen, which is confirmed with information collected in the drilling process* (p. 69). The continuing practice of drilling with organic foam and large amounts of water is unnecessary and must stop. The boreholes for monitoring wells may be drilled using only air as a drilling fluid. Many test holes and monitoring welts at LANL were drilled using only air as a drilling fluid. Characterization wells R-9 and R-12 are two examples of where the boreholes were drilled through the entire distance of the vadose zone and into the top of the regional aquifer with only the use of air as a drilling fluid. -For well R-9, the total depth of the borehole that was drilled using only air as a drilling fluid was 710 feet below ground surface (bgs). The water table of the regional aquifer was at a depth of 688 ft bgs. -For well R-12, the total depth of the borehole that was drilled using only air as a drilling fluid was 847 ft bgs. The water table of the regional aquifer was at a depth of 805 ft bgs. Current drilling practices are allowing organic foam to flow into the sampling zones in the monitoring wells. The testimony of the NMED Environmental Scientist Jersey Kulis at the LANL Proposed Part B Permit Hearing described the NMED acceptance of drilling boreholes for the LANL monitoring wells with organic foam. The pertinent excerpt from the Kulis testimony is pasted below: [c]ertain drilling additives, for example, foaming agents, may be used in the drilling interval above the expected groundwater table. In the last 100 to 150 feet above the		

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		water table, and below the water table, only municipal water may be used as a drilling additive (p.6). However, there are many reports are evidence that stopping the use of organic drilling foams at a distance of 100 to 150 feet above the regional aquifer is not preventing the organic foam from flowing down the open borehole and into the regional aquifer. The NMED must require LANL to install temporary of permanent steel casing in borehole intervals that are drilled with organic foam. LANL monitoring wells R-36 and R-42 are two examples where organic foam was used for drilling through most of the vadose zone. However, stopping the use of drilling with organic foam at a distance above the water table of the regional aquifer did not prevent the foam from flowing into the regional aquifer and impacting the water samples collected from the single-screen monitoring wells. The pertinent excerpt from the well R-36 completion report (LA-UR-08-2610 April 2008) is pasted below: The R-36 borehole was drilled using dual-rotary air-drilling methods. Drilling fluid additives used included potable water and foam. Foam-assisted drilling was used only in the vadose zone; no drilling fluid additives other than small amounts of potable water added to the air were used within the regional aquifer. Additive-free drilling provides minimal impacts to the groundwater and aquifer materials. The borehole was successfully completed to total depth using casing-advance drilling methods (p. v). Figure 5.1-1 in the well R-36 completion report shows that the use of organic foam stopped at a depth of 700 feet below ground surface which was a distance of only -50 feet above the water table of the regional aquifer. The fact that the organic drilling foam has impacted the chemical quality of water samples collected from well R-36 is documented in the LANL 2009 Interim Facility Wide Groundwater Monitoring Plan (the Interim Plan) (LA-UR-09-1340, May 2009). The pertinent excerpt from the 2009 Interim Plan is pasted below: Minor presence of residual organic drilling products is steadily clearing up. Continue to monitor in accordance with the 2009 Interim Plan and evaluate the stability of water-quality parameters over a longer period of record (p. F-60).		

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		The pertinent excerpt from the well R-42 completion report (LA-UR-09-0217 January 2009) is pasted below: > The R-42 borehole was drilled using dual-rotary air-drilling methods. Drilling fluid additives used included potable water and foam. Foam-assisted drilling was used only in the vadose zone; no drilling-fluid additives other than small amounts of potable water added to the air below 790 ft depth, which is 128 ft above the top of regional saturation. Additive-free drilling provides minimal impacts to the groundwater and aquifer materials. The borehole was successfully completed to total depth using casing-advance drilling methods (Executive Summary). The fact that the distance of 128 ft did not prevent the organic drilling foam from impacting the chemical quality of water samples collected from well R-42 is documented in the LANL 2009 Interim Facility Wide Groundwater Monitoring Plan (the Interim Plan) (LA-UR-09-1340, May 2009). The pertinent excerpt from the 2009 Interim Plan is pasted below: > Minor presence of residual organic drilling products is steadily clearing up. Continue to monitor in accordance with the 2009 Interim Plan and evaluate the stability of water-quality parameters over a longer period of record (p. F-62). Given the record of organic drilling fluid contamination in the water samples produced from wells R-36 and R-42, it is a disappointment that NMED did not require LANL to either 1) install steel casing in the borehole interval drilled with organic foam or 2) drill boreholes without the use of any drilling additive other than air. Monitoring wells R-39 and R-40 at TA-54 are additional examples of where the organic drilling foam has flowed into the sampling zones. The pertinent excerpt from an NMED memo (AR 32132) about well R-39 is pasted below: > 1) Section 2.2.1: This section (of the Well R-39 Completion Report) states that a foaming agent \vas not used during the drilling sequence between 707 feet (ft) to total at 896 ft below ground surface (bgs). Review of the open-hole borehole video		

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		log, taken 011 November 13, 2008, shows that an abundance of foam was present from 706 ft to the water table at 820 ft bgs. In the video, the foaming agent was recorded floating on the water table. The Report states on page 4 that only four gallons of foam was used at 707 ft bgs and that no additional foam was used past this depth. At well R-40, the organic foam was allowed to flow into the screened interval in the regional aquifer and also into two screened intervals installed in perched zones of saturation. Figure 3.1-1 in the well R-40 Completion Report (AR 32366) shows that organic foam was used for drilling through the upper perched zone and to a depth of 750 ft bgs which is only -10ft above the water table of the second perched zone of saturation and -100 ft above the water table of the regional aquifer. The pertinent excerpts from the well R-40 completion report that describe the impacted water samples produced from well R-40i installed in the upper perched zone are pasted below: The first perched groundwater recovered from R-4Oi was 12 gal. bailed on January 12, 2009. The sample was characterized as light brown and emitted a slight sulfur odor (p. 12). [Note: the light brown color and slight sulfur odor are evidence that the organic drilling foam is creating a new mineralogy in the sampling zone with strong properties to mask the detection of LANL contaminants.] At the end of the aquifer testing in R-40i, water-quality parameters were turbidity at 1 NTU and TOC at 11.22 *mg/L*. Turbidity was below the development threshold of 5 NTUs, *but TOC was above the development threshold* of 2 *ppm (mglL) due to the presence* of *drilling foam* [emphasis added] (p. 13). [NOTE: The drilling foam caused error in the permeability value measured by the aquifer test. In addition, the presence of drilling foam at the time of the aquifer test is evidence that the well development activities did not remove the drilling foam and that the drilling foam was present in the sampling zone of well R-40i for a period of six months before additional well development activities were performed to remove the residual foam. The six month period allowed large changes in the mineralogy of the screened interval. There is a need to replace well R-40i with a monitoring well installed using only air as a drilling fluid. The amount of organic drilling foam that was allowed to flow into the deeper perched		

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		zone and into the sampling zone in the regional aquifer is not known but both screened zones in well R-40 may be impacted because the borehole was not sealed to prevent this from happening. The Consent Order (AR 16255) does not allow installation of wells with screens installed in a perched zone of saturation and also in the regional aquifer. The pertinent excerpt from the Consent Order is pasted below: X.B DRILLING METHODS Groundwater monitoring wells and piezometers must be designed and constructed in a manner which will yield high quality samples, ensure that the well will last the duration of the project, and *ensure that the well will not serve as* a *conduit for contaminants to migrate between different stratigraphic units or aquifers* [emphasis added] (p. 194). A variety of methods are available for drilling monitoring wells. While the selection of the drilling procedure is usually based on the site-specific geologic conditions, the following issues shall also be considered: • Contamination and cross-contamination of groundwater and aquifer materials during drilling shall be avoided. (p. 194). The design and construction of groundwater monitoring wells shall comply with the guidelines established in various EPA RCRA guidance, including, but not limited to: • U.S. EPA, *RCRA Groundwater Monitoring: Draft Technical Guidance,* EPA/530-R93-001, November, 1992 (p. 194). NOTE: The requirements in the *EPA Draft Technical Guidance* are pasted below: Extreme care should be taken when drilling into confining units so that the borehole does not create a pathway for the migration of contaminants between upper and lower hydraulically separated saturated zones (p. 4-10). LANL monitoring wells R-37 and R-40 are two examples of where the NMED has approved drilling methods and well construction practices that have allowed cross-flow of groundwater from perched zones of saturation into the regional aquifer. The NMED		

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		has not enforced the requirement in the Consent Order to prevent the cross-flow. Organic drilling foams may prevent the detection of perched zones of saturation. The drilling record for LANL monitoring well R-40 is an example of where the use of organic drilling foam in the second borehole prevented the detection of the upper perched zone of saturation which was detected in the first borehole that was drilled using only air as a drilling fluid. The pertinent excerpt from the R-40 completion report (AR 32366) is pasted below: Because of injection of municipal water and foaming agent in the second borehole, the perched groundwater encountered at 594 ft bgs in the first borehole was obscured (p. 3). Drilling with water may prevent the detection of perched zones of saturation. The drilling record for LANL monitoring well R-37 is an example of where the water used for drilling the third borehole prevented the detection of a perched zone of saturation. The perched zone was detected in the second borehole this borehole was abandoned because it was unstable. The excerpts pasted below from the well R-37 completion report (AR 31964) document that water used for drilling the third borehole prevented the detection of the perched zone of saturation: In the third borehole, the perched water zone was not apparent because of injecting large amounts of municipal water to aid drilling (p. 18).		
314	Gen.	I am providing the following public comments about the lack of groundwater protection requirements in the proposed Hazardous Waste Permit for Los Alamos National Laboratory (LANL). Chris Busby, a British physical chemist, has studied radioactivity extensively and says that, "the ingestion of radioactive materials through food and water has effects quite distinct from those of external exposure." Internal exposure can create multiple hits on a single cell within hours. This means that unlike external exposure, when radioactivity is ingested, in food or water, it is up to 100 times more toxic to human beings and will cause cells to mutate and create cancers and tumors. It is important to note that most studies of the toxicity of radioactivity have only been done on high levels of radiation. Chris Busby and other scientists have been following	See the Department's responses regarding regulated units/alternative requirements and groundwater protection in the document titled General Response to Comments. Regarding radionuclides, the Department agrees that exposure to radionuclides can present a threat to human health. The Permit does not address radionuclides except as it pertains	No

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		the effects of ingestion of radioactivity AND the effects of low levels on life. Much of the arguments for the supposed safety of radioactivity are based on studies done on high levels of radioactivity (and only externally). As a woman and mother who has lived in Santa Fe for 30 years, I am one of many I know who live in the area who have developed thyroid issues. This is one of the effects of radioactivity. I understand that those who actually live on the mesa near Los Alamos are even worse off. The 40-square mile LANL Facility is located in the Espanola Basin. The Environmental Protection Agency (EPA) has designated the Espanola Basin as a sole source aquifer, meaning that the Espanola Basin is the sole drinking water source for the area between the Jemez and Sangre de Cristo Mountains, running from Tres Piedras, to the north, to just outside of Galisteo, to the south. Since operations began in 1943, LANL has buried over 21 million cubic feet of radioactive, hazardous and toxic wastes in unlined pits, trenches and shafts dug into the volcanic tuff. The LANL groundwater monitoring network has been under development since 1998 and has yet to provide reliable and representative samples of groundwater from the regional aquifer. I am particularly concerned about the lack of detection and compliance groundwater monitoring for the "regulated units," Areas G, Hand L, at Technical Area 54 (TA-54). I quote the March 19, 2010 written testimony by James Bearzi, Bureau Chief of the NMED Hazardous Waste Bureau: " ... groundwater contamination has already been detected beneath the regulated units at TA-54 ...." p. 62. Groundwater beneath LANL discharges to springs along the Rio Grande. Albuquerque residents are already drinking water from the Rio Grande and Santa Fe residents will begin next year. To protect our community and others NMED must require LANL to install wells drilled only with air. The wells must be able to detect contamination and provide the necessary information in order to make informed decisions about corrective action, or "cleanup." The necessary information is not available to determine if the wastes can be left in place or whether they must be excavated. Execution of these decisions must be done in an	to mixed hazardous waste.	

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		efficient and cost-effective manner that is protective of human health and the health of all things. Already too much taxpayer money has been wasted drilling defective wells, collecting and analyzing samples from defective wells and reporting data to the public that is unreliable. Please work to protect the lives of our children, and our grandchildren and their grandchildren. Our quality of life depends on your actions. It is time to hold LANL accountable.		
315	Gen.	I am very concerned about ground water contamination. I am aware that groundwater contamination has already been detected beneath the regulated units at TA-54. I am concerned about taxpayer money being wasted drilling defective wells, collecting and analyzing samples and reporting data that is unreliable. LANL needs to be a "good citizen" and consider the consequences of its activities and effects on the people who live in and around Santa Fe.	See the Department's responses regarding regulated units/alternative requirements and groundwater protection in the document titled General Response to Comments.	No
316	Gen.	Within the last two weeks, we have also collected 49 signed comment letters regarding the lack of groundwater protection requirements in the proposed hazardous waste permit for the Los Alamos National Laboratory. The letter is addressed to John E. Kieling, Program Manager, Hazardous Waste Bureau, New Mexico Environment Department. In Re: Lack of Groundwater Protection Requirements in Proposed Hazardous Waste Permit for Los Alamos National Laboratory. Dear Mr. Kieling: I provide the following public comments about the lack of groundwater protection requirements in the proposed hazardous waste permit for Los Alamos National Laboratory. "The Environmental Protection Agency has designated the Espanola Basin as a sole-source aquifer, meaning that the Espanola Basin is the sole drinking water source for the area between the Jemez and Sangre de Cristo Mountains, running from Tres Piedras, to the north, to almost Galisteo, to the south. Since operations began in 1943, LANL has buried over 21 million cubic feet of radioactive, hazardous and toxic wastes in unlined pits, trenches and shafts dug into the volcanic tuff. The LANL groundwater monitoring network has been under development since 1998 and has yet to provide reliable and representative	See the Department's responses regarding regulated units/alternative requirements and groundwater protection in the document titled General Response to Comments.	No

No.	Loc.	Comment	NMED Response	Δ
		samples of groundwater from the regional aquifer. I am particularly concerned about the lack of detection and compliance groundwater monitoring for the 'regulated units,' Areas G, H and L, at Technical Area 54. I quote the March 19th, 2010, written testimony by James Bearzi, Bureau Chief of the NMED Hazardous Waste Bureau: 'Groundwater contamination has already been detected beneath the regulated units at TA-54.'" That's on page 62. Groundwater beneath LANL discharges to the springs at the Rio Grande. Albuquerque residents are already drinking water from the Rio Grande and Santa Fe residents will begin next spring. It is time to get back to basics. NMED must require LANL to install wells drilled only with air. These wells must be able to detect contamination and provide the necessary information in order to implement corrective action, or 'cleanup,' in an efficient and cost-effective manner. Already too much taxpayer money has been wasted drilling defective wells, collecting and analyzing samples from defective wells and reporting data to the public that is unreliable. I delivered these letters to NMED this morning. I would like to submit the receipts for these letters as Loretto Community Exhibit Number 3. There are more letters that were mailed or e-mailed directly to NMED.		
317	Gen.	For Citizens Action (CA) and other members of the public to adequately comment on the draft permit, we must have full access to parts of the administrative record that are currently unavailable. Because of the lack of availability of the full administrative record, CA and the public are unable to adequately make *informed* comment on the LANL draft permit. CA requests that the NMED extend the public comment period for the LANL draft permit for at least 90 days after provision is made for furnishing the full administrative record for the LANL draft permit. Failure to furnish the full administrative record is not in accordance with due process requirements or public participation requirements of RCRA or NMAC. Currently missing from the administrative record are secret technical documents held in the NMED HWB Library that are relevant to the LANL draft permit. One such document is a January 9, 2002 TechLaw Inc. report relevant to Material Disposal Area	See the Department's responses regarding contractor documents in the document titled General Response to Comments. Regarding the three Environmental Protection Agency (EPA) Kerr Laboratory technical reports, the commenter provides insufficient description of the reports to know whether or not they are in the Bureau's LANL	No

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		(MDA) G, TA-54 that discusses numerous other documents related to groundwater flow and radionuclide transport in the vadose zone beneath Area G. The report is critical of the technical deficiency of a LANL computer code used for modeling of contaminant flow and transport through the complex geology associated with LANL. The code was apparently used by LANL but not subjected to a rigorous, independent review by the NMED. Numerous and unknown other TechLaw, Inc. reports exist for LANL that have similarly been kept secret and that are not referenced or presented to the public for review within the administrative record. If a lawsuit were to be filed for the LANL draft permit, such secret documents, paid for by taxpayers funds, could be available under subpoena and discovery powers of the court and could result in great delay of the approval of the LANL draft permit if the permit were remanded for consideration of such secret reports. Three significant technical reports issued by the Environmental Protection Agency (EPA) Kerr Laboratory regarding the reliability of the well monitoring network at LANL are not on the NMED website or included in the administrative record. Those reports should be considered within the permit as part of the administrative record just as were the National Academy of Science (NAS) reports. Those reports would also have bearing on the plans for monitoring wells that will be part of the post closure monitoring network and the use of alternative requirements.	administrative record. Generally, if the three technical reports are not referenced in a Permittees' submittal, and EPA did not submit the reports to the Bureau, the reports would not necessarily be in the Bureau's LANL administrative record. If the commenter wishes to supply the reports to the Bureau, they will be reviewed for relevancy and possibly placed in the record.	
318	Gen.	It is difficult to determine what the criteria are for NMED to include something in the administrative record. The first item in the 412-page list is titled "Is cobalt of any significance in the treatment of milk anemia with iron and copper?" from a technical journal in 1938. The early part of the list [prior to 1989] is unnecessary because it lists early documents that would be included, summarized, or provide background to reports provided to NMED as part of the environmental characterization program. This is another indication of how NMED cannot determine what is important and how to manage a permit for LANL. If NMED cannot provide the documentation to show the same level of administrative recording for other permits, all the extraneous material should be removed. NMED must be consistent to be fair. Documents provided to NMED and from NMED to stakeholders are correctly in the administrative record.	The Hazardous Waste Bureau's administrative record policy includes a requirement that submittals to the Bureau associated with any particular hazardous waste facility must include copies of all referenced documents. The Bureau applies this policy consistently to all permitted hazardous waste facilities.	No
319	Gen.	The revised and reissued LANL draft permit does not contain all regulated units that operated at LANL. MDAs G, Hand L are the only regulated units listed. Other	See the Department's response regarding regulated	No

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		regulated units that received hazardous waste after July 26, 1982 are MDA P, TA-16 and the SWMU 16-021(c) (also called the 260 outfall) settling pond (a RCRA impoundment). Although not a regulated unit, MDA B at TA-21 is undergoing excavation, MDA B lacks any groundwater monitoring wells for post-closure care. In the 2007 NAS Final Report on LANL Groundwater Protection Practices, the LANL scientists identified that of the nine (9) MDAs have significant potential for groundwater contamination with radionuclides. Accordingly, there is also potential for groundwater contamination by hazardous contaminants regulated by NMED. The monitoring well networks of all nine of these units are inadequate to provide protection of the groundwater. No attention is called to these dangerous, large inventory legacy waste dumps by the permit although they are listed in the 2005 Consent Order. The public will require additional time to review these units after their insertion into the LANL draft permit. There are the unlined dumps TA21--A, B, T, U and V, and TA50-MDA C. MDA AB at TA49 will receive two (2) new monitoring units, but the public has been given no information as to where the monitoring wells will be located.	units/alternative requirements in the document titled General Response to Comments.	
320	Gen.	The revised draft Permit identifies three categories of permitted units at the facility-indoor units, outdoor units and regulated units. (Section 9.1). The regulated units are identified as "material disposal areas G, H, L." (*Id.*; Table J-1). The term "regulated unit" is used throughout the revised draft Permit. The Permittees oppose the designation of the entirety of "material disposal areas G, H, L" as regulated units because it is inconsistent with the applicable regulatory requirements and is inconsistent with the history of the facility and the 2005 Compliance Order on Consent (Consent Order). Each material disposal area is made up of all the associated SWMUs and AOCs in that area, so, for example, MDA G consists of all the subsurface SWMUs and AOCs at Area G. Technical Area 54 (TA-54) Areas G, H and L include solid waste management units (SWMUs) and regulated units. 40 CFR §264.90 defines regulated units as a "surface impoundment, waste pile, and land treatment unit or landfill that receives hazardous waste after July 26, 1982." Based on the definition in §264.90, the only regulated units at TA-54 are Shaft 124 and Pit 29 at Area G, Shaft 9 at Area H, and a number of shafts and surface impoundments at Area L because these are the only discrete units that accepted hazardous waste after July 26, 1982. Pursuant to regulatory requirements and	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No

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		the intent to close those units under RCRA, LANL has consistently submitted closure plans that have identified the pits and shafts as discrete hazardous waste units. All of the other units at TA-54, including MDAs G, H, and L, have been identified as SWMUs by both LANL and NMED. The LANL SWMU report, required by EPA, and Module VIII to the current RCRA Permit, identified the units that had received hazardous waste before 1982 and mixed waste before 1990 as solid waste management units subject to corrective action. The Consent Order removed all the corrective action requirements for the SWMUs and AOCs from the current Permit to place them in a separate enforceable document (the Consent Order). Corrective action for the SWMUs is to be completed under the Consent Order. Corrective action at LANL SWMUs and Areas of Concern (AOCs) is being conducted pursuant to the Consent Order, which meets the statutory and regulatory requirements for 1) corrective action under RCRA for releases of hazardous waste or hazardous waste constituents; 2) corrective action for releases to groundwater; and 3) groundwater monitoring, groundwater characterization and groundwater corrective action requirements for regulated units under 40 CFR Subpart F and for miscellaneous units under 40 CFR Subpart X and 4) additional groundwater information required in RCRA Part B permit applications. (Consent Order Section III.A). The Consent Order requires LANL to submit a Corrective Measures Implementation Plan, which will be equivalent to a closure plan under the RCRA regulations and Part 9 of the revised draft Permit. (Fact Sheet at 5). The Consent Order includes corrective action requirements for TA-54. (Consent Order Section IV.C specifically identifies work to be undertaken at MDAs G, H, and L). Areas G, H and L contain SWMUs, AOCs and regulated units. 40 CFR§264.110(c) allows alternative closure for regulated units "situated among" SWMUs and AOCs as long as the alternative requirements are set out in a permit or in an enforceable document. The regulated units (as identified above) in Areas G, H and L are co-located or situated among SWMUs and AOCs and the Consent Order is an enforceable document. NMED has agreed that alternative closure is applicable to the regulated units. Section 9.3 states that the closure of the regulated units will be done under the Consent Order using alternative closure requirements in accordance with 40 CFR 264.110(c).		

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		In order to be consistent with the Consent Order and the administrative record, the regulated units should be specifically identified as Shaft 124 and Pit 29 at Area G, Shaft 9 at Area H and Shafts 1, 13-17, 19-34 and Impoundments B and D at Area L. The specifically identified regulated units are situated among SWMUs and AOCs at Areas G, H, and L and are thus eligible for alternative closure.		
321	Gen.	EPA recommends that after the draft permit is final/effective that the open detonation units be added expeditiously to the permit.	The Department concurs – The Renewal Permit includes a requirement that the Permittees submit within 180 day of the effective date of the Permit the documents necessary to regulate the open detonation units, *i.e.*, interim status units. Added permit language at Permit Section 1.4.1: For the interim status units listed in Table J-1 that the Permittees do not choose to operate, the Permittees shall submit to the Department within 180 days of the effective date of this Permit either a notice of intent to close in accordance with a current closure plan, or a revised closure plan. These documents shall indicate that the closure of these interim status units shall be initiated in accordance with 40 CFR § 265.113(a) no later than 270 days of the effective date of this Permit. For the interim status units listed	Yes

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			in Table J-1 that the Permittees propose to permit, the Permittees shall submit to the Department 180 days of the effective date of this Permit a permit modification request in accordance with 40 CFR § 270.42 that includes all applicable information required at 40 CFR §§ 270.10, 270.11, 270.14, and 270.23 for each unit.	
322	Gen.	SRIC and NRDC object to various sections (9.2.2.1, 11.4, 11.4.1.1, 11.4.2.1, 11.4.2.2, and 11.12.5.9) of the Revised Draft Permit which set a risk level of 10^{-5}. Scientific and health data clearly show that a risk level of 10^{-6} is more protective of public health and is a reasonable and achievable risk level. Given the multiple carcinogens that are used at LANL, a risk level of 10^{-6} should be included throughout the permit. There is substantial support for this risk level in agency practice. For example, in both cancer and non-cancer assessments, the U.S. Environmental Protection Agency (EPA) has defined 1 in 1,000,000 excess risk as a *de minimis* risk level (Caldwell et al 1998; Clean Air Act Amendments 1990; Fiori and Meyerhoff 2002; U.S. EPA 1991; Castorina and Woodruff 2003). For non-cancer risks such as birth defects, respiratory disease, and organ toxicity, EPA presumes that there is a threshold below which there is a negligible risk of adverse health effects from a lifetime of environmental exposure. The risk estimate is called the oral reference doses (RfDs) and inhalation reference concentrations (RfCs) (U.S. EPA. 1999. Integrated Risk Information Service (IRIS) Glossary of JRIS Terms. Available: http://www.epa.gov/iris/gloss8.htm). For cancer assessments, it is generally accepted that there is no known "safe" level, or threshold level of exposure to the vast majority of cancer-causing agents. That is, the only "safe" exposure is no exposure. The approach the EPA uses to quantify the risk associated with a given level of exposure is to develop a dose-response curve, where the default assumption is that the slope of the curve is linear unless substantial data can	The Department disagrees - The risk level of 10^{-5} in the Renewal Permit is consistent with Department, New Mexico Water Quality Control Commission, and New Mexico's Environmental Improvement Board's policy. NM's groundwater quality standards are based on the same risk level. The Department feels that the Renewal Permit is not the appropriate mechanism to alter that risk level. Furthermore, the target risk level in the Renewal Permit falls within the U.S. EPA's range of acceptable levels. EPA discusses what that agency considers appropriate risk levels in a March 16, 1998 memorandum titled *Risk-Based Clean Closure*. In that memo EPA states "EPA	No

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		demonstrate otherwise. Unfortunately, we also note for the record that EPA's standard assessment approach often underestimates risk to children and other susceptible populations. Children's health and risks associated with in utero, perinatal, or childhood exposures have been identified as critical public health issues. Simply adjusting for differences in dose between children and adults based largely on body weight or size is not adequate for protecting children from environmental cancer risks. Exposures to hazardous agents during early life stages may lead to long-term and even permanent damage, such as possibly increasing risks for later developing cancers. It is for these reasons that EPA issued its *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens,* which outlines the specific susceptibilities and preferable approaches for preventing exposure to carcinogens during early life (U.S. EPA. *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens,* U.S. Environmental Protection Agency, Washington, DC, EP *Al630/R-03/003F, 2005).*	generally considers protective media cleanup standards for human health to mean constituents concentrations that result in the total residual risk from any medium to an individual exposed over a lifetime falling within a range from 10^{-4} to 10^{-6}, with the cumulative carcinogenic risk not to exceed 10^{-4} and a preference for cleanup standards at the more protective end of the risk range."	
323	Gen.	The Permittees object to the financial assurance requirements set forth in Sections 2.13 (Cost Estimates for Closure and Post-Closure Care), 2.14 (Financial Assurance for Closure and Post-Closure Care), 2.15 (Liability Requirements) and 2.16 (Incapacity of Operators, Guarantors, or Financial Institutions) and as referenced throughout the revised draft Permit and Attachments. The provisions require LANS, as the private co-operator of LANL, to provide cost estimates and financial assurance for closure and post-closure care and to provide liability insurance for sudden and accidental occurrences. The financial assurance requirements set forth in the revised draft Permit conflicts with EPA guidance on the RCRA exemption for publicly-owned facilities, are not consistent with Public Law 106-113, Section 220 and conflict with the 2005 Compliance Order on Consent (Consent Order). <u>RCRA EXEMPTION</u> RCRA Subpart H establishes financial assurance requirements for closure and post-closure care for owners or operators of hazardous waste facilities. 40 CFR §264.140(c) specifically exempts States and the Federal government from the financial assurance requirements of Subpart H. State and Federally-owned RCRA facilities are exempt from the financial assurance requirements because "government institutions are	The Department disagrees. See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes

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		permanent and stable, and have as their reason for being the health and welfare of their people." (45 FR 33198 (May 19, 1980). Because of the permanency and stability of State and Federal governments, they are "more likely and more able to carry out their closure and post-closure responsibilities." *Id.* As EPA explained in promulgating the exemption, "State and Federally-owned facilities will always have adequate resources to conduct closure and post-closure care activities properly." *Id.* Unlike owners of private facilities, Federal and State governments have the financial strength and incentive to cover the costs of closure and post-closure care. Although NMED recognizes that §264.140(c) exempts DOE from financial assurance requirements, NMED has taken the position that LANS, as the private co-operator, is required to provide financial assurance. NMED is improperly focusing on the status of the Permittees as either a Federal entity or a private entity rather than on the fact that LANL is a Federally-owned facility. The EPA has consistently stated that the exemption applies to publicly-owned facilities, with the emphasis being on the ownership of the facility. The Preamble to Subpart H states that publicly-owned facilities, meaning State and Federally-owned facilities, are exempt from the financial assurance requirements. (45 FR 33198). In the EPA training manual on RCRA financial assurance, the EPA states that the requirements of Subpart H "are not, however, applicable to state and federally owned or operated facilities. (§§264/265.140.c))." (RCRA Training Module, EPA530-K-02-0181, Oct. 2001). The EPA directive on State authorization to handle mixed wastes states that "Federal facilities that handle mixed waste are not required to demonstrate financial assurance." (OSWER 9441.1987). In an audit report, the EPA Office of Inspector General stated that "Federal and state owned RCRA facilities are not required to establish financial assurance." ("RCRA Financial Assurance for Closure and Post-Closure", Report No. 2001-P-007, March 30, 2001). NMED's position that LANS is required to provide financial assurance is contrary to EPA guidance and is not consistent with the rationale underlying the exemption. The EPA has stated that a private sector co-operator at a publicly owned facility is also exempt from the financial assurance requirements. In a January 5, 1983, letter from John Skinner, UPEPA Acting Director of Solid Waste, the EPA stated "that where one party (the owner or operator) is an exempted party because it is a State or Federal government unit, the other, private sector party need not comply with the Subpart H		

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		requirements." In promulgating the regulations for solid waste disposal facilities, which also include a financial assurance exemption for publicly-owned facilities, EPA stated that "the financial assurance exemption extends to cases in which a [landfill] is owned by a State or Federal government entity and operated by a private party or local government (or operated by a State or Federal government entity while owned privately or by a local government." 56 FR 50978 (Oct. 9, 1991). Exempting private co-operators of publicly-owned facilities is consistent with the purpose of financial assurance and with the rationale for the exemption. The purpose of the financial assurance requirements is to ensure that "owners and operators of TSDFs will have sufficient funds to properly close and maintain the site. EPA promulgated the financial assurance requirements to ensure that owners and operators could not default to federal funds because they are unable or unwilling to cover significant closure or post-closure costs." (RCRA Training Module, EPA530-K-02-0181, Oct. 2001). Because the State or Federal government is liable for closure and post-closure costs as an owner or operator of a publicly-owned facility, and because the rationale for the exemption is that the governments will have the necessary means to complete closure and post-closure care, there is no reason to require a private owner or operator to provide financial assurance. In the context of a pre-emption argument, the United States Supreme Court refused to make a distinction between the Federal government as the owner of a Federal facility and the private contractor as the operator of the facility. The Court, in interpreting the possible application of state worker's compensation laws to the Portsmouth Gaseous Diffusion Plant, stated that, "[a]s an initial matter…we consider whether the federally owned Portsmouth facility is…shielded from direct state regulation even though the facility is operated by a private party under contract to the United States." *Goodyear Atomic Corp. v. Miller et al.*, 486 U.S. 174, 180 (1988). The Portsmouth facility was a Federally owned nuclear production facility operated by a private contractor. The Court stated that nuclear production facilities "are authorized by statute to carry out a federal mission, with federal property, under federal control." *Id.* at 181. The Court found that federal pre-emption protected the facilities from direct state regulation, "even though the federal function is carried out by a private contractor." LANL is a Federally-owned facility that is carrying out a Federal mission, on Federal property, under Federal control. NMED has recognized that DOE is exempt from		

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		financial assurance requirements. LANS, as the co-operator of a Federally-owned facility, is also exempt from financial assurance. Pursuant to the EPA preamble, which bases the rationale for the exemption on the fact that the particular facility is publicly owned, the LANL facility is exempt because it is a publicly owned facility. Therefore, because the Facility is exempt and because the expectation supporting the exemption is that DOE will have the means to pay for closure and post-closure costs, there is no reason to require LANS to post financial assurance. There is no basis for making the distinction between a Federally-owned facility and a private contractor that NMED is making for purposes of financial assurance. Making such a distinction ignores the underlying rationale for the exemption, which is that State and Federal entities will have the means to pay for closure and post-closure care. Since EPA has determined that State and Federal entities have such funds, there is no basis to impose additional financial assurance on the private operators. NMED attempts to justify imposing financial assurance requirements on LANS by arguing that the closure of the MDAs may be frustrated by funding shortfalls. (Fact Sheet at 28). As discussed below, LANL is required by the Consent Order to close the MDAs by 2015. The Consent Order has numerous mechanisms, which NMED has shown that it is willing to use, to ensure that the requirements of the Consent Order are met. The Consent Order includes provisions for stipulated penalties and NMED has the authority to undertake enforcement action if it believes that DOE is not complying with the Consent Order. Despite NMED's statements in the Fact Sheet, the work under the Consent Order is proceeding and funding continues to be made available. There is no evidence that DOE intends to discontinue funding of the corrective action measures required for the MDAs under the Consent Order. The crux of NMED's argument is that DOE is not providing funding at the level the Department would like to see. However, that is not a valid justification for imposing financial assurance requirements on LANS when the EPA guidance applies the exemption to publicly-owned facilities and includes private co-operators in the exemption and where there is no evidence that EPA was incorrect in assuming that the Federal government will have adequate resources to provide for closure and post-closure care. In addition, DOE has made a commitment to undertake closure and post-closure care of DOE owned facilities nationwide. As part of the long-term stewardship of the nuclear		

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		weapons facilities, DOE has committed to comply with the applicable requirements under RCRA and other laws for the closure and post-closure care of the facilities. Finally, NMED's reliance on the Hearing Officer's report in the WIPP proceeding is misplaced because it does not have any precedential value. Following the imposition of the financial assurance requirements against the private co-operator of WIPP, the Permittees appealed the requirements to the United States District Court. Prior to a decision on the appeal, Congress passed a Federal statute exempting the WIPP facility, including both DOE and DOE contractors, from the RCRA financial assurance requirements. 114 Stat. 536 (Public Law 106-246). Congress passed a similar provision for Sandia National Laboratories. 118 Stat. 440 (Public Law 108-199). Following the passage of Public Law 106-246, then Secretary of the Environment Pete Maggiore stated that "the standards and regulations upon which the Permit was based have changed and the State of New Mexico may no longer impose upon DOE's contractors the financial assurance requirements." (Letter from Pete Maggiore to Dr. Inez Triay, August 9, 2000). After the Public Law was passed, WIPP voluntarily dismissed the appeal on August 18, 2000. There has not been a definitive ruling by either a State or Federal Court on the applicability of financial assurance provisions to private contractors at Federally-owned facilities. PUBLIC LAW 106-113, SECTION 220 Congress has exempted the Federal Government and its contractors at facilities designed to manage transuranic waste from financial assurance requirements under RCRA. 113 Stat. 1501A, App. E Sec. 220, Public Law 106-113. Section 220 states: > Exemption for Waste Management Facilities Owned or Operated by the United States. No form of financial responsibility requirement shall be imposed on the Federal Government or its contractors as to the operation of any waste management facility which is designed to manage transuranic waste material and is owned or operated by a department, agency, or instrumentality of the executive branch of the Federal Government and subject to regulation by the Solid Waste Disposal Act (42 U.S.C. 6901 et seq.) or by a State program authorized under that Act. LANL is owned and co-operated by DOE, which is a department in the executive branch of the Federal Government and is subject to regulation by NMED pursuant to the		

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		State hazardous waste management program, which is a state program authorized by the Solid Waste Disposal Act. LANS is a contractor to the Federal Government. Portions of the LANL Facility that are governed by the RCRA regulations are waste management facilities designed to manage TRU waste and therefore the exemption under Section 220 applies to those portions of the LANL Facility and both DOE and LANS are exempt from the RCRA financial assurance requirements. The language of Section 220 is consistent with the exemption in 264.140(c) and demonstrates that Congress intended the financial assurance exemption to apply to contractors of the Federal Government at specific types of waste management facilities. CONFLICT WITH THE CONSENT ORDER Section 2.13.1 of the draft RCRA permit, Closure Cost Estimates, requires LANS to "submit closure cost estimates for each regulated unit listed in Table J-1 (*Active Portion of the Facility*) in Attachment J (*Hazardous Waste Management Units*) at the time of the submission of the Corrective Measures Evaluation (CME) report in accordance with Permit Section 9.3 and §VII.D.4.b.v of the Order. The Permittee LANS shall include the final cost estimate of the selected remedy in the submittal of the closure plan (*i.e., Corrective Measures Implementation Plan*) for the regulated units listed in Table J-1." The revised draft Permit identifies the regulated units as "material disposal areas G, H, L." (Attachment J, Table J-1; Section 9.1). Section 2.14 states that "[f]or Material Disposal Areas G, H, and L, the Permittees shall identify the instruments for financial assurance for closure in the associated Corrective Implementation Plans." The Consent Order specifically states that it is the sole mechanism and only enforceable document for establishing and enforcing corrective action requirements for SWMUs and AOCs at the Facility. (Consent Order, Section III.W.2). The Consent Order also states that the RCRA permit will not include any corrective action requirements, nor any other requirement that is duplicative of this Consent Order." (Section III.W.4). Section 11.1 of the revised draft Permit is consistent with the Consent Order and states that NMED and the Permittees have agreed to the Consent Order "which requires the Permittees to conduct corrective action at all solid waste management units (SWMUs) and Areas of Concern (AOCs) at the Facility to fulfill the requirements of 40 CFR §264.101. The Consent Order is an enforceable document pursuant to 40 CFR §§264.90(f), 264.110(c),		

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		and as defined in 40 CFR §270.1(c)(7). Nothing in this Permit Part shall be construed to constitute a change to the Consent Order." Section 9.3 states that the closure of the regulated units will be done under the Consent Order using alternative closure requirements in accordance with 40 CFR 264.110(c). The provisions of Sections 2.13, 2.14, 2.15 and 2.16 of the revised draft Permit are inconsistent with the Consent Order because they create duplicative requirements and establish a second enforceable document for corrective action. The Consent Order includes the three MDAs in all of the Consent Order processes, including the pre-CME, CME and CMI requirements. The specific pits and shafts that the Permittees have identified as regulated units come under the Consent Order because they are co-located with the SWMUS and AOCs and alternative closure is therefore allowed under 40 CFR §264.110. (*See* Comment on Regulated Units). The revised draft Permit states that closure of the regulated units shall be in accordance with the Consent Order. The Consent Order specifically states that compliance with the Consent Order constitutes compliance with Subpart F and Subpart F includes a requirement for financial assurance at §264.101. The Consent Order does not create or carve out an exception for financial assurance but states that all of Subpart F is met. Therefore, by including closure cost estimates and financial assurance for the regulated units in the draft Permit, NMED has included duplicative requirements and created a second enforceable document for corrective action because the cost-estimates are clearly based on the CMI, which is a Consent Order requirement. In summary, the exemption applies to publicly-owned facilities and is not limited to a State or the Federal government as a permittee.		
324	Gen.	LANL is a federally owned and operated facility with a contractor as a co-operator. The Federal Government owns all of the structures, property and equipment. The facility is run by federal tax payer dollars controlled by the Department of Energy. All operations at the Laboratory are overseen by the Department of Energy. Being so, the Laboratory is not subject to financial assurance. Section 264.140(c) under Applicability states "States and the federal government are exempt from the requirements of this subpart." Placing the burden of financial assurance on the Laboratory would take tax payer dollars away from important work and place them in a trust that will never be needed. The clean up of the past operations and current permitted operations is guaranteed by the	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes

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		federal government. Placing multi millions of dollars in a useless trust will cause clean up activities to slow for that money in all likelihood will have to come from that budget. This would also place the laboratory in jeopardy of not making its commitments under the "Consent Order". Since this requirement clearly does not apply to LANL it should be deleted from this permit.		
325	Gen.	Financial Assurance Requirements. DOE/LANL do not want to provide the financial documents that say they will have funding available in order to cleanup the contaminated facilities at LANL when they are done using them. I support NMED requirements in the revised draft permit that DOE/LANL must meet all of the financial assurance requirements for each of the 26 hazardous waste management units.	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
326	Gen.	We support Financial Assurance Requirements. We support NMED requirements in the revised draft permit that DOEILANL must meet all of the financial assurance requirements for each of the 26 hazardous waste management units. Because DOE/LANL do not want to provide the financial documents that say they will have funding available in order to cleanup the contaminated facilities at LANL when they are done using them, we do not trust that they will do the cleanup without NMED's requirement.	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
327	Gen.	SRIC and NRDC support financial assurance requirements of the Revised Draft Permit. Permittee Los Alamos National Security, LLC (LANS), co-operator of LANL, meets the applicability requirements for financial assurance of 40 CFR § 264.140. As a matter of law, the permit must require financial assurance and permittee LANS must meet those requirements. Additionally, SRIC and NRDC respectfully suggest that the cost estimates for financial assurance provided in Attachment M are likely too low, especially because of the inadequacies regarding performance standards, disposal requirements, and decontamination requirements described above. The cost estimates should be revised to reflect the costs of those provisions.	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
328	Gen.	So I've been listening to the discussion this morning about the financial assurances, and I just wanted to say that the citizens of New Mexico -- that we need financial assurance, which the lab will clean up all the waste it has left. We need to know that the funds will	See the Department's response regarding financial assurance in the document titled General	Yes

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		be available to remove the contamination from the sacred lands of the pueblo people that are now under the management of DOE, because this hazardous and radioactive waste is leaking into the Rio Grande, which is the primary drinking water source now for Northern and Central New Mexico. We need to talk about and keep in mind that the issue is our health, the issue is cancer. There have been significant cancer clusters reported in Los Alamos County and around Los Alamos County, and we're all being affected. Our health is being affected by this material. And for DOE and the lab to fail to take full responsibility for it and make it their priority to run a really, really clean ship, it's hypocritical and disingenuous and it leaves one to feel really distressed and with no faith that there's any possible benefit in anything that's going on up there. So we need the financial assurances because DOE has not always cleaned up its legacy wastes, in particular Area G must be cleaned up totally, not just the aboveground waste, but the below-ground waste. And finally, DOE already has nationwide over $3 billion of waste jobs that haven't been done. So the financial assurances are very important, I believe, for the citizens of New Mexico.	Response to Comments.	
329	Gen.	I am currently an employee of the Los Alamos National Laboratory (LANL). My comments presented here are my own and should not be construed to represent LANL's position. I have worked in the environmental compliance and permitting field for RCRA Hazardous Waste since 1979. I served as a Program Manager for the State's Hazardous Waste Program and then as the Bureau Chief of that program, the underground storage tank program, and superfund program at the then Environmental Improvement Division. I worked for two years as a hazardous waste consultant for LATA working on a contract that provided services to the Department of Energy Complex. I have been employed at LANL since 1993 working on compliance and permitting for waste management projects. I wish to take this opportunity to say that in general the proposed permit for LANL is a positive step. It is important that each waste storage, treatment and disposal (TSD) site in New Mexico receive a permit. Permitting requirements need to be consistently applied to all TSD facilities across the state. The requirements need to be based on the regulations and provide clear and consistent guidance for facilities to operate under and	Comment noted. The commenter does not specify which requirements in the Renewal Permit are too prescriptive, address inappropriate issues, or are redundant. See the Department's response regarding open burning in the document titled General Response to Comments. Regarding the corrective action requirements in the Renewal Permit, they pertain only to	Yes

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		for the regulator to enforce. The draft permit as proposed goes a long way to meet that standard. GENERAL COMMENTS • The permit as drafted is too prescriptive. A permit should provide the compliance envelope for a facility and not how it must operate. There is little to no flexibility in the permit thereby making it extremely complex, long, very time consumptive in its development and difficult to implement and enforce. It leads to a lot of "grey" areas that require interpretation and clarification. Also with great detail comes the need for a very active permit modification process that poses undue hardships for the facility and the regulator both having limited resources. • The permit contains many sections that are redundant of other documents and agreements or are just not permitting issues. This permit as applied for by LANL was to permit storage locations at TAs-3, 50, 54 and 55 as well as treatment by cementation at TA-55 and by Open Burning at TA-16. There are a myriad of sections within the permit that go well beyond that scope. Many of these have no basis in the regulations. • The applicability of various elements of the revised final draft is questionable. The RCRA permitting process is met to address any treatment, storage or disposal operations for defined hazardous waste at a facility. The regulations offer a number of exemptions, some because certain operations are addressed by other environmental regulations. • Removal of the Open Burning Part 6 and its associated information/data throughout the draft permit and its attachment is not justified. It creates a huge impact on the facility operations, laboratory mission, safety and protection of the public health and environment. I will address this more thoroughly in the specific comment section. • Over half of the draft permit text is devoted to Corrective Action which is already covered by the "Consent Order" which was negotiated with NMED/DOE/LANS. That is a binding document with hard deadlines and stipulated penalties. Any changes made by mistake or as a result of the	releases from permitted hazardous waste management units as stated in the Permit and do not pertain to the sites being addressed by the Consent Order unless so specified. The corrective action requirements are currently identical in the two documents but they need not stay identical.	

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		permitting process places these two documents in conflict and the Laboratory in an untenable position of trying to maintain compliance. Part of the permitting process is offering the public the opportunity to comment on the draft document. If the "Consent Order" is unchangeable then the public can not offer changes as part of this permitting process or if changes are made then the two documents will be in conflict. The public, as can be seen by comments and proposed testimony, feels that since this issue has been placed in the permit that it is appropriate for them to submit comments on it and the associated groundwater monitoring. That is understandable. If the order and other agreements are immutable then they have no place in the permit.		
330	Gen.	Regarding environmental justice, I urge you to know and remember that poor people cannot afford to move out of toxic environments or buy expensive air and water filters. In fact, none of us should have to buy these filters. As you may know, there is an epidemic of cancer and diseases such as asthma and other immune system disorders. Real prevention of disease involves not producing these toxic chemicals in the first place; however, if they do exist, they need to be safely and carefully contained. The precautionary principle should be applied. I would also like to see NMED be more timely and diligent and deny Los Alamos National Lab (LANL) the permit to continue burning hazardous waste in the open air. This is because LANL has been a blatant polluter of our air, water and earth. Fining LANL does not seem to be effective, per their neglect of environmental stewardship. Denying the permit is one way to protect us. Please put an end to their negligence, please ...	See the Department's response regarding environmental justice in the document titled General Response to Comments.	No
331	Gen.	First of all, the elimination of a physical information repository, in accordance with the requirements of 40 CFR 124.33(c) and which was agreed to in prior negotiations with parties, represents a lack of good faith on the part of NMED in addressing environmental justice principles, which the current administration has committed to. The majority of poor and people of color communities do not have the hard and software computer resources, nor the technology skills, to deal with the sheer size of information that these types of documents require. Removal of the information	Comment noted. See the Department's responses regarding the information repository and environmental justice in the document titled General Response to Comments.	Yes

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		repository will have a negative impact on participation and meaningful involvement. I think we experienced that this morning. What a wonderful example. The US Census Bureau, Current Population Survey of October of 2009, reports that New Mexico -- that in New Mexico, 65 percent of individuals three years and older live in a household with internet access. However, when they break it down by selected characteristics, the percentages go way down. For instance, only 47.9 percent of Hispanic households have access to broadband internet. Statistics for Native Americans were not reported. Based on our socio-indices, we can assume that this percentage would be even lower. Clearly, a physical information repository at an institute of high learning, which is more than willing, would facilitate participation and meaningful involvement. These are environmental justice principles addressed in President Clinton's and Governor Richardson's Executive Orders on Environmental Justice. The New Mexico Environment Department also led a series of environmental justice listening sessions several years back in which many of these same issues were reported, and there was a list of recommendations that can also be accessed on the NMED website. The library internet survey that has been presented as an exhibit, although interesting, is hardly a justification for not providing a physical information repository. The amount of time it would take just to access the documents, much less read them and then pay the 10 or 25 cents per page to copy them, would make it a prohibitive effort. The 10 or 25 cents per copies are quotes from the Springer Library. I would also bring your attention to the fact that the survey, although mentions in the intro Mora County, there is no area in Mora County that is actually reported on the Excel sheet that we had. Being a resident of Mora County, and a resident of Wagon Mound, the only access we have in Wagon Mound would be the school; and that, unfortunately, those areas are not always open to the public, there are a lot of restrictions with it, and, again, the issues of copying. Again, we had an excellent example today of the connection here at the casino. In Mora County, we don't even have that. As a matter of fact, I worked in the Wagon Mound Public School District and was assigned to Valmora when I left from that school eight years ago, and the school did not		

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		have access to the internet because they were in a little dip that prohibited that. We do not know how many computers they may have throughout Mora County, or any of the survey does not lend itself to that, nor does it really lay out the methodology used to obtain this information. So the chances of Mora County residents driving to Mora to have limited, if any access, would be prohibitive. Both Executive Orders on Environmental Justice direct interagency collaboration and planning within their particular agency. Does DOE and Los Alamos have environmental justice provisions, rules and/or procedures? An information repository seems like a small gesture that would cost little, considering the disparate and cumulative risk towards the communities that HOPE represents have been historically subjected. An information repository in a location like Northern New Mexico Community College would provide equipment, support for analyzing, interpreting and duplication of materials. There has been an interest in the college in developing and providing services to surrounding communities in order to do research, training, develop classes and databases to inform community and policy makers about environmental issues associated with Los Alamos. Language is also an issue, as 66 percent of residents of Rio Arriba speak a language other than English, as reported by the census. The repository should be available in the appropriate languages of the impacted communities as requested. This is also reinforced and ordered through the executive orders. A proposal that has been made for cross-examination of community members also flies in the face of environmental justice principles promoted by the executive orders. Cross-examination of community members would have a chilling effect on public participation. Cross-examination of technicians, sociologists, lawyers, et cetera is customary. Again, this does not reflect an effort by the applicants or NMED to offer EJ -- to honor EJ principles. The permit application has had and may have further negative consequences and undue exposure risks for vulnerable communities, in particular children, whose organs are not yet fully developed. Poor, rural and communities of color already face many problems and barriers with regard to health, health care access, economics, and environmental, cultural access to education, training and information and other social risks related to		

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		environmental justice. Restorative justice considerations. The traditional and spiritual ways of life in indigenous nations here and around Los Alamos have been interrupted historically for centuries without compensation or protective measures, much less nation-to-nation diplomacy. Addressing and considering the issues of cumulative and disparate risk to vulnerable communities requires additional measures and actions by the Department of Energy, Los Alamos, and other federal and state agencies to address outstanding and continuing issues as a result of historical and environmental and social injustices. When dealing with issues of restorative justice in communities of color, we must also examine the effects of racial discrimination, also known as racism; and in particular institutionalized forms of racism that impact planning and zoning, legal options, access to education, and of course the regulatory processes. If we -- an absence of looking at these issues, basically, it leads us to where we are today, 30 years of a nuclear cycle legacy that has left us death, destruction and cancers and other diseases in the uranium belt, in the mining and milling of uranium, and which feeds the nuclear cycle developed at Los Alamos and tested for years in New Mexico. Most of us denote New Mexico not as the Land of Enchantment, but rather the national sacrifice state for nuclear power. There is a need for health studies -- let me just add a little bit, also, in this. About two years ago, the community of Wagon Mound went through a permit process with the solid waste regulations and in the revision of the solid waste regulations, and in that particular revision, the New Mexico Environment Department lawyer pretty much sided with industry in that issues of race and ethnicity should not be considered, just as NMED fought for many years against the consideration of social issues and concerns of communities. We know from the court decision -- the New Mexico Supreme Court decision on Rhino that the practice of NMED to rely solely on technical issues has been challenged. I would also like to, for the record, just identify the fact that in that particular hearing, NMED strongly opposed the use of race or ethnicity in protecting vulnerable and communities of color, using Adarand and Gerrard as cases as justification that race could not be considered. When one looks at those cases, it's clearly just an opinion, as		

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		they do not necessarily prohibit the use of race. I believe it is convenient for the legal system to try and promote the concept of a colorblind law, but I think it is outrageous for us to be expected to be color-deaf and also color-mute. There is an also a need for health studies to be done in the tri-county area. The State Department of Health has done some studies in which it reports that there are three to seven times higher levels of uranium in the urine of New Mexico citizens than the national level. We need further studies to identify the sources of contamination and how other areas of the state are impacted. We need more health studies to identify our risk with respect to hazardous waste. There is a need for studies to assess the risk to children, and, in particular, women's health, and in particular reproductive health. We would also want to stress the need for increased monitoring in Northern New Mexico based on air dispersion. Soil and water contamination must also be studied and monitored. Testimony during the WIPP permit application for remote and -- remote-handled waste documented testimony of suspected exposure from the ash created during the Cerro Grande fire in Los Alamos in communities as far Golondrinas and Ocate, New Mexico. Residents of Wagon Mound have also testified at solid waste and hazardous waste hearings of their concern that hazardous waste may make its way to a private landfill near their community. The private landfill owner for a time held a special waste permit, which allowed for over 7,000 cubic tons of contaminated ash from the Cerro Grande fire to be taken to this private landfill. This is an issue of environmental injustice. Why should one of the poorest counties in New Mexico bear the risks of contaminated material from one of the wealthiest counties in New Mexico? Residents of Rio Arriba and other communities surrounding Los Alamos are concerned and have also testified about these issues. The Concerned Citizens of Wagon Mound and Mora County also carried out a survey in the villages of Mora County and found that folks reported high levels of cancers, asthmas and allergies in a county that has little industry. Residents are concerned with the wind patterns that flow in the direction of Mora County from Los Alamos.		

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		The New Mexico Environment Department must also exhibit a higher level of review, consciousness and accountability with regard to public participation, notice and hearing. From our past experience in New Mexico, whether the residents of Chaparral or Wagon Mound or Native Nation, what government agencies see as public notice and participation, i.e., listening sessions, scoping meetings, and other public forums, are at times at odds with each other. HOPE reports that they did not find these meetings clear, informative or effective. Oftentimes, these meetings serve merely a numerical purpose, but its effect was questionable. Often, it is not clear what the meetings are about, nor how communities can interact with this process. These meetings are oftentimes carried out in cooperation with industry and permit applicants, giving communities the wrong impression, and without offering the same support to community organizations. I will use again an example from Wagon Mound, where NMED facilitated a community meeting in the parish hall of the village with a private landfill in the region. The landfill owner provided the food and had the presence and work of five staff of the New Mexico Environment Department, who do the publicity and facilitated the meeting and, of course, recorded it. Although they neglected to invite the Concerned Citizens of Wagon Mound and Mora County, a community which they knew to be active in Wagon Mound, and which has led a struggle against the private landfill owner's efforts to obtain a special waste permit for now a decade. Nor did they offer the same resources to the Concerned Citizens of Wagon Mound and Mora County. Communities in the south, Chaparral, Mesquite and Sunland Park, have all questioned how so-called scoping meetings were promoted and facilitated and how results were reported in hearings. When one submits a public service announcement, it is an important consideration of where they are placed. Are KUNM and KANW appropriate radio stations for the impacted communities which are in the tri-county area of Los Alamos? As offered by the NMED, the EPA Title VI guidance with respect -- is just that, guidance. We would again hope that in a state that has hosted environmental justice listening sessions, has a Governor's Executive Order on Environmental Justice that we would go a little bit above suggested guidance. It would also be helpful to have a list of recipients of the notices and letters that were sent out by the New Mexico Environment Department. Was this list of EJ communities		

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		identified or was the list of EJ communities identified during the New Mexico Environmental Department listening sessions on environmental justice also sent notice and letters? These particular listening sessions basically developed a huge list of community organizations and individuals throughout the state, and it seems that, again, if the agency has -- if there is interagency -- even within an agency, interagency collaboration and discussion, it seems that that would be a list that would be available to NMED bureaus. This testimony is supported by the New Mexico Environment Department's mission statement, which is to protect the health of the environment, the people of this state, state solid waste regulations, President Clinton and Governor Richardson's Executive Orders on Environmental Justice, President Clinton's Executive Order 13045, and an opinion in the so-called Rhino decision, a State Supreme Court ruling in favor of considering social concerns in permitting decisions, in addition to relying solely on technical considerations. It would appear that the information repository is a social concern, that it has been clearly requested, and is deemed important to the communities that HOPE represents. This represents a unique case where a significant interest has been shown and testified to by the impacted communities and has been part of a negotiating process. We urge you to direct the applicant to establish a physical repository, as well as a virtual copy, and additionally we support denial of this permit.		
332	Gen.	I remember when you used to walk into this room, and you couldn't even come in because there would be so many people here, and wanting to know – wanting to know what was happening, wanting to understand what was going on. For many years, we fought, from the very beginning, to establish what we thought would be an access to Los Alamos, which was the Citizens Advisory Board, a Citizens Advisory Board that would be made up of community representatives, and we found that this was an avenue to be able to have community input, and there was a Citizens Advisory Board that was established. Unfortunately, most of the community representatives were pushed off. The sad part about that is that we find ourselves in the same place that we did 20 years ago, once again asking for the same things that we've been asking for all along, for community representation, access to information within our communities, not always located within the universities.	Comment noted. See the Department's responses regarding the information repository and environmental justice in the document titled General Response to Comments.	Yes

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		You know, I have no problems in putting the information at -- you know, at the community -- at the college. What I do have, you know, a problem with is that most of our people do not always go to the college. You have a lot of community organizations and community service centers that a lot of people do use, and I can't understand, for the life of me, why this hasn't happened. It isn't up to you to decide whether we use it or not. The responsibility is, is that it's placed there, so that we can have access to it. The other thing I can't understand is that -- is coming here and trying to figure out what is it that you want from the community, because the community has historically at these meetings come and told you what they want, but you have consistently come and told us what we need. It's always that you need this. It's not what we need, because if you would have listened to us, what we need is for, one, our lifestyles not to be impacted by any kind of contamination, which means our livestock, our times of growing, because most of these communities do have gardens, they live on their gardens. I'm sure everybody here knows about Chimayo chili, you know, the famous Chimayo chili. You know, there is the water. You know, so what we -- what we want is for our lifestyles, of which we depend on, because we're not urban, of which we depend on, not to be impacted. We would also want the respect that many of these things be available to us in our communities. That means -- our communities, that means the service centers that we have access to it. You know, you complain -- you know, we always hear about Los Alamos has the best educational system in the whole state, and yet Espanola has the highest drop-out rate. Has anybody figured out why? Do you know that DOE has appropriations, special appropriations, for the educational system? Not only do I come here to say that today, but I said this more than 15 years ago. You know, it just annoys me -- and I didn't want to get up here and really come out really ugly, because I can, but I just want to get to a point. When we talk about environmental justice, what does environmental justice really mean? How are we going to penetrate our communities to have a -- to have a voice within this process that has some substance? Because, you know what, we don't. And until the makeup is different, we're not going to. And until you understand the high rates of cancer that we have in our communities and how we're affected by many of the things that go on -- and I already know, don't tell me, you can't blame that on Los Alamos. We've heard it. But Los		

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		Alamos has never -- or the state has never gotten to a point where they can come down and do some studies. We had a hearing back in I think -- I think it must have been 1998 or '99, I can't remember, but we had a bunch of congressional people down here that came to a hearing. It happened that Domenici happened to put it together for us. At that time, it was really sad, because we had a lot of people that were really sick, a lot of people. So -- you know, so I came here today, and I -- you know, I wasn't going to say anything, because the sad part of it is, is that many of our people work on both sides, and that's what this community is. The Espanola Valley has a lot of people that work at Los Alamos, and we have a lot of people that now live in the Espanola Valley, and it's a shame that many of our educational systems and our things are still not up to par, not even the half what they should be in terms of what at Los Alamos it is. When you can tell me where the balance is between what is going on in that community and what is going on in this community, when there can be a balance between our educational systems and our business systems and all of the others, then -- you know, then I think people would be willing to hear, and I think you would have people from the communities that are not frustrated by the fact that they try to come here and understand and nobody wants to listen. So when you get ready to put down those things and you take them to our communities, then we can teach our own people how to, you know, read some of that information, or at least have a basic understanding of what you're saying, you know, and we wouldn't have to be here fighting all the time. Because you know what, at the end, nobody is going to win. So, you know, I just wanted to say, you know, I feel that we do need to have these facilities and access to our -- to the information. We also need for the state to pay closer attention to some of our communities that in the last fire that we had, where the contamination really fell, was on many of our communities, like Chimayo, like the Espanola Valley, like Tesuque, and all the rest. So, you know, I think there is some – some responsibility on behalf of the state to protect our interests and not always to compromise it.		
333	Gen.	I've been through these weeks of testimonies many times myself, and -- and over and	Comment noted.	Yes

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		over it's the same issue in New Mexico, right? We're kind of like -- we are the national sacrifice state when it comes to the nuclear cycle, from the uranium milling and mining that has happened in this country to the processing and the technology of Sandia Labs and Los Alamos, and as well as the testing here, and not to mention, of course, all of the things that other people have talked about in terms of the risk to our health, to our -- all our natural resources. I did technical testimony last week on behalf of HOPE, and today I basically am testifying in behalf of the Concerned Citizens of Wagon Mound and Mora County, of which I am the president -- board president. In Wagon Mound, people are particularly upset because Mora County doesn't have any industry, yet through a survey that we did throughout the county a few years ago, we found that the residents there have a -- 17 percent of the respondents said that they were experiencing some types of cancers or going through some types of cancers. So again, if we don't have industry, where is all of this coming from, no? We are also the recipients not only of a lot of ash that came from the Cerro Grande fire in 2000, but we're also the recipients of a private landfill there of 7,000 cubic tons of contaminated ash from Cerro – from the Cerro Grande fire. Again, a classic case of environmental racism, no? The poor -- one of the poorest counties in the state, as well as the nation, carrying the risk of -- that comes with the contaminated ash that went to Wagon Mound. And we'll never know what will happen with that ash there. We're -- we decided that we wanted to keep it there. We did win a court case rescinding a special waste permit that that private landfill had gotten, when we decided not to push the courts to take back to Los Alamos those 7,000 cubic tons of contaminated ash, because we didn't want -- we figured at this point, I guess, it's better off underground, although the science of that is -- is questionable. So again, people are very concerned about their health. People are very concerned about the lack of transparency. Almost every day in the news we hear about all the documents that Sandia Labs hasn't released all the documents that Los Alamos hasn't released. When I first moved to Albuquerque and raised my children in the Mountain View community of Albuquerque, one of the most contaminated communities or areas in Albuquerque -- it has thirty-six EPA-regulated sites, two Superfund sites, all -- any kind	See the Department's responses regarding the information repository and environmental justice in the document titled General Response to Comments.	

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		of industry that you want to talk about. And the air quality reg. -- board that someone mentioned a while ago in Albuquerque, the only one, by the way, that exists beyond the NMED, has basically always fallen in its mission to protect the people's health. As a matter of fact, they issued a permit to a cement plant that was opening up just across the street from the kids' community center, right? But our children are never quite as valuable sometimes. Poor community children are never quite as valuable. And so again, I think it's really an issue of environmental racism, and the way that New Mexico has been treated, the armed powers in this country feel that this is a state that can be taken advantage of, that could -- whose water can be contaminated, whose air can be contaminated, all the natural resources, as well as the people can be contaminated. President Clinton issued an Executive Order on Environmental Justice that was subsequently issued also in another Executive Order here in New Mexico by Governor Richardson, and it's pretty sad because there -- I did ask the question the other day -- no one actually answered it, or maybe it wasn't in anyone's role at that particular time to answer -- but I've never seen any EJ documents from the Department -- from the DOE or from Los Alamos. I don't know if there are any documents that they have in terms of how they will deal with the Environmental Justice Executive Order directives that came out from those two executive orders, which really did direct all the agencies of the federal government -- and the state Executive Order also directed agencies to look at those issues. So it's pretty sad to sit and listen the few hours that I've had the opportunity to do that over the last few weeks to really over and over hear the NMED, which is entrusted to protect the health of the people and the environment of New Mexico, to really back away from providing any kind of public notice, real public notice, and public -- and opportunities for real public participation. And most specifically blatant is the resistance to provide a physical repository. I think that that is going to be the stamp of environmental racism you all will carry with you if you don't at least do that, because that's the basic minimum you can do when you're poisoning people and not -- and offering no transparency. So I just wanted to make sure that we hit upon that again. I also want to talk about this whole idea of informing people through E-mails. I think I did provide testimony on that. Again, it was very disappointing, the surveys that were presented by the parties to kind of justify why they wouldn't provide a physical		

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		repository, when very little research shows you that in New Mexico about 50 percent -- and that's a failing grade, by the way, in the schools, right -- that only 50 percent actually have access to a computer with fast Internet access. But when you look at specifically Hispanic or Chicanos or whatever people decide to call themselves, only 47 percent of people in New Mexico have that access. There aren't any statistics for Native Americans. So is there a compliance here in terms of trying to with -- between government and industry to keep people uninformed? Because that is like the lowest common denominator when you want to get public participation and public notice out, just doing E-mails. That -- that's not getting any -- anyplace. And by the way, since I have testified, I hope I'll be on the list and will in the future be receiving any kinds of notices having to do with -- with LANL. I've testified on WIPP, and I don't think I've ever received any notices from WIPP. I guess I'll finish with just again referring to the Concerned Citizens of Wagon Mound and Mora County, there was a person that would have been here tonight but wasn't able to make it so I came in their place. It's real easy for government officials and highly paid lawyers that represent industry to come here and again present different sciences, no? And it's like the Spanish saying goes, "Cada cabeza es un mundo." You got 10 scientists; you've got to have 10 different perspectives on anything, right? So it's really all about whose science has the power, really. But New Mexico in Mora -- in Wagon Mound, we don't even have -- we have a volunteer fire department. That's the only type emergency response or any kind of safety that we have within a 40-mile radius, right? The closest doctor we have is in Springer, which is 21 miles, and nobody really likes that doctor, so they travel to Las Vegas. And I don't know if you've listened to the news lately. Almost everybody -- probably about 50 percent of the people that go to Las Vegas, to the hospital there end up with infections, and most of them end up dying, unfortunately. We've had a lot of deaths in Wagon Mound because of infection. And so -- and then we could always go to St. Victims Hospital, as it's called, because they also have a lot of issues with health care and how it's given to maybe people that are having to travel long distances to get there, right? So all these issues are issues for us. We don't have a HAZMAT -- or should I say the closest HAZMAT that we have is 70 miles. So there's just no help for our community in terms of dealing with -- whether it be WIPP trucks going through or ash that comes from Los Alamos fires or ash that gets		

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		buried five miles from our community, and we have no way to protect ourselves from any of these risks that were laid on us. So again, on behalf of the Concerned Citizens of Wagon Mound and Mora County, I urge you to deny the open burn permit and stop exposing and burning the State of New Mexico with unnecessary risks for the nuclear arms race. And we urge you, we urge you, to do a little bit of something to respond to the environmental justice executive orders, and at the minimum, at the minimum, because that's minimum, is provide a physical repository. Granted, it may make transparency an issue, but it will definitely make public participation and notice a lot easier.		
334	Gen.	I'd like to first begin by thanking the New Mexico Environment Department, Concerned Citizens for Nuclear Safety, and Nuc Watch New Mexico for standing up for the rights of the citizens against the operations of the Los Alamos National Laboratory, which from a citizens' perspective and from a perspective of one who has been very concerned about the environmental travesty of the laboratory being on a hill, at the top of a watershed, in a wind-swept zone, of the people who live downwind and downstream from Los Alamos. I've been engaged in this concern for many years. It feels like the citizens of New Mexico really are -- have a very small voice when it comes up against this big environmentally -- this environmental catastrophe that has been happening at the top of the mountain on the hill since 1945. I would like to bring to the attention that a lot of citizens of New Mexico have been injured from -- from this environmental travesty over the years in the name of the military and in the name of protecting the United States citizens abroad. And today we are at tax day, and there is a huge amount of taxes -- of the citizens' taxes that are being spent to further military interests throughout the world. If the logic behind the open burning is to protect the soldiers abroad, and it is known that the toxins going into the air have the potential -- a very high potential of injuring United States citizens, the question is really; what is the US military protecting? If it isn't protecting the citizens who live inside the borders of this country, the United States citizens living in the United States, what is the purpose of a military going abroad to protect us? And when it comes to a situation where a government knowingly is doing harm to its own citizen base, there is a kind of very unpleasant name for that called genocide. And	Comment noted. See the Department's responses regarding environmental justice and groundwater protection in the document titled General Response to Comments.	No

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		it -- it has been apparent to me over the years that the National Nuclear Security Administration, the Department of Energy, has targeted New Mexico as a place where the activities of the nuclear weapons complex have kind of have a free run to be here, because it's really basically, you know, the Hispanic and Native American people who live here, and it seems to me that this is a case of -- when the environment is being ignored and the surroundings of these people, that it is a racist activity that I call environmental racism. Environmental racism is a cousin of what could be considered genocide. So I would just like the people who decide about what's going to happen with the burning up there to bring that into consideration, to think about, you know, really, who is being hurt, why they are being hurt, why the government is allowing them to be hurt, and maybe come up with a different approach to really understanding what it means to take care of our citizens of the United States of America, what is true national security. So I'm sorry if I'm going on a little too long, but my intention is to continue the reading of the Plans and Practices for Groundwater Protection at the Los Alamos Laboratory, the Final Report. LANL's efforts to understand the role of geochemistry in contaminant migration have not kept pace with efforts to understand hydrology. The committee found a lack of basic, site-specific geochemical data to support LANL's assumptions about the relative immobility of important contaminants - especially radionuclides - along transport pathways and judged that LANL underestimated the value of both field and laboratory geochemical measurements. *Recommendation*: LANL should increase its attention to geochemistry within the context of its site characterization work. LANL scientists should conduct more field and laboratory studies to measure basic geochemical parameters such as sorption coefficients with the goal of testing and verifying their conceptualizations of subsurface hydrogeochemical processes. The following finding and recommendations reflect the committee's evaluation of the Interim Facility-wide Groundwater Monitoring Plan (LANL 2006c), which was requested in the Statement of Task. The Hydrogeologic Workplan has been effective in improving characterization		

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		of the site's hydrogeology. However, the knowledge gained through the workplan does not appear to have been used effectively in the development of the interim monitoring plan. The workplan is mentioned only in the introduction of the interim plan, and rationale for the siting of new wells in the interim plan is not grounded in the scientific understanding of the site evident in the Synthesis Report and other publications such as the Vadose Zone Journal. *Recommendations:* LANL should demonstrate better use of its current understanding of contaminant transport pathways in the design of its groundwater monitoring program. Tables in the monitoring plan that give the rationale for locating monitoring wells should at least provide a general linkage between the proposed locations and the site's hydrology, or a section discussing the relation between well locations and pathway conceptualizations should be added. LANL should take a site-wide approach to monitoring the intermediate and regional aquifers. Further, the interim should summarize the ways in which the information from related studies will be used for updating the plan. The current description of the conceptual models (in Appendix A of the plan) is useful, but it should be improved. First and foremost would be a description of potential pathways, both surface and subsurface, that connect the sources (listed in Appendix A) with the groundwater that is being monitored. LANL should examine the potential for approaches that both optimize the monitoring network and incorporate uncertainty into its design." I would encourage LANL to take seriously that there are people who live downwind, downstream, and take the utmost consideration in protecting them.		
335	Gen.	I've been involved in working on the nuclear issues in New Mexico for just about 30 years, and I've been involved in quite a few permit hearings for various projects, both hazardous and mixed waste projects around the state. I would comment that Los Alamos is the DOE facility that has the most number of potentially affected people of color in the whole DOE complex, and that this is	Comment noted. See the Department's responses regarding environmental justice and groundwater protection in the document titled General Response	No

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		significant in terms of environmental justice. That doesn't necessarily mean that the people absolutely closest to the laboratory are necessarily -- that that is necessarily the environmental justice community, but the surrounding areas certainly are. I have seen the attitude of the Environment Department toward environmental justice over this period of time, and I have to say that I have not been impressed positively at all; that it seems to have ranged, in my opinion, from ignorance to contempt in terms of their approach to environmental justice. I would hope that there would be a change – I don't have much hope for it, because, as I said, after 30 years of going to these hearings, I really haven't seen any improvement. I have seen the Environment Department create laws -- or help to create the definition of environmental justice community in the law that essentially eliminates virtually all the affected communities from this category. So -- and I have had personal interactions with high officials in the Environment Department, where they have actually come right out and expressed their contempt for environmental justice. So I would like to see this change during this permit hearing, but I -- as I said, I don't have a lot of hope. I'm going to read some material from this book, which is Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory, Final Report. *Detailed Findings and Recommendations* Findings and recommendations to assist LANL in addressing remaining gaps in pathway conceptualizations and improving its monitoring plans are as follows: The current conceptualization of the LANL flow system into alluvial, intermediate-perched and regional components, along with their importance to understanding the flow system within and below wet canyons, is a major accomplishment by LANL scientists. However, there is a lack of understanding of the interconnectiveness of pathways between basins. While there is a general understanding that perched waters are probably redirecting contaminants from areas directly below canyons, where they originally infiltrate, to submesa areas and to other nearby canyons, the	to Comments.	

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		detailed knowledge needed to predict subsurface flow-paths does not exist. Lack of understanding of these phenomena, coupled with rapid flow in the alluvium and apparent rapid flow facilitated by perched waters, was central to the surprise over detection of chromium near the water supply wells. An improved knowledge of these inter-watershed processes is needed to design an effective, early warning monitoring program. *Recommendation:* LANL should add a site-wide perspective to its future groundwater monitoring plans. This perspective would include the following: Design additional characterization, modeling, and geochemical investigations to better understand potential fast pathways between watersheds. Increase the area of the regional aquifer that is monitored by sampling inter-canyon areas from mesas or using directional wells from canyon bottoms. "Provide additional monitoring locations in the southern area of the site and on Pueblo de San Ildefonso lands. Develop more applications of geophysical techniques to supplement information provided by well drilling and sampling, especially for understanding vadose zone pathways. As LANL's site characterization and monitoring programs mature, well locations should be derived from a quantitative spatial analysis of monitoring well locations to identify areas with the greatest uncertainty in plume concentrations, using geostatistics or other methods, possibly coupled with flow and transport modeling. Mathematical models are essential tools for both codifying current knowledge and identifying knowledge gaps. Although LANL is using a numerically sophisticated multiphase model for vadose and regional groundwater modeling, it is not yet possible to predict with confidence when, where, or if a contaminant		

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		might appear in the regional aquifer. This is due largely to an exceptionally complex vadose zone. Studies show that most of the mass of many contaminants is likely still in the vadose zone on the way down from the release location to the regional aquifer. *Recommendation*: LANL should increase its efforts to develop and use quantitative methods to describe contaminant pathways through vadose zone and into the regional aquifer, as follows: Mathematical models that incorporate the uncertainties from alternative conceptual models should underpin plans for design and operation of the site-wide monitoring system. Characterization of the vadose zone begun under the Hydrogeologic Workplan should continue with emphasis on new results from characterization and monitoring being used to test and improve the mathematical models. To support an evaluation of the effectiveness of the monitoring system to provide early warning of potential impacts on the regional aquifer, LANL should quantify, to the extent possible, the inventory and current implication of the contaminants disposed of in the major waste sites. Large waste disposal sites in the dry canyons and on dry mesas have not received as much attention as wet canyons and wet mesas because they presumably lack an aqueous driver to move contamination. The presumed dry locations have received minimal characterization with regard to the presence, strength, and potential impact of aqueous drivers. In some of these, surface disturbances have led to unexpected increased infiltration breaks. LANL provided few data to justify assumptions about the relative immobility of wastes at these sites. *Recommendations*: LANL should confirm the integrity (lack of surface disturbances or conditions leading to increased infiltration) of the major disposal sites in the dry canyons and mesas. LANL should schedule regular subsurface surveillance beneath disposed waste on dry mesas and in dry canyons.		

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		LANL's present conceptualizations of the regional aquifer lead to very different pictures of how contaminants in the aquifer might behave. If there is low connectivity between layers within the aquifer, the contaminants might remain near the top of the regional aquifer and most likely discharge in the springs near the Rio Grande. On the other hand, high connectivity could result in the contaminants spreading vertically and more likely entering the deep screened intervals of regional water supply wells. Recommendation: LANL should continue efforts begun under Hydrogeologic Workplan to characterize the regional aquifer. More large-scale pumping tests and improved analyses of the drawdown are needed to establish a scientifically defensive conceptual model of the aquifer, i.e., leaky-confined, unconfined, or layered. LANL's efforts to understand the role of geochemistry in contaminant migration have not kept pace with efforts to understand hydrology. The committee found a lack of basic, site-specific geochemical data to support LANL's assumptions about the relative immobility of important contaminants - especially radionuclides - along transport pathways and judged that LANL underestimated the value of both field and laboratory geochemical measurements. *Recommendations*: LANL should increase its attention to geochemistry within the context of its site characterization work. LANL scientists should conduct more field and laboratory studies to measure basic geochemical parameters, such as sorption coefficients, with the goal of testing and verifying their conceptualizations of subsurface hydrogeochemical processes. The following findings and recommendations reflect the committee's evaluation of the Interim Facility-wide Groundwater Monitoring Plan (LANL 2006c), which was requested in the statement of task. The Hydrogeologic Workplan has been effective in improving characterization of the site's hydrogeology. However, the knowledge gained through the workplan does not appear to have been used effectively in the development of the interim plan. The workplan is mentioned only in the introduction of the		

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		interim plan, and rationale for the siting of new wells in the interim plan is not grounded in the scientific understanding of the site evident in the Synthesis Report and other publications such as the Vadose Zone Journal (2005). *Recommendations*: LANL should demonstrate better use of its current understanding of contaminant transport pathways in the design of its groundwater monitoring program. Tables in the monitoring plan that give the rationale for locating monitoring wells should at least provide a general linkage between the proposed locations and the site's hydrology, or a section discussing the relation between well locations and pathway conceptualizations should be added. LANL should take a site-wide approach to monitoring of the intermediate and regional aquifers. Furthermore, the interim plan should summarize (e.g., in Section 1.6) the ways in which the information from related studies will be used for updating the interim plan. The current description of the conceptual models (in Appendix A of the plan) is useful, but it should be improved. First and foremost would be a description of potential pathways, both surface and subsurface, that connect the sources (listed in Appendix A) with the groundwater that is being monitored. LANL should examine the potential for approaches (Minsker, 2003; EPA, 2006) that both optimize the monitoring network and incorporate uncertainty into its design.		
336	Gen.	I represent the Southwest Network for Environmental and Economic Justice. The Southwest Network is a coalition of grassroots groups that's housed here in Albuquerque. There are 61 organizations that are affiliated -- grassroots group that are affiliated through our network, and about 15 of those organizations are located in the City in the State of New Mexico -- City of Albuquerque in the State of New Mexico. As some of you may be aware or not aware, I've been actually chair of the National Environmental Justice Advisory Committee to the US Environmental Protection Agency for eight years at one point under the Clinton administration, and then under the Bush administration for several years, and most recently under the Obama administration. I've stepped down. I've chaired the Environmental Justice Advisory	Comment noted. See the Department's responses regarding environmental justice, the information repository, and open burning in the document titled General Response to Comments.	Yes

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		Committee in December of this year. And my term would have expired in 2012. I'm very familiar with the issues in Los Alamos. I'm also very familiar with environmental justice issues not only in Northern New Mexico, but throughout the State of New Mexico, throughout the Southwest and up and down the Mexico/US border, and the important issues that -- that many government industry -- government entities, industry, municipalities, in some cases and others, and the kind of not-so-good situations many a times that our communities or communities surrounding these facilities have been impacted by. We're here today in support of HOPE and HOPE's recommendation and the other groups and the other parties around two very specific issues. One is the repository. And I just wanted to let the committee members know the repository is not something that's spanking brand new to us either. When I say "us," I mean those that -- that are in our organization that are affiliated to the Southwest Network. We have a community repository in Tucson, Arizona. And that's actually -- that particular repository was a struggle that took place from a group called TCE, Tucsonians for a Clean Environment, over the water contamination issue in Tucson, is one of the largest TCE contaminated sites in the US. And the community requested, along with -- several years back, along with the Southwest Network, requested that a repository be put up and housed in the community. And today, as we're here making these comments, that repository is located in the community in Tucson. It's housed in a facility, in a health clinic, that's -- that the repository itself has a library, as an open place where community members, students from universities, others from -- government entities and others can come and do that. So -- so we're here to -- to support the request for a community repository. Now, what I would say along with that, though, is that -- that it's our opinion that all materials should be put in the repository. That's -- that's materials that the community has -- has developed, whether they're leaflets and newspaper articles, whether they're surveys that the community has done, amongst other community members, whether they're government documents, whether they're state documents, whether they're federal government documents, whatever that they should be. Based on -- on these -- on these issues, we think it's vital not only for -- for people that are -- that are presently amongst us, for our generations to come, to also have access to materials so that in some cases		

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		some of the things that have been taking place don't happen again, so we can all kind of learn from that. So -- so the repository is something that -- that we hope that takes place. The open burning of hazardous materials – you all may or may not know I come from the South Valley of Albuquerque. Environmental issues or environmental justice issues is not new to my community, unfortunately. And it's not the impacts of many of those environmental hazards from a health perspective and others that have impacted not only the South Valley of Albuquerque, but the City of Albuquerque and others in the Southern New Mexico, Central New Mexico and in Northern New Mexico. So again, permitting for -- for burning, for open burning, we believe, is not -- is not the way to go about doing this. No? From a preventative standpoint, if we don't create the hazardous waste, then we don't have to worry about, quite frankly, where we're going to get rid of it at. But since we are talking about hazardous waste, in fact, that that's already there, then very clearly we don't support open burning. I do want to say that through the National Environmental Justice Advisory Committee under – under the new administrator for the USEPA, under the new secretary for the Department of Energy, and for the others, and for the Obama administration and for the president himself, very clearly, before the election, and now that President Obama is President Obama, that his administration very clearly has put environmental justice as one of the top issues within the administration. That was one of the appointments of Lisa Jackson as the administrator for the US Environmental Protection Agency, not only the first person of color to be an administrator of the US Environmental Protection Agency, but an individual that comes from a state agency, New Jersey in particular, where there was a lot of environmental injustices and environmental justice issues that have taken place in the State of New Jersey where Administrator Jackson worked as a commissioner for the State of New Jersey. So we believe that under the existing Governor, Governors Richardson -- Governor Richardson, Executive Order on Environmental Justice, the commitment that's been made by the New Mexico Environmental Department, the commitment that's been made by the administrator, by the secretary, Ron Curry, and the deputy administrator, and the longstanding commitment on the part of grassroots groups and community people for		

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		the protection and the well-being not only of ourselves, that are surrounded by many of these facilities, but for those that have families and others that are either working in, living close by or impacted one way or the other by these kind of facilities. I would highly encourage this committee, the Department of Energy and the others to read the public participation document that was produced by the National Environmental Justice Advisory Committee that actually is one of the truest forms of public participation that can take place.		
337	Gen.	Thank you for listening to our comments, and I implore you to sincerely consider the concerns of the citizens of this great state when making your decisions about the status of the draft hazardous waste permit for Los Alamos National Laboratories. Let me voice my unequivocal and steadfast opposition to permitting Los Alamos National Laboratories to burn hazardous waste in the open air when cleaner alternatives are available. New Mexico has been saddled with the nuclear industry since the inception of the atomic bomb. New Mexicans have worked uranium mines, built bomb cores and handled waste for over half a century. These industries are located in the most rural and impoverished areas of one of the most rural and impoverished states, and the negative impact on the health of New Mexico's people and fragile ecosystem is often ignored or downplayed in the name of supposed economic benefit or national security necessity. But the release of toxins into the air and the concomitant potential for further polluting the water supply of Northern New Mexican communities is a case of environmental racism. The people living in the Espanola Valley and its surrounds are overwhelmingly people of color. I do not believe anyone would find it acceptable to propose burning hazardous materials in the rarified air of wealthier, whiter areas of this country. But we are all created equal, and what is unacceptable in Silicon Valley is equally unacceptable in the Espanola Valley. Especially concerning is the fact that the waste can be burned in closed areas where pollution could be contained. Expense should never be an issue where environmental and human health is at stake. The nuclear industry must be regulated and monitored more heavily than any other, because of its unparalleled potential for long-term	Comment noted. See the Department's responses regarding open burning, environmental justice, and the information repository in the document titled General Response to Comments.	Yes

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		environmental damage. The people of New Mexico must be fully informed partners in determining the storage and disposal of any hazardous waste generated from that industry that potentially affects their bodies, their fields and orchards, their drinking water and the health of their children. Please let me state for the record that this hearing was not adequately publicized in the press, be it radio, newspapers or television, and that low public turnout does not equate to low public concern about hazardous waste at Los Alamos National Laboratories. The citizens of New Mexico are the ones who will live with the legacy and consequences of your decisions here today, and we deserve the opportunity to participate in the decision-making process by way of public comment. We cannot do so unless we are given adequate notice of the hearing, unless we are informed about issues surrounding the hazardous waste permit, and unless the public comment period is of sufficient duration to allow working people, the vast majority of New Mexicans, to speak their minds. Also, comments should be allowed via E-mail or telephone, which brings me to my last point. The citizens of New Mexico must be allowed to access information about the labs by way of a physical information repository. The labs and the hazardous materials they deal with concern every single person who breathes the air, drinks the water and eats the fruit of New Mexican soil. Transparency and public participation are essential. Please prioritize these things when making your decisions. Please consider the long-term impact of hazardous waste on the human beings of this place and the land and water they love and depend on for survival. You have the power to shape the environmental health of New Mexico. Please take it seriously, and please respect the citizens of New Mexico and treat them with the same dignity that you would the citizens of any other state. Recognize their need to participate and be informed about processes that affect them. This land matters, and the people of this land matter. Please keep that in the forefront of your minds when making your deliberations.		
338	Gen.	I think I pretty much agree with a lot of the comments that people have already made here today and probably what you've heard about, all the issues of transparency, environmental racism, and I think that this permit should be denied for open burning of hazardous wastes. It's a very clear thing. And I'm just sort of struck by the fact that this is the 40th anniversary of Earth Day, and	Comment noted. See the Department's responses regarding environmental justice and open burning in the document titled General Response to	Yes

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		here we are, 40 years later, still talking about things that Rachel Carson talked to us in the '60s, these dangers of contaminating and polluting the environment with all these kinds of chemicals and activities. And her big specialty in what she was talking about was the synergistic effect of these things. And I think that we need to figure out a standard and a way to raise the levels instead of lowering them and look at the fact of how all these things interact with each other on the human body. I mean, transparency, yes, I agree with that, but, I mean, I think we already know enough. I think there's enough knowledge out there to know that we've not as a society been doing our job very adequately and very well. I see Los Alamos basically as Rocky Flats 2, and it's a disaster that's -- has already been made, and it's going to get worse. We're looking at already with radionuclides in the river and thousands of people downstream here, a city that's approaching the area of a million people, are drinking that water. We found out last week that it's got PCBs in it now. We haven't been using PCBs supposedly since 1979. And so here they are in our drinking water, coming down the river. We've got all this other garbage, heavy metals, toxins in there, and doing open air burning in Los Alamos is just going to add to that. It's going to go up in the air and come back down in the watershed, going to wash down here, and we're going to be dripping in it, bathing in it. It's going to be in our ice cubes, the baby's bath water and everything else. And, you know, this comes from a view sometime back in the past, around the time when Rachel Carson was running actually, that, you know, radioactivity was -- and all these hazards were probably good and create healthy people. I mean, that was a silly idea, but that was what was around at one time. And I think that has a -- that has permeated in a lot of programs like Los Alamos and Sandia out here and these other nuclear facilities to just sort of run unbridled and get carried away with no real regulation and oversight. So I'm glad to see that something's being done, but I think it's a little late. I think we need to shut the door on this thing if it -- I mean, I think it's like Rocky Flats. I think the thing should be shut down, because we're in a population base here of a million-and-a-half people. I mean, we're on a collision course if you don't -- you have to realize, I think, looking at the context of this permit, because when all this stuff started and the	Comments.	

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		activities that go on, there was very few people here, and maybe you could get away with a lot of big, gross accidents and disasters and things like that, but we can't do that anymore. Just the social consequences of it -- they're talking about building up in Los Alamos, you know, a new -- a plutonium pit factory, which I think is a little bit insane when right here -- this school where I teach right here, we don't have money to pay the faculty and the teachers and to run the classes. APS, which is just across the street here, doesn't have money -- we're getting ready to lay off the teachers in the schools. So classes are going to get larger, less teachers, there's going to be less quality of education. And then we're going to turn around and talk about building new pits up there, pit factory, and we're going to build -- and do all the things, you know -- like deregulated, unregulated wild west atmosphere times again and just let them do whatever they want? I think it's time to step back and really grab a hold of where we're at, the social, environmental and the -- all the military conditions that go with this thing. We don't need any more of the activities at LANL. It's created environmental racism in the state; it's got people upset with each other and fighting over what should be trying to pull together to go forward. And now, not only -- I mean, I think if we go through with this open burning kind of permit, for example, we know that they're also going to deal with nanotechnologies and bio warfare stuff up there. I mean, that's going to come down the river, it's going to come down to the air, too, over all of us. The next step will be, you know, well, let us release these things into the water supply, too. And we don't know anything about nanotechnologies. I mean, it's these subatomic particles that they're using. So, you know, I -- I see this thing as a Rocky Flats 2. It should be shut down, and we should be putting our money in another direction for the benefit of society instead of this make-work project up here which is basically a corporate warfare – welfare system. I think we've got enough transparencies, but we can always have more.		
339	Gen.	SRIC and NRDC are interested in LANL because it is a key facility in the Department of Energy (DOE) nuclear weapons complex, it generates and stores extremely large amounts of hazardous and radioactive wastes, and its associated cleanup and long-term management of those wastes will set a precedent for other sites across the country. Those hazardous and radioactive wastes pose significant threats to public health and the	The Department concurs that LANL must have a new permit and that that permit must have adequate safeguards for, and limitations on, the types and	NA

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		environment, and a stringent permit is essential to the safe operation of LANL and the protection of the public and the environment. Moreover, DOE plans for the future nuclear weapons complex provide for new and expanded LANL missions, including plutonium pit production. It is essential that the LANL permit have adequate safeguards for, and limitations on, the types and amounts of wastes that are generated and stored and that disposal units be prohibited. Further, a new permit is necessary, since the original LANL permit, issued on November 8, 1989 and administratively extended, is more than 18 years old and has many deficiencies. Updating a document that is nearly two decades old is crucially important if our hazardous waste laws are to have any meaningful impact on the plans for LANL's future. SRIC and NRDC appreciate the efforts that NMED, the permittees, and public parties in more than 40 days of negotiations in 2008 and 2009 that resulted in the Stipulation on Permit Language of June 26, 2009. The negotiations have resulted in a substantially improved Revised Draft Permit that is more protective of public health and the environment than the draft permit released on August 27, 2007.	amounts of wastes that are generated and stored. The Department believes that the Renewal Permit has all necessary general and specific terms and conditions as established by New Mexico's Hazardous Waste Act (HWA) and its implementing regulations to protect human health and the environment. The Permittees do not seek, and the Department is not issuing, a permit for hazardous waste disposal. The disposal of hazardous waste is in affect prohibited at LANL by New Mexico's Hazardous Waste Management regulations (HWMR) at 20.4.1.900, which incorporates by reference the federal regulations at 40 CFR 270.1(b) stating that the disposal of hazardous waste by any person who has not applied for or received a RCRA permit is prohibited. Permit Section 1.4 prohibits the disposal of hazardous waste by requiring compliance with all applicable laws and regulations. However, hazardous waste was disposed of in the past at Material Disposal Areas (MDAs) G, H,	

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			and L at TA-54. The Renewal Permit addresses the closure and potential post-closure care of these units.	
340	Gen.	I noticed that on the schedule for the public hearings for the LANL permit there is only one meeting in Espanola and am wondering if there may be an opportunity for at least one other. I do not know the time frame for completing these forums, but our environmental science students are required to participate in community planning and outreach as part of our environmental science program. Is there any opportunity for a student run community meeting that can help NMED meet its objectives for garnering information from the community? My sense has been that those that have been held at Northern in the past have been over whelmed by activist groups and possibly we can affect a broader scope of community input with student coordination. I must disclose that some of our students work at LANL, but they are also members of their community. If there is a potential for something that could be meaningful in the Espanola valley, please let me know.	Comment noted See the Department's responses regarding the information repository and public participation in the document titled General Response to Comments.	NA
341	Gen.	WE the People United of the Sole Source Espanola Aquifer Basin and Santa Fe Community respectfully request that the Powers that Be hear our concerns and act in our behalf to protect and preserve our living waters that affect the health of all our women, men, pregnant women, infants, children, sick and the aged. The Buckman Direct Diversion Project continues to spend $215 million plus without adequate research and documentation that our health and safety will be protected by the diversion of Rio Grande river water containing emerging radioactive contamination from nuclear bomb waste created by our up river nuclear scientists from LANL. Health risks such as genetic mutations, birth defects, low birth weight, infertility, premature birth, environmental illness, and autoimmune disease from the synergistic and cumulative effects of contaminates such as: Americium-241, Neptunium-231, Plutonium-238, 239, and 240, Casium-137, Strontium·90, and Tritium, Selenium, Hexavalent Chromium, PCB, and Perchlorate in our drinking and food growing water and our air; need further research and	Comment noted	NA

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		documentation. WE the People United of this Community Respectfully Intend that there be Created; 1. Independent toxicologists or medical review panel with current experience in nuclear related disease, environmental and embryological risk factors be consulted to research our continued concerns about health and safety for pregnant women and children from drinking water and eating food with nuclear contamination in a area with highly unresolved «background radiation" also in our air. 2. A volunteer citizen review panel to work with the BDD Board to assure all public health concerns is addressed fully before $215 million continues to be spent 3. More frequent Town Hall Meeting to monitor tax spending and safety issues publicly 4.Verification that the surrounding area of the Rio Grande BDD Projects site be free of potential increases of emerging nuclear bomb waste with all cost of protective research, early warning system, and clean up being financially accountable to LANL. 5. Regionally controlled sun, wind, and turbine energy for water purity and transport. 6. Alterative long term sustainable water resources to be funded concurrently as the BDD Project that include roof top catchments and filtration, effluent bio-digesters, deep saline aquifer filtration, aquifer research, and major water conservation education programs.		
342	Gen.	I was born and raised in the Espanola Valley. My grandfather and my grandmother and their great-grandparents and generations before them were raised here. So my concern is with people's lives at hand and how this is affecting them, and that's the bottom line, you know, because I love the people from this valley, and I think we have to, you know, take into consideration everybody's lives and what's going on and how it's affecting everybody. Like they said, life is water, right, and so it's all about that and the consequences at hand.	Comment noted	NA

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343	Gen.	I'm from Russia. I lived in the mountains near the first Russian nuclear plutonium facility. So I -- from my experience as an engineer and as a scientist, from my experience with legislation, and from my work from governments, and now again from my work in sociology, I am at this hearing from several areas. First of all, it is a very promising culture to create this close examination to understand the vision of the community, industry and governments. Of course, it is, I feel -- I understand, as a sociologist and as an activist and as a scientist, the buckle between cultures, between understanding and between rules. My question to the nuclear scientist; is the open burning the best decision? Is it a high-tech decision? Are you sure? Is it a demonstration of your technical -- technical level? I think no. It is discrimination of the -- of the position of the nuclear industry. This is a simplification. It is not an alternative to transportation. It is – so this is -- I feel I understand -- I know how it is working in Russia, and it is simply trying to minimize expenses. But who will pay? The community will pay. What is the cost; life or the future generation? This creates opportunity for the next generation for the people that live their own life. So it is not the best decision. So the -- what I would prefer, as a human being, is a network of our biosphere, and the people from the other side, I would like to appreciate our -- our expectation to live a safe and healthy life, to create rules of safety and security, and respect those rules -- respect these rules. Of course, humanity is faced with new facts of high-explosive, high-destructive materials, but we need now to reduce this risk, through the common thinking, through the common wisdom, through the common – through the joining of our humanity. So that's what I would like to learn from your community and from this cross-examination, and I wish you to find -- to find a common decision, which will be very respectful.	Comment noted. See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
344	Gen.	After we finished reading sections of the documents that had been kept secret for up to 10 years, we prepared sections for people to read of a hotline report from the EPA's Office of Inspector General, titled "Region 6 Needs to Improve Oversight Practices" dated April 14, 2010, which we obviously received after this hearing had	See the Department's responses regarding contractor documents in the document titled General	Yes

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		begun. In anticipation that some of these pages would be read, I gave the court recorder a copy of the entire document, and also a copy to you, Your Honor for your convenience as pages were read, because it had not yet been introduced into the record. It turned out that citizens who came for public comment since then had prepared their own statements and thus these pages were not read into the record. So I highlighted in a copy of the full document those parts that we had intended to read, and I would like to submit this copy with the pertinent parts highlighted. We respectfully request that Your Honor take administrative notice of this serious report from the Office of Inspector General.	Response to Comments.	
345	Gen.	I want to say a few words about the documents that we have been reading into the hearing record, some of which had been held secret for a decade. I hope as these documents are read, everyone can hear how often over and over again, the TechLaw documents said such phrases as: lacks sufficient technical detail; severely deficient; difficult to justify; missing information; incomplete; poorly written and difficult to follow the assumptions; not clearly identified or discussed; options should be described; the risk assessment will need to be redone; revise the report to calculate a more accurate Hazard Index for the construction worker scenario; inconsistent with the human health risk assessment; many detected chemicals were eliminated without adequate justification; should be included; numerous incidents where information was presented but not supported; LANL has yet to provide descriptions of wastes to be stored at each unit; revise the application to include all pertinent figures; these issues need to be resolved immediately; and implementation of a sound safety strategy must be pursued on an urgent basis. Even if most of these directives have been taken care of by now, this definitely shows a pattern of sloppiness regarding care for the environment and the health of both workers and neighbors. If the public would have had access to those documents a decade ago, different decisions could have been made and we wouldn't have all the contamination problems we have now in the Rio Grande, groundwater and air. LANL claims that these contaminants are below standard and are therefore OK. But the	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes

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		standard is based on what is called "reference man," which is a healthy, Caucasian, 154 pound male in his twenties, with a height of 5 ft. 7 in. These standards are not sufficient for many people of color, anyone who weighs less than 154 pounds or is shorter than 5'7", or has a compromised immune system. Women, children, fetuses, and the elderly are especially susceptible to toxins and other pollutants. The "Reference Man" standards are not adequate standards for the majority of citizens living and working near the Lab. If the pollutants are present in our rivers, groundwater and air, they pose potential health hazards to citizens downwind and downstream from the Los Alamos Lab, and who have already borne the burden of too many contaminants in their environment. We do not want any more toxins in our air, soil and water, not even the smallest amount. It is time to stop.		
346	Gen.	I'm going to read from what was a secret document, which is now identified as Administrative Record Number 32367. The document is dated November 7th, 2000. It comes from the New Mexico Environment Department. It is addressed to June Dreith, project manager at TechLaw, Incorporated. The subject line reads, "The scope of work for review of 'Draft Mesa-Top Material Disposable Areas Implementation Plan' Los Alamos National Laboratory." (MORE)	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes
347	Gen.	I'm going to be reading from the secret documents. And this document identified as 32379. It was sent to Ms. Eliza Frank at the State of New Mexico Environment Department, and it was sent from June K. Dreith, the project manager at TechLaw, Incorporated. "The general consensus is that the Revised Conceptual Model for TA-54 is not complete in that it does not identify primary and secondary transport pathways, offsite transport, exposure routes and receptors, or demographics and land use (current and future). (MORE)	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes
348	Gen.	And I wish to read into the record from document number 32433, which is a letter from TechLaw, Incorporated, to Mr. Carl Will of the State of New Mexico Environment Department, Hazardous Waste Bureau. And this concerns LANL Permitting Section -- Permitting Support, Evaluation of LANL NOD Responses for TA-54 Part B, RCRA Permit Renewal Application. (MORE)	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes
349	Gen.	This is a letter from June K. Dreith, program manager of TechLaw, Inc., written on March the 12th, 2002, to Mr. James Bearzi and Mr. David Cobrain, consisting of the technical review comments of the Los Alamos National Laboratory Technical Area 55	See the Department's responses regarding contractor documents in the document titled General	Yes

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		(TA-55) Part B Permit Application, dated 2002. The number of the document is 32409.	Response to Comments.	
350	Gen.	I'm going to read selected sections of what was until recently a secret document, which is now identified as Administrative Record Number 32468. The document is dated January 15th, 2004. It is from TechLaw to Mr. Cobrain. (MORE)	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes
351	Gen.	I'm going to read selected sections of what was until recently a secret document, which is now identified as Administrative Record Number 32409. This document is dated March 12th, 2002. It is from June Dreith, Program Manager of TechLaw, Inc., to James Bearzi of the New Mexico Environment Department. This document refers to the LANL Technical Area 55 Part B application, dated January, 2002. (MORE)	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes
352	Gen.	I'm going to read selected sections of what was, until recently, one of the secret documents. The first document is now identified as Administrative Record Number 32421. It refers to TA-54. The document is dated June 4th, 2002, from June Dreith, Program Manager of TechLaw, and it is to Mr. James Bearzi and Mr. David Cobrain. The second is from Administrative Record Number 32438 and refers to TA-55. The document is dated September 30th, 2002. Again, it is from June Dreith, the Program Manager of TechLaw, but this time to Mr. Carl Will.	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes
353	Gen.	I'm going to read selected sessions of what was, until recently, a secret document, which is now identified as Administrative Record Number 32424, and refers to TA-55. The document is dated June 20th, 2002. It is from June Dreith, Program Manager of TechLaw, Incorporated, to Mr. Carl Will.	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes
354	Gen.	Before I begin reading some selected sections of what was recently a secret, I do want to address something in this mildly contentious meeting with which we all agree, and that is our court reporters, all of them, are fabulous, and I'd like to hear a round of applause for those hard-working people. And, please, do put that in the record. The document is dated November 14th, 2003. It's from June Dreith, Program Manager of TechLaw, Incorporated, to Sandra Martin of the New Mexico Environment Department. The document refers to Risk and Ecological Assessment Review Comments on LANL's Phase 3 RCRA Facility Investigation Report for Solid Waste	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes

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		Management Unit 16-021(C)-99 and applies to TA-16.		
355	Gen.	I'm going to read selected selections of what was, until recently, a secret document, which is now identified as Administrative Record Number 32463. The document is dated August 25th, 2003. It is from June Dreith; the Program Manager of TechLaw, Incorporated, and it's to Mr. David Cobrain of the New Mexico Environment Department. The document refers to the risk assessment review comments on the Los Alamos National Laboratories Interim Action Completion Report for Solid Waste Management Unit 21-024(I) at TA-21.	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes
356	Gen.	I'm going to read selected selections of what was, until recently, a secret document, which is now identified as Administrative Record Number 32566. The document is dated February 4th, 2008. It is from Jasmine Schliesmann-Merkle, Vice-President of TechLaw, Incorporated, to Mr. David Cobrain of the New Mexico Environment Department. This document refers to a Technical Evaluation dated January 21st, 2008, of the Response to the Notice of Disapproval for the Consolidated Units at LANL Technical Area 16.	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes
357	Gen.	I want to say a few words about the documents that we have been reading into the hearing record, some of which have been held secret for over a decade. I hope as these documents are read everyone can hear how often, over and over again the TechLaw document said such phrases as "lacks sufficient technical detail," "severely deficient," "difficult to justify," "missing information," "incomplete," "poorly written and difficult to follow the assumptions," "not clearly identified or discussed," "options should be described," "the risk assessment will need to be redone," "revised report to calculate a more accurate hazardous index for the construction worker scenario," "inconsistent with the human health risk assessment," "many detected chemicals were eliminated without adequate justification," "numerous incidents where information was presented but not supported," "LANL has yet to provide descriptions of wastes to be stored at each unit," "revise the application to include all pertinent figures," "these issues need to be resolved immediately," "the implementation of a sound safety strategy must be pursued on an urgent basis." Even if most of these directives have been taken care of by now, this definitely shows a pattern of sloppiness regarding care for the environment and the health of both workers	See the Department's responses regarding contractor documents in the document titled General Response to Comments.	Yes

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		and neighbors. If the public would have had access to those documents a decade ago, different decisions could have been made, and we wouldn't have all the contamination problems we have now in the Rio Grande, groundwater and air. The lab claims that these contaminants are both -- are below standard and therefore okay. But the standard is based on what is called reference man, which is a healthy, Caucasian, 154-pound male in his 20s with height five feet and seven inches. These standards are not sufficient for many people of color or anyone who weighs less than 154 pounds or is shorter than five feet and seven inches or has compromised immune systems. Women, children, fetuses and the elderly are especially susceptible to toxins and other pollutants. The reference man standards are not adequate standards for the majority of citizens living and working near the lab. If the pollutants are present in our rivers, groundwater and air, they pose potential health hazards to citizens downwind and downstream from the Los Alamos Lab, and who have already borne the burden of too many contaminants in their environment. We do not want anymore toxins in our air, soil and water, not even the smallest amount. It is time to stop.		
358	Gen.	I'll be reading from the Plans and Practices for Groundwater Protection at LANL, the Final Report put together by the National Research Council; specifically, from Chapter 5 on Monitoring and Data Quality. Implementing a groundwater monitoring plan includes four elements: drilling wells, completing the wells, obtaining groundwater samples from the wells, and analyzing the samples. Monitoring is done to measure the extent of contaminant migration along expected pathways or to determine that the water is free of contamination. Monitoring is the only direct means to confirm models and predictions about subsurface contaminant transport and to provide early warning of potential contamination in drinking water supplies. This chapter deals with the actual practices of conducting monitoring - in particular ensuring that the LANL's groundwater monitoring data are reliable. The first part of the chapter deals with LANL's well construction work. The second deals with the specific data-quality questions presented in the	See the Department's responses regarding groundwater protection in the document titled General Response to Comments.	No

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		committee's task statement. LANL's understanding of contaminant pathways, which is essential for developing a monitoring plan, is discussed in Chapter 4. The data-quality questions raised in the committee's task statement are: 1. Is the laboratory following established specific practices in assessing the quality of its groundwater monitoring data? 2. Are the data (including qualifiers that describe data precision, accuracy, detection limits, and other items that aid correct interpretation and use of the data) being used appropriately in the laboratory's remediation decision making? The short answer to the first item is a qualified yes. LANL is using good practices in terms of having the proper quality assurance and quality control plans and documentation in place, but falls short of consistently carrying out all the procedures cited in the plans. Well drilling and completion methods are continuing to evolve, and the site is only beginning to implement its groundwater monitoring program under the consent order. I'd like to emphasize the following sentence. Many if not all of the wells drilled into the regional aquifer under the Hydrogeologic Workplan appear to be compromised in their ability to produce water samples that are representative of ambient groundwater for the purpose of monitoring. The short answer to the second answer, as it is written, is no. Although LANL appears to be generating sound analytical data, the results reported in databases and LANL reports often do not carry the proper qualifiers according to good QA/QC practices. This especially applies to analytical results near or below the limits of practical quantification and detection, near the natural background, or both. The difficulty here is that reported detection of contamination that is not statistically significant may be taken as real by regulators and other stakeholders		

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		- with concomitant concerns and calls for remedial actions.		
359	Gen.	One of the issues and concerns I have regarding the burn permit is currently the information repository is only accessible electronically, and as an individual that doesn't have a computer at home or access to the internet, I have a limited ability to get on-line. I have to go to the library. There is a 30-minute limit, and I actually tried to access this document and was able to, but looking at the page, it was hard to navigate and figure out where I needed to go for information, and it was very overwhelming, and in looking at the document, it seems like it would probably take hours to read the document, and with a 30-minute time limit at the library, it would be very -- it's not accessible to me. So I would really like to request that there be a physical informational repository that's accessible not only to me but other community members. I think it's a real issue, because a lot of people in this community and the outlying areas don't have access to internet from home. So that is one of the comments that I really want to impress on you and really indicate that it's a huge concern that I have for myself and other community members. I will also be reading from the Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory, the Final Report that was conducted by National Research Council of the National Academies. Chapter 6, *Findings and Recommendations* This chapter summarizes the committee's findings and recommendations developed in Chapters 3, 4 and 5 of this report. Los Alamos National Laboratory's current groundwater protection program began under mandate from the New Mexico Environment Department in 1998, and it is to be completed by 2015 according to a consent order issued by the New Mexico Environment Department. To help ensure a timely and successful completion, the Department of Energy requested the National Academies to provide technical advice on certain technical aspects of the program. The committee's statement of task is given in Sidebar 1.1.	See the Department's responses regarding the information repository and groundwater protection in the document titled General Response to Comments.	Yes

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		Because the groundwater protection program is at about its midpoint, the committee viewed it as a work in progress, and this report is necessarily a snapshot in time. The committee's findings are based on information presented by LANL and other stakeholders through about April, 2007. The committee's recommendations are directed toward improving the effectiveness of the program and providing a sound scientific basis for LANL's future remedial actions and long-term monitoring. *Overarching Findings* LANL's groundwater protection program faces substantial technical challenges. There is considerable uncertainty about the contamination sources themselves. The pathways for transport of contaminants from their sources include four different hydrologic regimes: (1) surface streams and run-off; (2) near-surface groundwater in the canyon alluvium; (3) intermediate-perched groundwater in the unsaturated zone; and (4) a deep, regional aquifer. Each of these regimes adds considerable uncertainty to the understanding of the overall system. Even with the best efforts to understand contaminant sources and pathways, the uncertainty will always be great. Nevertheless, LANL has no other options except to advance its program in the face of uncertainty. Surprises will be inevitable in this learning process. On the positive side, LANL scientists learned a good deal through the Hydrogeologic Workplan, which was conducted from 1998 to 2005. While the thickness of the vadose zone and the depth of the regional aquifer, some 1,000 feet, make their scientific study difficult, these features are assets for groundwater protection. The substantial relief provided by the canyons that cut through the volcanic sequence provides a good conceptual picture of the site's geology. The direction of surface of the groundwater flow is generally known, even if the identification		

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		of the specific pathways is problematic. Regardless of the difficulties that lie ahead, prudence and the law require that a groundwater monitoring system be established. The recommendations in this report support the proposition that it is technically feasible to monitor the groundwater. The efficacy of the monitoring system will have to be determined based on the analysis of the future data that will be obtained as the system is developed. There are four overarching findings that arose from the committee's study and that have relevance to essentially all parts of the task statement. *Geochemistry* LANL demonstrated substantial progress in the site characterization under the Hydrogeologic Workplan. However, LANL's work in geochemistry has not kept pace with the work in hydrogeology. Geochemistry is central to understanding the extent to which contaminants move with groundwater; it is a tool for better understanding hydrogeologic pathways; and it is essential for determining the degree to which monitoring data are representative of actual groundwater. The specific need is to understand how contaminant migration caused by groundwater is affected by geologic or anthropogenic media that are encountered along the groundwater's flow path. The committee saw few fundamental, site-specific studies that quantitatively address this need. Conducting such studies in the laboratory is not difficult, but it requires dedicated scientific effort to plan and conduct appropriate tests and to interpret their results. *Mass Balance* LANL needs better ways to demonstrate its considerable understanding – and eventually its mastery - of potential threats to the regional aquifer. Specifically this means knowing the site's inventory of contaminants and where they are.		

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		Most contaminants are evidently still in or near their sources; a sizable fraction of some have migrated into the vadose zone; and a small fraction are in the regional aquifer. This information needs to be quantified and presented succinctly. The committee judged that mass balance is an appropriate tool for this purpose. Mass balances, which LANL has begun developing for a few disposal areas, could be developed for other high-inventory areas and integrated to eventually account for contaminants statewide. Such accounting for contaminants is the essence for groundwater protection, and it can help foster trust among LANL, its regulators, and public stakeholders. *Uncertainty* Uncertainty is inherent in scientific knowledge, and work to address uncertainty leads to improved knowledge. LANL needs to do a better job of describing uncertainties in its groundwater protection program to both scientific and public audiences. This includes describing fundamental conceptual uncertainty - things that are simply not known, such as the nature of some groundwater pathways - and measurement uncertainty, such as the variability of the laboratory results for contaminants detected at very low levels. The committee judged that greater openness about uncertainty - on the parts of LANL and its stakeholders - could improve the quality and transparency of LANL's groundwater protection program. *Peer Review.* Peer review is the standard of science. The committee is not hesitant to take LANL's motto: 'The World's Greatest Science Protecting America' at face value. However, like many publications from DOE laboratories, LANL reports typically fall in the area of non-peer-reviewed literature. "LANL has produced massive amounts of report material, and the additional step of summarizing and publishing key portions, as it did with some information from the Hydrogeologic Workplan, can help authenticate LANL's groundwater protection program.		

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		This is not to discount LANL's other peer-reviewed publications from the program, but rather to encourage more. Besides peer-reviewed literature, other venues are available for peer review of important work that is not amenable to journal publication. Demonstration of sound science through peer reviews will go a long way toward ensuring the effectiveness of LANL's groundwater protection program and enhancing confidence among stakeholders.		
360		I'm reading from Plans and Practices for Groundwater Protection at Los Alamos National Laboratories. *Findings and Recommendations to Address the Task Statement* This section gives the detailed findings and recommendations developed in the main text of this report according to the task statement. *Findings and Recommendations on Sources of Contamination and Source Controls* Radioactive or chemically hazardous wastes disposed on site at LANL constitute the sources of contamination that the committee considered in addressing its statement of task. These sources are the inputs from which contaminants into the soils, rocks, and water that compromise the hydrogeologic environment beneath the LANL site. The laboratory has practiced on-site disposal of its waste since the early 1940s. Disposal methods include the discharge of liquid effluents into canyons and the emplacement of solid wastes, mainly on mesa tops. The committee's statement of task posed three questions regarding sources: 1) What is the state of the laboratory's understanding of the major sources of groundwater contamination originating from laboratory operations and have technically sound measures to control them been implemented? The committee's short answer to the first question is yes for liquid sources and no for solids. Liquid waste discharges are generally eliminated or controlled. LANL's data indicate that previous liquid discharges were the	See the Department's response regarding groundwater protection in the document titled General Response to Comments.	No

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		sources of contamination currently found in groundwater. However, solid wastes and contaminants deemed by LANL to have less near-term potential to impact groundwater have received much less attention than the liquid sources and are not well understood, especially in terms of source inventories. 2) Have the potential impacts of this (non-laboratory) contamination on corrective-action decision making been assessed? "The short answer to the second question is a qualified yes. The answer to the third has to be no because LANL is only beginning to determine corrective actions under the consent order. This aspect of decision making was not discussed with the committee. 3) Their findings and recommendations were "Have potential sources of non-laboratory groundwater contamination been identified? The committee offers the following findings and recommendations to assist LANL in future work to understand and control its contamination sources, with emphasis on longer-term concerns that have not been addressed during the first portion of the groundwater protection.		
361	Gen.	I'm going to read from Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory, Final Report. Solid wastes, e.g., the 25 material disposal areas (MDAs), and certain contaminants deemed by LANL to be essentially immobile have the potential for impacting groundwater in the future. MDA AB in Technical Area 49 (TA-49), which contains some 2,300 Ci of Pu-239, is an example. The committee received little information that would provide assurance that these sources are well understood or well controlled. *Recommendation:* LANL should complete the characterization of major contaminant disposal sites and their inventories complete the investigation of historical information about these disposal sites with emphasis on radionuclides and chemicals likely to impact human health and the environment. Selected sites	Comment noted. See the Department's response regarding groundwater protection in the document titled General Response to Comments.	No

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		should be characterized by field analysis when historical information is insufficient to determine quantities of major contaminants disposed and to confirm the degree of transport that has occurred. LANL should devote greater effort to characterizing sources with significant inventories of contaminants (especially plutonium) that usually are strongly sorbing but still have the long-term potential to migrate in the presence of water. *Priority for investigating sources established by the consent order* This recommendation emphasizes the need to confirm assumptions that underpin the assignment of lower priority to 'immobile' wastes. There are still large uncertainties in LANL's estimates of the inventories of principal contaminant sources and their locations. Similarly, analyses are lacking to approximate the current locations of contaminants (which may have migrated from these sources) in the various hydrogeological units that constitute the LANL site and surrounding areas. *Recommendation:* For the major disposal sites, LANL should develop mass balance estimates of the quantities of disposed chemicals and radionuclides remaining in the surface soil and/or residing in the shallow alluvium, the vadose zone, and the regional aquifer. Site-wide LANL should perform a mass balance for hazardous and radioactive substances by assessing the types, quantities, and volumes of individual hazardous materials that have entered the site over the years. These analyses, with estimates of data uncertainties, should help LANL account for contaminant sources, releases, radioactive decay, and migration through the hydrogeologic system in a way that is transparent and understandable to all of its stakeholders. Surface water is an important pathway for transport of contaminants to the groundwater. Stormwater can remobilize contaminants that have been deposited in canyons and transport them downstream. The contaminants can enter the shallow groundwater away from their original		

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		source or be transported off site. LANL needs to quantify the inventories of contaminants released in the canyons in order to understand their potential threat to groundwater. The site-wide mass balance of inventories of hazardous and radioactive substances should include the surface water transport pathway. LANL should continue to develop surface water and sediment monitoring programs. LANL should continue, and improve, its control contaminants moving down the canyons to prevent further surface transport and redistribution off site of both mobile and sorbing contaminants. Measures to control surface transport down canyons, including further reduction of aqueous discharges, removal of contaminated media, and appropriate use of barriers, are needed. Just added, I would like to say that living in Los Alamos, it has been uncomfortable for me to drink any of the water from the tap, due to the high calcium and other stuff in it; it just doesn't taste that great. A concern that I had, my brother works for LANL, and in reading this, he has worked at the bottom of the hill, where they are putting in certain things in the river to monitor everything that was discussed and read here. But my concern is, do their employees know exactly what they were working with and what they were doing, and what liabilities do they have, or what were they putting their hands in and their feet in and not ever knowing? They were just doing their job. I don't know if anything was explained to them properly or if they know exactly what their job description was. But I know that his job was 12 hours of working in a river that's already contaminated.		
362	Gen.	I guess I'm here to read from the scriptures, it looks like, from the Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory, Final Report, National Research Council. The geochemistry of contamination migration has not been studied at a level of detail comparable to the site investigations conducted under the Hydrogeologic Workplan. This is a gap in LANL's current groundwater protection program. *Recommendation:* LANL should better integrate geochemistry into its	See the Department's response regarding groundwater protection in the document titled General Response to Comments.	No

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		conceptual modeling. Laboratory experiments and field tests, in addition to literature data, are necessary to substantiate LANL's general observations and assumptions about the geochemical behavior of contaminants. LANL will continue to be an active DOE site with the potential for release of contaminants from its ongoing operations. Discharges and releases have been cut substantially at TA-50, the location of the site's Radioactive Liquid Waste Treatment Facility. Yet, its discharges will continue to provide a flow of water that will tend to remobilize contaminants already deposited in the canyons. *Recommendation:* LANL should continue to review all operations and releases to the greatest extent practical. This includes efforts to minimize the disposal of solid waste on mesa tops because waste disposal in those areas can pose a long-term threat to the regional groundwater. LANL carried out its Hydrogeologic Workplan from 1998 through 2004 to better characterize the site's hydrogeology and potential pathways for contaminant transport. The purpose of the characterization program was to develop the scientific basis for a site-wide groundwater monitoring plan. The committee's statement of task posed two questions regarding LANL's current (interim) monitoring program: 1. Does the lab's interim groundwater monitoring plan follow good scientific practices? Is it adequate to provide for the early identification and response to potential environmental impacts from the laboratory? 2. Is the scope of groundwater monitoring at the laboratory sufficient to provide data needed for remediation-decision making? If not, what data gaps remain, and how can they be filled? After reviewing LANL Interim Facility-Wide Monitoring Plan the committee answered the two parts of item one with a qualified yes and no, respectively. While the Interim Plan generally follows good scientific practices, there are opportunities for improving it. The plan is not adequate to provide early identification of potential contaminant migration with high confidence because		

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		LANL's understanding of pathways for contaminant transport, especially inter-watershed pathways, is not yet adequate to support such confidence. The committee answered item two with a qualified no. Findings and recommendations to assist LANL address the remaining gaps in pathway conceptualizations and improve its monitoring plan are as follows: The current conceptualization of the LANL flow system into alluvial, intermediate-perched, and regional components, along with their importance to understanding the flow system within and below wet canyons, is a major accomplishment by LANL scientists. However, there is a lack of understanding of the interconnectedness of the pathways between basins. While there is a general understanding that perched waters are probably redirecting contaminants from areas directly below canyons where they originally infiltrate, to submesa areas and to other nearby canyons, the detailed knowledge needed to predict subsurface flow paths does not exist. Lack of understanding of these phenomena, coupled with rapid flow in the alluvium and apparent rapid flow facilitated by perched waters, was central to the surprise over detection of chromium near the water supply wells. An improved knowledge of these inter-watershed processes is needed to design an effective, early warning monitoring program." The recommendations are: LANL should add a site-wide perspective to its future groundwater monitoring plans. This perspective would include the following: Design additional characterization, modeling, and geochemical investigations to better understand potential fast pathways between watersheds. Increase the area of the regional aquifer that is monitored by sampling inter-canyon areas from mesas or using directional wells from canyon bottoms. Provide additional monitoring locations in the southern area of the site and on Pueblo de San Ildefonso lands. Develop more applications of geophysical techniques to supplement information provided by well drilling and sampling, especially for understanding		

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		vadose zone pathways. As LANL's site characterization and monitoring programs mature, well locations should be derived from a quantitative spatial analysis of monitoring well locations to identify areas with the greatest uncertainty in plume concentrations, using geo-statistics or other methods, possibly coupled with flow and transport modeling.		
363	Gen.	I'm reading from the Plans and Practices for Groundwater Protection at Los Alamos National Laboratory, Final Report, National Research Council of the National Academies. *Findings and Recommendations*, page 67. Mathematical models are essential tools for both codifying current knowledge and identifying knowledge gaps. Although LANL is using a numerically sophisticated multiphase model for vadose and regional groundwater modeling, it is not yet possible to predict with confidence when, where, or if a contaminant might appear in the regional aquifer. This is due largely to an exceptionally complex vadose zone. Studies show that most of the mass of many contaminants is likely still in the vadose zone on the way down from the release location to the regional aquifer. *Recommendation:* LANL should increase its efforts to develop and use quantitative methods to describe contaminant pathways through the vadose zone and into the regional aquifer, as follows: Mathematical models that incorporate the uncertainties from alternative conceptual models should underpin plans for design and operation of the site-wide monitoring system. Characterization of the vadose zone begun under the Hydrogeologic Workplan should continue with emphasis on new results from characterization and monitoring being used to test and improve the mathematical models. To support an evaluation of the effectiveness of the monitoring system to provide early warning of the potential impacts on the regional aquifer, LANL should quantify, to the extent possible, the inventory and current location of the	See the Department's response regarding groundwater protection in the document titled General Response to Comments.	No

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		contaminants disposed of in the major waste sites. Large waste disposal sites in the dry canyons and on dry mesas have not received as much attention as wet canyons and wet mesas because they presumably lack an aqueous driver to move contamination. The presumed dry locations have received minimal characterization with regard to the presence, strength, and potential impact of aqueous drivers. In some of these, surface disturbances have led to unexpected increased infiltration rates. LANL provided few data to justify assumptions about the relative immobility of wastes at these sites. *Recommendation:* LANL should confirm the integrity (lack of surface disturbances or conditions leading to increased infiltration) of the major disposal sites in the dry canyons and mesas. LANL should schedule regular subsurface surveillance beneath disposed wastes on dry mesas and in dry canyons. LANL's present conceptualizations of the regional aquifer lead to very different pictures of how contaminants in the aquifer might behave. If there is low connectivity between layers within the aquifer, the contaminants might remain near the top of the regional aquifer and most likely discharge in the springs near the Rio Grande. On the other hand, higher connectivity could result in the contaminants spreading vertically and more likely entering the deep screened intervals of regional water supply wells. *Recommendation*: LANL should continue efforts begun under the Hydrogeologic Workplan to characterize the regional aquifer. More large-scale pumping tests and improved analyses of the drawdown data are needed to establish a scientifically defensible conceptual model of the aquifer, i.e., leaky-confined, unconfined, or layered.		
364	Gen.	I'm going to be reading from Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory, Final Report, as published by the National Research Council. With regard to LANL's practices in assessing the quality of its groundwater sampling data, the committee found that good data quality procedures are in	See the Department's responses regarding groundwater protection in the document titled General Response to Comments.	No

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		place, but there is a lack of follow-through in how the data are reported. Recommendation: LANL should ensure that there is consistency and clarity of all related sampling and analytical procedures with documented follow-through and appropriate action. This especially relates to: having clear data quality objectives; documenting how samples are to be collected; documenting how data are handled, statistically compiled, and reported; clear documentation of the quality of the data; and identification of all suspect data.Interpreting data at or near analytical detection limits is an area of growing scientific interest. LANL can benefit from scientific exchanges with other groups and organizations that are actively working in this area (such as the Environmental Protection Agency, American Society for Testing and Materials). Lack of agreement between LANL, regulators, and concerned citizens as to what constitutes the appropriate representation of groundwater contamination data is a source of confusion and distrust. Recommendation: LANL should ensure that measurements at or near background levels or near analytical detection limits (i.e., Method Detection Limits and Practical Quantitation Levels) are scientifically and statistically sound and are reported appropriately. The LANL site office of DOE should take steps to ensure that LANL and site regulators agree on how all such data are to be handled, compiled, and reported. LANL should make more effort to ensure that data uncertainties are made clear to public stakeholders. LANL's Groundwater Background Investigation Report (LANL, 2006b) is an important step in establishing levels of naturally occurring contamination in the regional aquifer, although some data quality gaps were identified by the committee. The Integrated Groundwater Monitoring Plan (LANL, 2006c) lists non-LANL sources of groundwater contamination. Such data are important to support future remediation decision making. *Recommendations:* LANL should continue to track regional groundwater monitoring wells and water supply wells routinely to improve the statistical basis		

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		for reporting any increases above background. LANL's work under the Hydrogeologic Workplan significantly enhanced understanding of the hydrological characteristics of the site, and lessons learned during the program can improve future drilling efforts. Wells constructed under the Hydrogeologic Work plan were intended for characterization. LANL later attempted to use the characterization wells that reached the regional aquifer for monitoring. As noted earlier, their use for monitoring was evidently compromised by drilling and well development procedures. *Recommendation:* LANL should plan and conduct future characterization drilling and monitoring well drilling as separate tasks. For monitoring locations where characterization data are unavailable, LANL should consider drilling simple test holes to obtain these data before attempting to drill the monitoring wells. With the more complete hydrogeologic characterization that is now available (see Chapter 4), LANL can design and construct future monitoring wells more confidently. LANL's plans to obtain geologic and geophysical logs during drilling further increase confidence that well screens can be installed to intercept a contaminant pathway. *Recommendation:* LANL should design and install new monitoring wells with the following attributes: A borehole drilled through the monitoring zone without the introduction of drilling muds or additives (i.e., use air or water); one screened interval that targets a single saturated zone, and a carefully planned design (length and depth) of the well screen, which is confirmed with information collected in the drilling process. Drilling under specific conditions and sampling requirements can lead to exceptions to the above, and adapting to circumstances will be necessary. LANL's Quality Assurance Project Plan should enforce the documentation of any and all instances where it is believed that chemicals and radionuclides detected in groundwater are not the result of LANL operations, such as naturally occurring or anthropogenic contaminants or the result of sampling artifacts.		

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		Concluding Remarks - LANL's groundwater protection program is at or about its temporal midpoint, continuing for another eight years until 2015. The consent order establishes an enforceable process and schedule for the program. The committee hopes that the assessments, findings, and recommendations presented in this report will be useful in informing technical decisions that will be made within the consent order process.		
365	Gen.	Final Report published by the National Research Council. *Findings and Recommendations on Monitoring and Data Quality.* Implementing a monitoring plan involves the practicalities of constructing groundwater wells and analyzing samples from the wells. Any monitoring activity faces a conundrum: If little or no contamination is found, does this mean that there is in fact little or no contamination, or that the monitoring itself is flawed? During this study the committee was presented a good deal of information suggesting that most or all wells into the regional aquifer at LANL are flawed for the purpose of monitoring. The committee did not disagree, but rather found a lack of basic scientific knowledge that could help ensure future success. Evidence about the conditions prevalent around the screens in the compromised wells is indirect - relying on plausible but unproven chemical interactions, general literature data, analysis of surrogates, and apparent trends in sampling data that may not be statistically valid. The committee's statement of task pose two questions regarding the reliability of data produced in LANL's current monitoring program: 1. Is the laboratory following established scientific practices in assessing the quality of its groundwater monitoring data? 2. Are the data (including qualifiers that describe data precision, accuracy, detection limits, and other items that aid correct interpretations and use of the data) being used appropriately in the laboratory's	See the Department's response regarding groundwater protection in the document titled General Response to Comments.	No

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		remediation decision making? The short answer to the first item is a qualified yes. LANL is using good practices in terms of having the proper quality assurance and quality control plans and documentation in place, but falls short of consistently carrying out all the procedures cited in the plans. Well drilling and completion methods are continuing to evolve and the site is only beginning to implement its groundwater monitoring program under the consent order. The answer to the second item as written was judged as no. Although LANL appears to be generating sound analytical data, the results presented in databases and LANL reports often do not carry the proper qualifiers according to good QA/QC practices. This especially applies to analytical results near or below the limits of practical quantitation and detection, near the natural background, or both. The difficulty here is that reported detection of contamination that is not statistically significant may be taken as real by regulators and other stakeholders - with concomitant concerns and calls for remedial action. The following findings and recommendations are intended to strengthen LANL's well drilling and sample analyses for site monitoring. Data from scientifically vetted (peer-reviewed) studies are necessary to authoritatively address concerns and uncertainties about how drilling and well completion processes might alter the native conditions around well screens and to ensure reliable monitoring activities in the future. The committee received little scientific information - for example, on a par with LANL's publications about vadose zone pathways - regarding the geochemical behavior of contaminants in the subsurface or effects of non-native materials (drilling fluids, additives, construction materials) on the geological media to be sampled. Recommendation: LANL should plan and carry out geochemical research to ascertain the interactive behavior of contaminants, materials introduced in drilling and well completion, and the geological media.		

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		As a part of LANL's future plans for site-wide monitoring, this work would include: Determining the nature of interactions among material proposed for use in constructing monitoring wells and the types of geological media that LANL intends to monitor. Quantitative measurement of sorption of contaminants onto the natural, added, and possibly altered constituents that constitute the sampling environment of the monitoring well, and publication of results in peer-reviewed literature. The committee is not recommending open-ended research. Rather, targeted investigations would underpin plans for future monitoring of specific areas of the site: contaminants of greatest concern in the area, geologic media expected to be sampled (known from previous site characterization), and drilling fluids, additives, and other materials intended to be used in constructing the monitoring wells). Screening tests envisioned by the committee would include simple batch equilibrium tests to measure solubilities and sorption coefficients and to determine what, if any, interactions actually occur among drilling materials and the geologic media - and whether alterations are permanent or temporary. More detailed column tests can simulate and measure effects of flow rate and surface area (mass transfer) around the well screens. Planning, conducting, and interpreting the results will require the high quality of science one would expect of a national laboratory.		
366	Gen.	I'm going to read selections from three letters regarding the plutonium nuclear facility, written by A. J. Eggenberger, Chairman of the Defense Nuclear Facilities Safety Board. The first is dated January 13th, 2009: In the revised Implementation Plan for the Defense Nuclear Facilities Safety Board's Recommendation 2004-2, 'Active Confinement Systems,' the Department of Energy (DOE) committed to delivering the Ventilation System Evaluation Report for the Plutonium Facility at Los Alamos National Laboratory (LANL) to the Board by December 21st, 2006. The Board has not yet received this report. The evaluation of the Plutonium Facility was intended to address a 'high-priority facility' on an accelerated	The Permittees have demonstrated that they can conduct the hazardous waste management operations that they propose in the TA-55 vault in a manner that's protective and in compliance with the regulations and the permit provisions governing container management at this location are protective. The conditions and requirements in	No

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		schedule, and to include an assessment of the facility's needs and a plan for resolving identified gaps with appropriate upgrades. "As DOE finalizes this deliverable, the Board wishes to emphasize that the implementation of the recommended actions demands careful integration and planning to ensure successful execution. "Therefore, the Board requests that, within 90 days of receipt of this letter, DOE submit the following deliverables as described in the Implementation Plan for Recommendation 2004-2." The first item is a site office facility-specific Ventilation System Evaluation Report for the Plutonium Facility at LANL (originally due December 21st, 2006)." The second point is a Program Secretarial Office concurrence with and approval of the upgrades in coordination with the Central Technical Authority." Then, "Additionally, pursuant to 42 USC, Article 2286b(d), the Board requests that DOE provide a report summarizing physical modifications and upgrades for the Plutonium Facility, including plans for funding and a schedule for completion, to be submitted along with the above two deliverables. This report should include the approach DOE will take to ensure that the best project management practices are applied in implementing the upgrades. It should also include a technical justification if any of the enhancements recommended in LASO's September 17th, 2008, letter will not be implemented in the near future. Sincerely, A. J. Eggenberger, Chairman." The second is dated April 7th, 2009, and is to Secretary of Energy Steven Chu. "April 7th, 2009, the Honorable Steven Chu, Secretary of Energy, US Department of Energy, 1000 Independence Avenue, Southwest, Washington, DC, 20585-1000. "Dear Secretary Chu: The Defense Nuclear Facilities Safety Board (Board) remains concerned that the safety-class vault water bath system at the Plutonium Facility at Los Alamos National Laboratory (LANL) is unable to fulfill its safety function in a reliable manner. This system is relied upon to protect the public by preventing one of the laboratory's highest consequence accident scenarios. Despite this critically important safety function, significant unresolved issues with this safety-class system are unaddressed; leaving it in an indeterminate and degraded state with respect to operability, reliability, and	the proposed permit, combined with the information that the applicants have provided to us in their application, satisfy any of the requirements of RCRA and New Mexico's Hazardous Waste Act. The issues raised by the Defense Nuclear Facilities Safety Board are beyond the purview of those statutes. Furthermore, the Department is aware that hazardous wastes are not managed in the room containing the vault water bath system at TA-55.	

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		effectiveness – a situation that is unacceptable to the Board. "Many of the highest consequence accidents at LANL involve the processing, handling, and storage of plutonium-238 enriched heat source plutonium (HS-Pu). The vast majority of LANL's inventory of HS-Pu is stored in the Plutonium Facility's vault water baths, which are relied upon to dissipate heat generated by the intense radioactive decay of HS-Pu. This heat dissipation prevents about 200 nonsafety-class containers - some of which have no reliable design information - from overpressurizing, failing, and releasing their contents. The unmitigated off-site consequences of an overpressurization event involving even a single container of HS-Pu amount to nearly 500 rem; the consequences of multiple failures are much higher. "In a letter to the National Nuclear Security Administration (NNSA) dated October 16th, 2007, the Board identified deficiencies in a number of vital safety systems and urged both NNSA and the laboratory to take actions that would rapidly increase confidence in credited safety systems. In particular, inadequacies were identified in the safety basis associated with the safety-class vault water baths. The Board has determined that the safety function of the vault water baths has not been effectively defined, implemented, or protected. As a result, inadequate controls exist to make certain that vital water level and cooling are maintained to ensure that all of the nonsafety-class HS-Pu containers will remain submerged and adequately cooled during all anticipated normal and abnormal conditions. In particular, a failure of the system cooling function for the vault water baths, which is not credited as a safety control, could allow the water in the baths to boil in as little as 18 hours, followed shortly by uncovering of the containers. Insufficient information exists to reliably predict how some of the containers will respond to such a loss of cooling. "Not withstanding these facts, the existing LANL system surveillance required only a monthly verification of water level and a spot-check that the nonsafety-class containers were submerged. The Board has identified a number of other weaknesses related to the vault water baths that further challenge their ability to perform the required safety function. Based on recent interactions with the Board's staff, both LANL and the Los Alamos Site Office have acknowledged the existence of these issues, however, it is not clear that proposed near-term actions will resolve		

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		the issues in an acceptable manner. "The Board is deeply concerned by this lack of progress in addressing deficiencies with the safety-class vault water baths to ensure that this critical system can perform as a reliable and effective control. The Board notes that an assessment of the vault water baths performed by LANL in 2008 failed to identify any of the issues outlined in this letter. This calls into question the laboratory's ability to conduct credible assessments of system safety functions. Based on the severity and persistence of these issues, as well as other safety system deficiencies identified in the Board's October 16th, 2007, letter, the Board believes emphasis must be placed on improving the ability to identify and expeditiously address operability issues associated with the vault water baths and other vital safety systems at LANL. "Therefore, pursuant to 42 USC, Part 2286b (d), the Board requests a report and briefing within 45 days of receipt of this letter describing (1) any compensatory measures and immediate actions NNSA has taken to improve the safety posture of nonsafety-class HS-Pu containers stored in the vault water baths, and (2) the strategy for fully characterizing and correcting vault water bath deficiencies identified by the Board or for improving the robustness of HS-Pu containerization. Additionally, the Board requests a briefing within 60 days of receipt of this letter describing the plan of action, including milestones and completion dates, to improve the process used to identify and resolve operability issues relating to other vital safety systems at LANL." This is "Sincerely A. J. Eggenberger," again. That's it. And then the third letter is dated July 28th, 2009, and it's again to Mr. D'Agostino, and it refers to the National Security Administration May 19th response to the April 7th letter that I just read. I'm just going to read highlights. The Board disagrees with NNSA's assertion that all nonsafety-class containers presently stored in the vault water baths can currently survive for at least 18 months in air. There is no engineering data to support such a claim for 40 of		

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		these containers. While future analysis may support this position, the fact that the necessary data do not currently exist underscores the need to safely and aggressively pursue actions to improve the robustness of HS-Pu containerization." "The Board and its staff will continue to closely follow the progress of NNSA and LANL in meeting the scheduled milestones and commitments to correct the deficiencies in the vault water bath system, improve HS-Pu containerization, and strengthen the process to identify and resolve vital safety system operability issues at LANL. I'd just like to say that, from what I understand, that Rocky Flats in Colorado was closed due to violations, as far as -- as far as hazardous waste violations. This was -- I believe it was in the '80s. This place was also made a Superfund site, as far as cleanup, and was officially closed. I think LANL has some of those same – same and similar violations, some of the similar operations, and I think it would be interesting to look into the possibility of severe, if not Superfund, cleanup conditions. They've been cited by the Department of Energy several times for violations, Los Alamos, and by their own Tiger Teams, and various other federal agencies as well.		
367	Gen.	I'm going to read selected sections from two letters regarding the Plutonium Nuclear Facility written by John Mansfield, Vice Chairman of the Defense Nuclear Facilities Safety Board. The first letter is dated October 26th, 2009, and is to Secretary of Energy Steven Chu. The second letter is dated March 15th, 2010, and is to Secretary -- Deputy Secretary of Energy Daniel Poneman.	The Permittees have demonstrated that they can conduct the hazardous waste management operations that they propose in the TA-55 vault in a manner that's protective and in compliance with the regulations and the permit provisions governing container management at this location are protective. The conditions and requirements in the proposed permit, combined with the information that the applicants have provided to us in their application, satisfy any of	No

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			the requirements of RCRA and New Mexico's Hazardous Waste Act. The issues raised by the Defense Nuclear Facilities Safety Board are beyond the purview of those statutes. Furthermore, the Department is aware that hazardous wastes are not managed in the room containing the vault water bath system at TA-55.	
368		Permit Section Specific Comments		
369	1.8	The definition for hazardous waste management unit in this section is acceptable but the Permittees reserve the right to object to the use of the term in other portions of the revised draft permit. The objection relates to the interpretation of the term "permitted units" in this general definition. The Permittees specifically object to the identification of certain units as permitted units in other parts of the permit (please see comment on the definition of permitted unit on page 18, line 14). In particular, the use of the term hazardous waste management unit subsequently affects the interpretation of Parts 11.2.(1) and (2) of the revised draft permit regarding the division of the appropriate unit designations between those covered by the permit and the Consent Order. No suggested change to text.	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
370	1.8	The definition for permitted unit in this section is acceptable but the Permittees reserve the right to object to the use of the term in other portions of the revised draft permit. The Permittees do not agree with the list of identified permitted units contained in Attachment J (Hazardous Waste Management Units), Table J-1 (Active Portion of the Facility) of the permit. The table lists Column 1,*Unit Identifiers* for TA-54 "G," "H," and "L" with the term "Material Disposal Area" in the Column 4 *General Information.* These identifiers potentially include a much larger area than the Permittees agree has been actually used for the management of hazardous waste. This identification also confuses other portions of the revised draft permit (*see* comment on the definition of	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No

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		hazardous waste management unit on page 17, line 28 and the general comment on regulated units). *See* Comment on Table J-1 and proposed text change, below. No suggested change to text.		
371	1.8	Suggested Changes to Section 1.8 DEFINITIONS in the February 2, 2010 New Mexico Environment Department Hazardous Waste Permit (DRAFT) for Los Alamos National Laboratory -The February 2, 2010 New Mexico Environment Department (NMED) Hazardous Waste Permit (DRAFT) for Los Alamos National Laboratory currently contains definitions that are: 1). Incomplete, and/or 2). Incorrect for compliance with the Resource and Conservation Recovery Act (RCRA). -There are also 3). Additional definitions that should be included in the Draft Permit. • Definitions to add or modify in the DRAFT Permit Section 1.8: • Add to the DRAFT Permit the definition in 40 CFR §2S4.90(a)(2) for *"Regulated Unit"* Regulated Unit. A surface impoundment, waste pile, and land treatment unit or landfill that receives hazardous waste after July 26, 1982 (hereinafter referred to as a "regulated unit") must comply with the requirements of §§264.91 through 264.100 in lieu of §264.1 01 for purposes of detecting, characterizing and responding to releases to the uppermost aquifer. The financial responsibility requirements of §264.1 01 apply to regulated units. • Modify the definition in the Draft Permit for *"Permitted Unit. 11* The definition for *Permitted Unit* in the LANL Draft Permit is incorrect and does not meet the	The suggestion that the Renewal Permit include definitions for terms defined in the regulations is unfounded. Permit Section 1.8 states "[t]erms used in this Permit shall have the same meanings as those in the HWA, RCRA, and their implementing regulations unless this Permit specifically provides otherwise." Subject terms include: *regulated unit, active life, active portion, closed portion, inactive portion*. The inclusion or exclusion of these terms in the Permit has no bearing on the regulatory or permit status of Material Disposal Areas G, H, and L and in all circumstances the Department utilizes and conforms to the definition of these terms as specified at 40 CFR § 260.10. *Permitted Unit* – The Department has changed the definition of this term for completeness. The Permit Section 1.8 definition of this term is consistent with the definition at 40 CFR § 260.10 and	No

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		required formal process under RCRA for issuance of a permit. The incorrect definition on page 19 in the LANL Draft Permit is pasted below: "Permitted Unit means a hazardous waste management unit: 1) that is not an interim status unit; and 2) that is authorized by this Permit and listed in Attachment J (Hazardous Waste Management Units), Table J-1 (Active Portion of the Facility), or Table J-2 (Permitted Units Undergoing Post-Closure Care)." - The *recommended* definition for Permitted Unit is pasted below: "Permitted Unit means a hazardous waste management unit: 1) that is not an interim status unit; and 2) that is issued a RCRA permit to manage hazardous waste. A RCRA permit application for each hazardous waste management unit consists of two parts; part A (see 40 CFR §270.13) and part B (see 40 CFR §270.14 and applicable sections in 40 CFR §§270.15 through 270.29)." In the Draft Permit, Table J-1 "Active Portion of the Facility," pp. 2-3, list TA 54 "G" as an active landfill (code 080) and as a "regulated unit," but states "Unit not permitted to receive hazardous waste." This indicates that MDA G is illegally carrying on operations without having met Part B requirements to be permitted, without submitting a closure plan and post closure permit application and has disposed of hazardous waste at the unit without a RCRA permit for its active life. Table J-1 p.5 lists MDAs Hand L as regulated units under the 080 code for active landfills and states "Unit not permitted to receive hazardous waste." Table J-2 "Permitted Units Undergoing Post-Closure Care," p.8, lists no units in postclosure care. Table J-3 "Closed Portion of the Facility not in Post-Closure Care," p. 9, identifies that TA-16 surface impoundment disposal received waste after July 26, 1982, *i.e.*, it is a "regulated unit." There is no information to indicate groundwater monitoring requirements are being met for post closure under 40 CFR §§264.91-100. The location of TA-16 must be, but is not identified. Surface impoundments at TA-16 are not identified in the table.	is augmented to reflect the fact that the Permit addresses both units actively managing hazardous waste and units in post-closure care. Post-closure care is an activity regulated under RCRA and NM's HWA, is specifically addressed at 40 CFR Part 264, Subpart G, addresses the management of hazardous wastes or waste residues remaining after a unit is closed, and is therefore appropriately included in the definition of *permitted unit*. The Department does not consider it necessary that the Permit definition include the regulatory clause regarding RCRA permit applications.	

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		• Many of the definitions to add to the Draft Permit Section 1.8 are from 40 CFR §260.10 Definitions. -Add from §260.10 *Active life* of a facility means the period from the initial receipt of hazardous waste at the facility until the Regional Administrator receives certification of final closure. -Add from §260.10 *Active portion* means that portion of a facility where treatment, storage, or disposal operations are being or have been conducted after the effective date of part 261 of this chapter and which is not a closed portion. (See also "closed portion" and "inactive portion".) -Add from §260.10 *Closed portion* means that portion of a facility which an owner or operator has closed in accordance with the approved facility closure plan and all applicable closure requirements. (See also "active portion" and "inactive portion".) -Add from §260.10 *Inactive portion* means that portion of a facility which is not operated after the effective date of part 261 of this chapter. (See also "active portion" and "closed portion".) • Many of definitions are incomplete and must be supplemented with language from 40 CFR 260.10 Definitions. NOTE: Section 1.8 in the DRAFT Permit has an incomplete definition for *Active Portion* that is pasted below. I recommend replacement with the definition pasted above from 40 CFR § 260.10. -From page 17 of the Draft Permit 10 Active Portion means that portion of a facility where treatment, storage, or disposal 11 operations are being or have been conducted after the effective date of 40 CFR Part 261 12 and which is not a closed portion as defined in 40 CFR § 260.10. NOTE: The effective date of 40 CFR Part 261 is May 19, 1980. Disposal operations were conducted at LANL RCRA "regulated units" MDAs G, Hand L after May 19, 1980.	*Active Portion* – The Department intentionally augmented the definition of this term to exclude unit at the Facility that are closed	

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		• Suggested changes to the definition of *Facility* in the DRAFT Permit. The definition of *Facility* in the DRAFT Permit is pasted below: -From page 18 of the Draft Permit Facility means the Los Alamos National Laboratory site comprised of approximately 40 square miles, located on the Pajarito Plateau in Los Alamos County in north central New Mexico, approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe, and owned by the United States Department of Energy. Add from 40 CFR §260.10 *Facility* means: (1) All contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them). (2) For the purpose of implementing corrective action under § 264.101, all contiguous property under the control of the owner or operator seeking a permit under subtitle C of RCRA. This definition also applies to facilities implementing corrective action under RCRA Section 3008(h). (3) Notwithstanding paragraph (2) of this definition, a remediation waste management site is not a facility that is subject to 40 CFR 264.101, but is subject to corrective action requirements if the site is located within such a facility. DISCUSSION OF THE IMPORTANCE OF THE DEFINITIONS ABOVE RCRA regulations require that a hazardous waste management unit must have permits during the active life (including the closure period) of the unit. (40 CFR 270.1 (c)). "Six months after the initial promulgation of the part 261 regulations, treatment, storage, or disposal of hazardous waste by any person who has not applied for or received a RCRA permit is prohibited." (270.1 (b)). The effective date of 40 CFR Part 261 is May 19, 1980. Disposal operations were conducted at LANL "regulated units" Material Disposal Areas G, Hand L after May 19, 1980. The definitions for a permitted unit in the RCRA permit application process consists	so that these two types of permitted units might be distinguished in the Permit. *Facility* – The Department has utilized its right and obligation to make the Permit more understandable and more enforceable by defining this term so as to distinguish between the entirety of LANL and those portions of LANL where hazardous wastes are being managed under the Permit. The Department has clarified this geographical distinction by defining *hazardous waste management unit* as being the applicable area referenced at 40 CFR § 260.10(1).	

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		of two parts known as Part A and Part B. Part A gives only general information. 40 CFR 270.1. The Part A application is necessary for a waste site to receive "interim status," pending more formal regulation. Part B of the application is more detailed and includes specific information relating to disposal facilities, environmental impact, and other details necessary for the review of the permit application. 40 CFR 270.14. Under the Post-closure Section 9 of the Draft Permit, the regulated units G, H and L are listed as one of three types of "permitted units." However, the MDAs G, H and L have not met the RCRA criteria for being permitted units. "The RCRA requires facilities that treat, store or dispose of hazardous waste to obtain a permit from either the United States Environmental Protection Agency or an authorized state." *Fla. Power & Light Co. v.* EPA, 145 F.3d 1414 at 1417 (D.C. Cir. 1998). Regulated units (Material Disposal Units, MDAs) G, H and L and other hazardous waste management units that received hazardous waste at LANL after July 26, 1982 need to be accurately described in the Draft Permit. The regulated units G, H and L were not part of the Part B permit after November 8, 1985, thus losing their interim status (40 CFR §270) and were slated to close under 40 CFR §264 Subpart G. (July 6, 2009 LANL Draft Permit Fact Sheet, p.27). The definition of "closed portion" includes the requirement of an approved facility closure plan. It is important to note that LANL did not obtain an approved closure plan for G, H and L and that no Closure Plan is provided for G, H and L in the Draft Permit. Regulated units G, Hand L remain as "active portions" of the LANL Facility because they were not "closed" subject to applicable RCRA regulations. Regulated units G, Hand L were subject to RCRA Part B requirements by 1986 at the latest, but continued without permits to receive hazardous and mixed waste until at least 1990 for Area G; 1986 for liquid hazardous and radioactive wastes at Area L and Area H for radioactive, hazardous, and explosive constituents until 1989. (March 1, 2005 Compliance Order on Consent, p. 77). Because the regulated units G, Hand L lost interim status and did not comply with the Part B permitting requirements, regulated units G, H and L have been and are still operating illegally.	This argument may be important for understanding the regulatory status of the MDAs but it is not helpful for the Permit. See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	

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		"Corrective Action," the action taken by the NMED under the 2005 Compliance Order on Consent (Consent Order), is not a substitute for meeting the stricter Part B permitting requirements, either in practice or by law. Instead, "corrective action" under the Consent Order is for removal or remediation of the hazardous wastes at regulated units G, H and L. LANL and NMED cannot now claim that because the Consent Order is being applied for corrective action that the regulated units have become "permitted units" in the Draft Permit. After losing interim status, not obtaining closure plans permit and post closure permit, regulated units G, H and L cannot now be elevated to the status of permitted units. LANL had no grace period to continue operating regulated units G, H and L for hazardous waste disposal after November 8, 1985 or to bootstrap absence of regulatory enforcement by NMED for the Closure Plan and Post-Closure permit into permanent immunity from RCRA Part B permitting requirements. The regulated units G, H and L as landfills were required to immediately close. *(United States v. Ecko Housewares,* Inc., 62 F.3d 806 at 813 (6th Cir. 1995). Simply ceasing operations does not constitute "closure" within the meaning of RCRA and to avoid liability. At the time LANL ceased *disposal* operations, *storage* and future plans for *treatment* remained -indeed, storage and future plans for treatment continue to this day. Once RCRA's protections are triggered, ceasing disposal operations does not mean an operator is not still actively engaged in contaminating the site. *(Environmental Defense Fund, Inc. Lamphier,* 714 F.2d 331, 335 (4th Cir. 1983); *see also Fisherman's Ass'n v. Remington Arms Co.,* 989 F.2d 1305, 1315 (2d Cir. 1993) (although gun club ceased skeet shooting and therefore ceased disposal of hazardous waste, it continued operating storage facility where contamination left on site). Thus, regulated units G, Hand L continue to be in operation without closure plans. • Discussion of definitions in the DRAFT Permit for groundwater issues. The Draft Permit contains the following definitions that are the same as definitions in 40 CFR §260.10. -From page 17 of the Draft Permit, *Aquifer* means a geologic formation, group of formations, or part of a		

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		formation capable 14 of yielding a significant amount of groundwater to wells or springs. -From page 18 of the Draft Permit *20 Groundwater* means water below the land surface in a zone of saturation. Definitions that should be *added* to the Draft Permit include: .. Add from 40 CF R §260.10 *Uppermost aquifer* means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary . .. Add from 40 CFR §260.1 0 *Confined aquifer* means an aquifer bounded above and below by impermeable beds or by beds of distinctly lower permeability than that of the aquifer itself; an aquifer containing confined ground water. • Additional groundwater definitions to add to the Draft Permit -can this be combined with the above? *Unsaturated zone* or *vadose zone* means the zone between the land surface and the water table of the regional groundwater resource. *Perched groundwater zone* means water in a limited zone of saturation below land surface a distance generally greater than 100 feet and above the regional zone of saturation. The perched groundwater zones are generally less than 50 feet thick, are not laterally continuous over a great distance and are bounded below by impermeable beds. Multiple perched zones may be present at one location. *Regional groundwater resource* means the large groundwater resource deep below the Pajarito Plateau. The water table of the regional groundwater resource generally is in the depth range of 800 to 1000 feet below ground surface. The large regionally extensive saturated zone contains interlayered geologic formations that are highly productive aquifers and geologic formations that have low permeability and are poorly productive of groundwater. *Sole Source Aquifer.* The Environmental Protection Agency has designated the Espanola Basin including the 40-square mile property of the Los Alamos National Laboratory as a sole source aquifer. (See Federal Register/Vol. 73, No. 14I Tuesday, January 22, 200 at	Permit Section 1.8 states "[t]erms used in this Permit shall have the same meanings as those in the HWA, RCRA, and their implementing regulations unless this Permit specifically provides otherwise. Where the term is not defined in the HWA, RCRA, implementing regulation, or this Permit, the meaning of the term shall be determined by a standard dictionary reference, EPA guidelines or publications, or the generally accepted scientific or industrial meaning of the term." The terms "Uppermost aquifer", "Confined aquifer", "Unsaturated zone", "Regional groundwater resource", "Sole Source Aquifer", and "Underground source of drinking water" do not appear in the text of the Permit; therefore, they do not need to be defined in the Permit. The meaning of the terms "Vadose zone" and "Perched groundwater zone" is determined by a standard dictionary reference, in accordance with Section 1.8 of the Permit.	

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		Notices page 3723.) The aquifer is eligible for sole source designation because it is the principal source of drinking water for the area. "EPA may essentially "veto" financial assistance proposed by Federal agencies for projects it finds may contaminate such a designated aquifer. To date, EPA has designated 75 sole source aquifers." kt. -Add from 40 CFR §270.2 *Underground source* of *drinking water (USDW)* means an aquifer or its portion: (a)(1) Which supplies any public water system; or (2) Which contains a sufficient quantity of ground water to supply a public water system; and (i) Currently supplies drinking water for human consumption; or (ii) Contains fewer than 10,000 mgtl total dissolved solids; and (b) Which is not an exempted aquifer. There is a fundamental requirement to install monitoring wells in the permeable geological formations that are accordingly the pathway for contaminated groundwater away from the disposal sites, including the regulated units. Unfortunately, many of the LANL monitoring wells are installed in poorly productive geologic formations instead of the permeable formations that are important to monitor.	Regional monitoring wells at LANL are designed to monitor a productive zone closest to the water table. Under some circumstances, if the most productive geologic formation is substantially below the water table, a less-productive formation that is closer to the water table will be selected for screen placement. In double-screened wells, the second screen will be usually placed in the deeper, most productive formation.	
372	1.10.1	EPA would like a clarification statement indicating that the RACER is a requirement of the permit; however, not all of the data in the RACER meets the NMED data quality criteria and may not be considered in the decision making process.	The Department disagrees – The data quality limitations of data within RACER are sufficiently described in the database's implementation document. The Department considers a permit requirement sufficient.	No
373	1.12	The Permittees support the requirements for a community relations plan as set forth in the revised draft permit, with one requested change. As part of the Community Relations Plan, the Permittees are required to specify how they will consult on a government-to-government basis with the local tribes and pueblos. The Permittees do	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

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		not document any information about consultations, communications, agreements, and disagreements between the Permittees and tribes and pueblos either in the Facility Operating Record or on the Permittees' web site unless the tribes and pueblos specifically request that the information be so documented or posted. The Permittees propose that Section 1.12 be revised to clarify this requirement. Suggested language change: Page 29, lines 1-4, modify the sentence to read as follows: The Permittees shall not document in the Facility Operating Record or post on the Permittees' web site consultations, communications, agreements, or disagreements between the Permittees and tribes and pueblos unless ~~approved by~~ those tribes and pueblos specifically request that the information be included in the Facility Operating Record or be posted on the Permittees' web site.		
374	1.16	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within in the section from "Figures 2, 3, and 4" to "to Figures 1, 2, and 3".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
375	1.16.2	We request that residential cleanup standards must be met for any land to be transferred and that deed restrictions should not be allowed.	The Department disagrees – The Department does not have the regulatory authority to stop the Permittees from transferring land. The Department can only require that any environmental liability must remain with a property and therefore new owners must be made aware of those liabilities prior to the transfer. The land transfer requirements in the Renewal Permit apply only to properties within the permitted	No

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			units. A permitted unit that does not achieve residential cleanup standards will not be considered clean closed and will have to be permitted for post-closure care. There is a provision in the Consent Order (§ III.Y) that addresses land transfer of property addressed under that document.	
376	1.17	This requirement is currently covered in a binding agreement. There is no regulation that requires a facility to report its demolition activities. This agreement was entered into by LANS, DOE and NMED. It is limited and flexible due to the nature of demolition operations at the laboratory. The requirements in the permit are more prescriptive and will cause issues with the demolition process thereby limiting the laboratory's ability to reduce its footprint, potentially jeopardize money allocated for demolition and, should there be issues of whether the laboratory met the requirement, it places the permit in jeopardy through enforcement. Since this is not a permitting issue it should be removed from the permit.	The Department disagrees - The Department has the authority under the omnibus provision of the regulations to include necessary general and specific terms and conditions to a hazardous waste permit to protect human health and the environment.	No
378	2.2.1	The inclusion of the "offsite" wastes section is unnecessary, poses a hardship for various programs, makes problems for national security, and is not a good use of tax payer's monies. This comment addresses both the sited Part of the permit and Attachment L. These sections limit the Laboratory from receiving wastes from off-site. The Laboratory is a National Laboratory. As such its missions are national in nature. This prohibition limits the Laboratory's ability to address national problems such as the Off-site Sealed Source Recovery Program. This program works at both a national and international level to recover sealed radioactive sources and securely dispose of them. This program is aimed at keeping these sources out of the hands of terrorists and preventing them from making "dirty bombs". The prohibition as written restricts the Laboratory to one drum of these sources per year if it is deemed mixed waste (governed by RCRA). At this time the program is not receiving any mixed waste but the potential exists that some	The Department disagrees – NMED limits the amount of off-site waste the Permittees may receive to avoid a significant increase in the quantity of hazardous waste at the Facility. Permit Section 2.9 requires the Permittees implement a waste minimization plan in part to accomplish this goal. The Department has authorized the Permittees to receive limited	No

No.	Loc.	Comment	NMED Response	Δ
		of the sources will be mixed waste. If the amount should exceed one drum per year then the Laboratory would be required to seek permit modifications to increase that amount. Additionally, the Laboratory routinely sends wastes off-site for treatment. It then is required to take back the treated residues (still regulated under RCRA) sometimes. The list of facilities in Attachment L is those facilities that the Laboratory is currently using to treat its wastes off-site. If the Laboratory can no longer use one or more of those facilities or a more efficient or cost effective option becomes available to the Laboratory, it would be required to seek a permit modification. I understand that NMED and the public do not want to see hazardous chemical and radiological/chemical mixed waste disposed at LANL. LANL has not asked for and is not trying to permit a disposal site for those wastes. LANL, however, is a unique member of the NNSA National Laboratory system. It has unique capabilities. It is understandable that with costs and requirements what they are for security and compliance with state/federal DOE laws, regulations and orders that many capabilities are not duplicated throughout the DOE complex. Therefore, if LANL has the capabilities that no other facility has it makes sense to have LANL provide the service necessary to characterize and package certain wastes (i.e. sealed sources, limited wastes from Sandia) for shipment to WIPP. The regulations contain no prohibition against this. The purpose of the permit is to protect the public health and the environment. This provision does just the opposite, it places restrictions upon the facility that make it difficult if not impossible to provide those services it missions demand to protect the nation. In order to carry on the mission of this program unhampered this provision should be deleted from the permit.	amounts of particular wastes and receive hazardous wastes from the limited off-site facilities the Permittees proposed in their permit application. At no time have the Permittees argued or provided evidence that the Renewal Permit's limits on the receipt of off-site wastes "poses a hardship for various programs" or "makes problems for national security." The Permittees have requested relieve from the Department for corrective actions and RCRA's long-term storage prohibitions because of difficulties is shipping wastes off-site. The Department has granted that relief in part because of Permit limits on the receipt of additional wastes.	
379	2.2.1(4)	On page 6 of the Fact Sheet it mentions that LANL is "to receive only sealed source wastes that are eligible for disposal" at WIPP and to "receive no more than one 55-gallon drum of sealed source waste per year ...." If there is a pathway to disposal, why is there a limit on the number of drums that can be received? It is vitally important to national security to have the flexibility to gather up unused and orphan sources from unsecure locations to prevent their use for terror-type activities and to ensure their proper disposal. The source recovery program at LANL has done an excellent job. Perhaps the current national need may only be one or several drums per year, but if there is an unforeseen increase in the unused/orphan source inventory, the country should have the ability to deal with it without obstacles created	NMED limits the amount of off-site waste the Permittees may receive to avoid a significant increase in the quantity of hazardous waste at the Facility. Permit Section 2.9 requires the Permittees implement a waste minimization plan in part to accomplish this goal. The Department has authorized	No

No.	Loc.	Comment	NMED Response	Δ
		by some unnecessary regulatory control. NMED should not have a limit on such drums but instead insert a clause to assure the drums are sent to WIPP within one year of receipt.	the Permittees to receive the amount of seal-source wastes the Permittees proposed. Furthermore, Permit Section 2.2.1(4) contemplates an increase to the allowable amount of off-site sealed source mixed waste. The Section requires a Class 2 permit modification request with all applicable public participation.	
380	2.2.2	Many of the sources that the Off-site Sealed Source Recovery Program deals with are sources manufactured in the United States but sold or sent out of the country for use. Those sources are then recovered, characterized and packaged for shipment and disposal. It is not impossible that some of these sources will be mixed waste once characterized. Again, it is in the interest of protecting the public from potential threats that these sources should be secured. Therefore, this section should be deleted from the permit as well.	The Department limits the amount of off-site waste the Permittees may receive to avoid a significant increase in the quantity of hazardous waste at the Facility. The Department has authorized the Permittees to receive the amount of seal-source wastes the Permittees proposed.	No
381	2.4.6	We request that waste streams that have not been previously treated in the thermal process (open burning) shall not be allowed to be burned openly under this permit.	The Department disagrees - In accordance with the thermal treatment requirement at 40 CFR § 265.375, the Permittees are permitted to treat previously untreated waste streams so long as they sufficiently characterize the waste.	No
382	2.4.7	Section 2.4.7 requires the Permittees to notify the Department in writing within three days of receiving notice from a waste disposal facility that there is a discrepancy between the waste received and the pre-approved waste analysis certification or accompanying waste manifest or shipping paper. 40 CFR §264.72(c), which addresses	The Department disagrees – the shorter notification time reflects the Department's interest in appropriate waste	No

No.	Loc.	Comment	NMED Response	Δ
		manifest discrepancies, states that the owner or operator of the receiving facility must attempt to reconcile significant manifest discrepancies, as defined in 264.72(b), with the waste generator or transporter. Section 264.72(c) allows 15 days for resolution of the discrepancy before notice must be given to the administrative agency. The Permittees request that the three day requirement in the revised draft Permit be changed to 15 days. Three days does not provide enough time for the Permittees to attempt to reconcile the discrepancy with the receiving facility, as required under Section 264.72(c). Suggested language change: Page 43, line 1, modify the sentence to read as follows: Permittees shall notify the Department in writing within ~~three~~ 15 days of their receipt of the notice of the discrepancy from the receiving facility.	characterization. The focus of the regulation cited by the Permittees is manifest discrepancies, not waste characterization. In fact, 40 CFR § 264.72(c) would allow no notification to the authority if the discrepancy is resolved within the specified time. The Department requires early notice of any possible error in waste characterization so that it might evaluate all possible ramifications, including problems in the waste characterization process and the possible mismanagement of similar wastes remaining at the Facility.	
383	2.4.9	The Permittees agree that there may be occasions when a comprehensive analysis for all constituents of a generated waste may be appropriate to meet the requirements of 40 CFR §268.48 where there is no other information. However, the permit condition does not allow alternative options. The condition as written does not explain the terms "laboratory analysis" and "capable of measuring," and is therefore ambiguous. Any condition of this Permit must clearly identify requirements imposed on the Permittees. Section 2.4.9 regards waste characterization for compliance with Land Disposal Restrictions (LDR) and the condition specifically addresses the hazardous constituents listed in the referenced table. 40 CFR §268.48 describes compliance with treatment standards for underlying hazardous constituents as defined by 40 CFR §268.2(i). 40 CFR §268.2(i) states that the term "underlying hazardous constituents" (UHCs) means constituents listed in the table "…which can reasonably be expected to be present at the point of generation of the hazardous waste at a concentration above the constituent–specific UTS treatment standards."	The Department agrees that the term "capable of measuring" may be ambigious so with the concurrence of the Permittees the following changes are made in the Renewal Permit to the following paragraph, When using laboratory analysis as part of a hazardous waste characterization pursuant to Attachment C (Waste Analysis Plan), Section C.3.1.2, the Permittees shall require the laboratory to report concentrations	Yes

No.	Loc.	Comment	NMED Response	Δ
		The permit condition precludes the use of process knowledge or other acceptable knowledge (see Section 3.1.1, Attachment C) to reasonably determine whether the UHCs are present. The preamble to the final Phase II rule implementing the LDR states: "regulated entities do not have to ascertain the presence of all hazardous constituents for which EPA is promulgating a universal treatment standard. Generators may base this determination on their knowledge of the raw materials they use, the process they operate, and the potential reaction products of the process, or upon the results of a one-time analysis of the entire list of constituents at 268.48" (see 59 FR 48015). In addition, EPA's April 1994 guidance for waste analysis plans in permits also supports the use of other waste information in addition to sampling and analysis for characterization and does not revise this provision in the case of LDR determinations (ECDIC-2002-011, OSWER 9938.4-03). NMED's adoption of the federal regulations does not include a provision revising this requirement (see Hazardous Waste Management Regulations, 20.4.1.801 [3/1/2009]). Additionally, as indicated above, and at 58 FR 29872, if a one-time analysis for all the 40 CFR §268.48 constituents is conducted, subsequent analysis may be limited to only those UHCs identified in the initial sampling and analysis. The permit condition, as currently written, requires that all constituents must be analyzed at any time laboratory analysis is used as part of a hazardous waste characterization. Attachment C of the draft permit describes the use of laboratory analysis both as primary sampling and analysis (Section 3.1.2) where acceptable knowledge is insufficient for waste characterization and as additional characterization data, an allowable component of acceptable knowledge when appropriate (Section 3.1.1). Laboratory analysis supporting AK is often selective in terms of analytes measured. The proposed permit condition does not define which type of laboratory analysis is being considered. The use of the term "capable of measuring" in the condition is not sufficiently explained by the additional reference to SW-846 to resolve its meaning for compliance purposes. SW-846 contains numerous sources for determining whether the contained methods are appropriate for analytes of concern. Chapter Two of SW-846 specifies the determinative methods for analysis of specified analytes but individual methods can potentially be used for much wider ranges of analytes. For example, Method 8260B	of all hazardous constituents listed at 40 CFR § 268.48, *Table UTS* that the analytical test method used is capable of measuring, as specified at the most recent version of the U.S. EPA's *Test Methods for Evaluating Solid Wastes* (*SW-846*). When performing this laboratory analysis the Permittees will not be required to perform sample preparation or determinative procedures other than those performed routinely for the target analytes.	

No.	Loc.	Comment	NMED Response	Δ
		(gas chromatography/ mass spectrometry) of SW-846 is used to determine volatile organic compounds for waste characterization. The method contains a table listing those compounds that can be determined by the method using the contained procedures (Section 1.1) and this table is generally in agreement with Table 2-1 of Chapter Two. However, the method further states that it can be used to quantitate most volatile organic compounds that have boiling points below 200°C (Section 1.3). This would potentially add many analytes in Table UTS that are not specifically listed for the method in SW-846 Table 2-1 where the appropriateness of the analytical requirements (e.g., detection limits, reproducibility) are not known. Additionally, there are six potential sample preparation techniques for Method 8260B (Section 1.2), none of which are appropriate for all the potential analytes capable of being measured by the method. The proposed permit condition does not resolve the applicability of any of these factors in determining how compliance will be achieved. Suggested language change: Page 43, lines 34-36 to page 44, lines 1-2, delete the following: ~~When using laboratory analysis as part of a hazardous waste characterization, the Permittees shall require the laboratory to report concentrations of all hazardous constituents listed at 40 CFR §268.48, *Table UTS*, that the analytical test method used is capable of measuring, as specified at the most recent version of the US EPA's Test Methods for Evaluating Solid Wastes (*SW-846*).~~		
384	2.5	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figures 5 through 11" to "Figures 4 through 10".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
385	2.6.3	The Permittees take exception to the use of the word "potentially" in the context stated as follows: *"any errors potentially affecting waste containment or compliance with this Permit;"* The requirement for listing *any errors potentially affecting waste containment or compliance with this Permit* is duplicative, onerous and beyond the requirements of the	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		regulations in 264.15(d). "Potentially" is a broad word in its meaning and is ambiguous here. Should an issue arise with the waste containers or compliance (i.e. equipment) found during the inspection, the anomaly is noted as required in Attachment E, Section E.1.1 and corrective measures are taken and documented. Container management for containers and mitigative measures are outlined in Part 3 of this Draft Permit. Suggested language change: Page 46, line 34, modify the sentence to read as follows: any errors ~~potentially~~ affecting waste containment or compliance with this Permit;		
386	2.8	Administrative – Suggested text change corrects a typographical error. Suggested language change Change the reference to Attachment N within the section from "Figures 12, 15, 21, 23, and 37" to "Figures 11, 16, 22, 24, and 38".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
387	2.8.1	SRIC and NRDC objected to the last sentence of section 2.8.1, which states: The Permittees shall assume that all containers that hold mixed transuranic wastes and that are not vented contain hydrogen gas and that the associated wastes are considered ignitable. SRIC and NRDC are concerned that provision limited venting to transuranic waste containers, while other mixed waste containers also are being vented to reduce the likelihood of explosions and deflagrations that could endanger public health and the environment. Subsequent to June 26, 2009, additional negotiations occurred, which included exchange of additional information about management of waste containers at LANL. As a result, SRIC and NRDC are aware that there are a limited number of waste containers with tritium, which are not vented to prevent tritium releases into the environment. In addition, some mixed waste containers are not vented because they	The Department concurs. The Renewal Permit is changed as follows to address the containers the Department considers at risk of inappropriately containing hydrogen gas: The Permittees shall assume that all drums with volume capacities between 55 and 110 gallons that hold mixed transuranic wastes and that are not vented , and standard waste boxes that hold mixed transuranic waste and are	Yes

No.	Loc.	Comment	NMED Response	Δ
		are not transuranic waste and are shipped offsite to disposal facilities that do not allow vented containers. Additional information about container management is being submitted for the record by the permittees. Therefore, SRIC and NRDC agree to support a revised last sentence of section 2.8.1, which states: The Permittees shall assume that all drums with volume capacities between 55 and 110 gallons that hold mixed transuranic wastes and that are not vented and standard waste boxes that hold mixed transuranic wastes and that are not vented contain hydrogen gas and that the associated wastes are subject to the conditions of this Section 2.8.1.	not vented, contain hydrogen gas and the associated wastes are subject to the conditions of this Permit Section (2.8.1). ~~that hold mixed transuranic wastes and that are not vented contain hydrogen gas and that the associated wastes are considered ignitable. (*see* 40 CFR §§ 264.17(a); 270.32(b)(2)).~~	
388	2.8.1	The Permittees propose lines 24-26 on page 48 be revised. Based on the supporting documents, listed below and attached as Appendix 2, hereto, and discussions with NMED and other parties, the Permittees anticipates that Southwest Research and Information Center and other parties will agree to the proposed language. If NMED files a response to comments or other documents stating that the proposed language will be included in the final Permit, the Permittees will withdraw the exception to Section 2.8.1. The following documents, attached hereto as Appendix 2, support the proposed language and were included in discussions held between the interested parties, NMED and the Permittees in July and August, 2009 to develop the proposed language: o LANL Response to Questions Submitted on July 9, 2009 by Don Hancock o LANL Waste Acceptance Criteria, P930-1, Rev. 2 o Waste Generator Instruction for Completing the Waste Profile Form (WPF), TL-001, Rev. 0 o Waste Profile Form, Form 1346 (9/08) o User Manual for the Waste Disposal Request (WDR) Form, Rev. o LANL Response to Questions Submitted on August 7, 2009 by Don Hancock o Storage and Remote Drum Venting of Unvented Transuranic Waste Drums,	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Safety Basis Addendum No. 1, Rev 0 to the TA-54, Area G Documented Safety Analysis, Dec. 2007 o Approval of Safety Basis Addendum No. 1, Rev. 0 o Waste Acceptance Criteria Exception Form, Form 1973, May 2008 Suggested language change: Page 48, lines 24-26, modify sentence to read as follows: The Permittees shall assume that all ~~containers~~ drums with volume capacities between 55 and 100 gallons that hold mixed transuranic wastes and that are not vented, and standard waste boxes that hold mixed transuranic wastes and that are not vented, contain hydrogen gas and that the associated wastes are subject to the conditions of this Section 2.8.1. ~~considered ignitable. (*see* 40 CFR §§264.17(a); 270.32(b)(2).~~		
389	2.12.2(8)	Based on the general comment on Financial Assurance, the Permittees object to 2.12.2(8) which requires that all closure cost estimates be included in the Facility Operating Record. Suggested language change: Delete Section 2.12.2(8).	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
390	2.13	Based on the general comment on Financial Assurance above, the Permittees object to the inclusion of requirements for cost estimates for closure and post-closure and request that this section be deleted. Suggested language change: Delete Section 2.13	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
391	2.13.1	Typically in the permitting process, the permittee (LANS) should have already submitted an acceptable closure cost estimate before the permit was drafted by the regulator.	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
392	2.14	What provisions exist for increasing financial provisions? How will the necessary funds be maintained and what provisions exist for inflationary costs for treatment, removal,	See the Department's response regarding financial assurance in	Yes

No.	Loc.	Comment	NMED Response	Δ
		etc?	the document titled General Response to Comments.	
393	2.14	Based on the general comment on Financial Assurance above, the Permittees object to the inclusion of financial assurance requirements and request that this section be deleted. Suggested language change: Delete Section 2.14	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
394	2.14	Typically in the permitting process, the permittee (LANS) should have already demonstrated one or more instruments of financial assurance for the closure costs of all hazardous waste management units before the permit was drafted.	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
395	2.15	What is the timeframe for the permittee, LANS, to be in compliance with this permit provision? EPA assumes that it is the effective date of the permit. Please clarify.	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
396	2.15	Based on the general comment on Financial Assurance above, the Permittees object to the inclusion of liability requirements and request that this section be deleted. Suggested language change: Delete Section 2.15	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
397	2.16	Based on the general comments on Financial Assurance above, the Permittees object to the inclusion of the requirements in this section and request that this section be deleted. Suggested language change: Delete Section 2.16	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
398	3.7.1(2)	The requirement to remove liquid within 24 hours or immediately is not based on the regulation cited and does not address the need to extend the timeframe when justified. Additionally, the term "accumulated" is not defined sufficiently to determine whether the condition of the storage unit is in compliance. The triggers for action to remove material from the containment system under the cited	The Department disagrees in part – the permit section establishes a requirement that is based on the cited regulation, is protective of human health and the environment, and is more	Yes

No.	Loc.	Comment	NMED Response	Δ
		regulations are linked to the excess capacity (40 CFR §264.175(b)(4)) and potential overflow of the collection system (40 CFR §264.175(b)(5)). In both cases, this involves determinations primarily related to the volume of the system and the potential for release rather than the residence time of the material. The specified timeframes in the revised draft Permit condition do not consider program needs that may appropriately result in longer removal times. Examples include the need to prepare for removal of ice or liquid and the need for sampling and analyzing spilled waste or precipitation to determine the appropriate removal method and related safety procedures. Based on the cited regulations, material can accumulate in the secondary collection systems unless the condition results in reduction of the required secondary containment volumes for the unit or overflow of the system. However, the permit condition does not provide a definition of a threshold amount that would activate the requirement. Thus, removal would potentially be necessary for any amount less than those levels, including de minimus precipitation or run-on events. This imposes a requirement that is burdensome and makes it difficult to determine the compliance status of the unit. Therefore, the Permit requirement should reflect the language of the regulation which is implementable and appropriate. Suggested language change: Page 67, line 32, delete the following: ~~If the sumps or secondary containment system are the sole means of secondary containment the Permittees must remove the spilled or leaked waste and/or accumulated precipitation within 24 hours of detection or immediately if necessary to prevent overflow of the secondary containment system.~~	enforceable than the regulation's term "as timely a manner as is necessary." The Department's primary concern is reducing the possibility of a release. For secondary containment systems without redundancy the Department sees no reason to allow a diminished storage capacity for greater than 24 hours. Large hazardous waste container management facility such as the Permittees' must have equipment readily available to manage accumulated liquids. The Permittees do not identify the fluid level on a containment system that must not be exceeded to maintain a minimum capacity. Furthermore, this level can change frequently depending on the type and quantity of wastes being managed. The revised language in the Renewal Permit addresses the need to measure liquid levels and to calculated capacity. The revised language in the Renewal Permit also addresses the short action time to remove liquids by allowing an extention of that time with the Department's approval if	

No.	Loc.	Comment	NMED Response	Δ
			necessary. The Renewal Permit is changed as follows: Otherwise, the Permittees must remove the spilled or leaked waste and/or accumulated precipitation in any form in as timely a manner as is necessary to prevent overflow of the containment system and shall, while the system's capacity is diminished, measure the system daily to demonstrate that the system retains sufficient capacity to contain 10% of the volume of containers or the volume of the largest container holding free liquids, which ever is greater. (*see* 40 CFR §§ 264.175(b)(4) and (5)). The Permittees shall document this measurement in the Facility Operating Record. Requests for extension of time for any deadline under this subparagraph may be made by e-mail.	
399	3.7.1(4)	The permit requires that the facility maintain, in their operating record, certification that coatings and/or sealants used as a secondary containment system were applied and maintained in accordance with manufacturer's specifications. EPA recommends that a condition be added to the permit requiring LANL to submit a certification to NMED (within fifteen days of the effective date). This is a highly overlooked item during inspections and would ensure that the certification is being performed in a timely	The Department disagrees - having the subject certification statement in the Permittees' operating record available for the Department's inspection is a suitable enforcement policy. The	No

No.	Loc.	Comment	NMED Response	Δ
		manner.	Permittees have numerous secondary containment systems and other systems requiring certification. Requiring certification statements be provided to the Department would create unnecessary tracking issues.	
400	3.7.1(4)	If an existing coating or sealant has been applied using normal industry standard practices (painting or spraying), appears functional, and passes inspection, there is no reason to replace it. The effect of the condition as written could require the replacement of coatings based solely on the lack of records that were not previously required irrespective of the condition of the material. The condition is retroactive and should be restricted to new or repaired coatings. Suggested language change: Page 68, lines 8-11, modify sentence to read as follows: If a coating or sealant is used as a secondary containment system and is re-applied or renewed during the life of this permit, the Permittees shall maintain documentation in the Facility Operating Record that the coating or sealant was applied and maintained in accordance with the manufacturer's specifications.	The Department disagrees – Adherence to sealant manufacture' specifications is critical to ensureing proper function of secondary containment systems. The Permittees' permit application identifies sealants as being an important component of some secondary containment systems. If the Permittees cannot certify that secondary containment system sealants have been applied and maintained as recommended by the manufacturer, and because there are no suitable inspection procedures and the appearance of functionality is insufficient, then the Permittees must properly replace the existing coating sealant. Without the manufacturer's specifications of coatings or sealants it is not possible to know the life expectancy of the material.	No

No.	Loc.	Comment	NMED Response	Δ
401	3.7.1 (5)	The permit requires that the facility maintain, in their operating record, certification that all flexible liners, being used as a secondary containment systems, were installed and maintained in accordance with the manufacturer's specifications. EPA recommends that a condition be added to the permit requiring LANL to submit a certification to NMED (within fifteen days of the effective date). This is a highly overlooked item during inspections and would ensure that the certification is performed in a timely manner.	The Department disagrees - having the subject certification statement in the Permittees' operating record available for the Department's inspection is a suitable enforcement policy. The Permittees have numerous secondary containment systems and other systems requiring certification. Requiring certification statements be provided to the Department would create unnecessary tracking issues.	No
402	3.11.3	The section inappropriately requires the Permittees to prevent run off from TA-50 units. Run off cannot be prevented. However, existing run-on and run-off controls ensure that water does not come into contact with waste and then run off the site. Hazardous waste is stored within transportainers at the unit and does not come into contact with precipitation. Precipitation does fall on the asphalt pad and is directed as described within the rest of the section. Suggested language change: Section 3.11.3, Page 71, Lines 17-18: The Permittees shall prevent surface water run-on to the TA-50 permitted units. ~~to other areas or to the environment.~~	The Department concurs in part – the TA-50 Outdoor Storage Unit is not constructed to contain run-off. Permit Section 3.5.1(5) requires that waste stored at the unit is protected from contact with precipitation using weather protective equipment. Permit Section 3.11.3 prohibits the loading or unloading of waste at the unit during precipitation events. The Renewal Permit is changed as follows: The Permittees shall prevent surface water run-on from contacting stored waste containers	Yes

No.	Loc.	Comment	NMED Response	Δ
			at the TA-50 permitted units.	
403	3.12.1 and 3.12.3.6	Sections 3.12.1 and 3.12.3.6 should be revised to accurately reflect the actual waste management practices at TA-54-412. Section 3.12.1, General Operating Conditions, requires that, at Area G, all containers storing hazardous waste with free liquids be stored on secondary containment pallets, except inside specifically identified structures, including Building TA-54-412 (DVRS). Section 3.12.3.6 sets forth secondary containment requirements for TA-54-412 and treats the building itself as the secondary containment. However, TA-54-412 is not designed to provide secondary containment and is not used for secondary containment. If free liquids are stored in TA-54-412, they are stored on secondary containment pallets. Therefore, the exception in 3.12.1 is not needed and the requirements in Section 3.12.3.6 should be removed. Suggested language change: Page 72, line 4, delete the following ~~Building TA-54-412 (DVRS).~~ Page 74, delete lines 7-11, Section 3.12.3.6. ~~3.12.3.6 TA-54-412~~ ~~The Permittees shall treat the floor of the building with an epoxy sealant, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation. The Permittees shall maintain the sealant in accordance with Permit Section 3.7.1 and the manufacturer's specifications.~~	The Department concurs – the TA-54 Area G Pad 1, DVRS is described in the permit application as having secondary confinement, not secondary containment. The Permittees have not requested that the building be considered secondary containment. The Permit is revised to require containers holding free liquids in TA-54-412 to be placed on portable secondary containment pallets.	Yes
404	3.12.2	EPA recommends that a condition be added to the permit requiring LANL to submit a certification to NMED (within fifteen days of the effective date of the permit) regarding the repair of the curbs.	The Department has confirmed that the curbs at Domes 153 and 283 and at Shed 8 protecting against precipitation run-on have been repaired and therefore a certification of that action is not necessary. The Department will alter the Renewal Permit accordingly during the next	No

No.	Loc.	Comment	NMED Response	Δ
			permit modification.	
405	3.12.3	EPA recommends that a condition be added to the permit requiring LANL to submit a certification to NMED (within fifteen days of the effective date) regarding the storage areas that are required (in the draft permit) to have a chemical resistant epoxy and protective coating.	The Department disagrees – having the subject certification statement in the Permittees' operating record available for the Department's inspection is a suitable enforcement policy. The Permittees have numerous secondary containment systems and other systems requiring certification. Requiring certification statements be provided to the Department would create unnecessary tracking issues.	No
406	4.6	The Permittees object to the inclusion of Section 4.6 in the revised draft permit, which sets forth a proposed permit condition applicable to the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50. As discussed below, this permit condition does not meet minimum legal criteria of 40 C.F.R. § 270.32(b), is not supported by the record, and is an inappropriate condition to impose under RCRA permit regulations. Section 4.6 provides as follows: The Permittees shall discharge all treated wastewater from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) through the outfall permitted under Section 402 of the federal Clean Water Act, or as otherwise authorized by the terms of an applicable Clean Water Act permit that regulates the treatment and use of wastewater. If the Permittees intentionally discharge through a location other than the permitted outfall, they will fail to comply with this requirement, and as a consequence the wastewater treatment unit exemption under 40 CFR § 264.1(g)(6) will no longer apply to the RLWTF. The Permittees shall not accept listed hazardous wastes as specified at 40 CFR Part 261 Subpart D at the RLWTF. Revised Draft Permit § 4.6, p. 78.	The Department disagrees - See the Department's response regarding the RLWTF in the document titled General Response to Comments.	No

No.	Loc.	Comment	NMED Response	Δ
		1. *Permit Condition 4.6 does not meet the criteria of 40 CFR § 270.32(b).* Section 270.32(b)(1) provides that the Department may impose permit conditions necessary to achieve compliance with RCRA regulations, including each of the applicable requirements specified in Parts 264 and 266 through 268. Department rules also require the agency to either incorporate the applicable regulatory requirement by reference or provide a specific citation to the applicable regulatory requirement (§ 270.32(e)). The Agency has the burden of proof to support agency-imposed permit conditions, and must provide ample justification in the administrative record. As an initial matter, Permit Condition 4.6 does not meet the criteria of § 270.32(b)(1) or § 270.32(f). The Department provides no regulatory citation or support that the requirement is necessary to ensure compliance with a hazardous waste management requirement under parts 264, 266 or 268. Instead, the Department states that the condition is necessary to ensure that the wastewater treatment unit (WWTU) exemption applicable at the RLWTF will "no longer apply" as a consequence of the Permittees' intentional failure to comply with the requirement that the discharge of all treated wastewater from the RLWTF be through an outfall permitted under Section 402 of the federal Clean Water Act (CWA) (Fact Sheet, at 82). In other words, the permit condition mischaracterizes the circumstances under which LANL may or may not lose its WWTU exemption at the RLWTF. The issue, as explained below, is a fact-specific question and ultimately an enforcement issue for EPA or NMED. The condition is not based on achieving compliance with any regulatory standard under part 264 or part 268. 2. *Permit Condition 4.6 inappropriately attempts to regulate the RLWTF and imposes requirements not supported by EPA and NMED rules.* <u>The WWTU Exemption</u> The RLWTF, a facility that treats wastewater, discharges effluent through an outfall (discharge point) into Mortandad Canyon that is regulated by a permit issued by EPA under § 402 of the CWA. LANL treats hazardous wastewater at the RLWTF without a RCRA permit under the WWTU exemption (Fact Sheet at 82). 40 CFR § 264.1(g)(6) exempts a wastewater treatment unit (as defined in 40 CFR § 260.10) from the requirement to obtain a RCRA permit for that storage and treatment of hazardous wastewater in tanks or tank systems. The WWTU exemption was issued to avoid imposing duplicative permitting requirements on a facility subject to both an NPDES		

No.	Loc.	Comment	NMED Response	Δ
		permit and a hazardous waste permit for the same unit (i.e., tank). To qualify for and maintain the exemption, LANL must treat hazardous wastewater in a "device" that meets the criteria of § 260.10. A facility that does not meet these criteria (for whatever reason) cannot claim that its treatment tanks are exempt from RCRA permit requirements. As a consequence, the facility must obtain a RCRA permit or be subject to potential enforcement. <u>Permit Condition 4.6</u> A. Permit Condition 4.6 states that the WWTU exemption "will no longer apply to the RLWTF" if the Permittees *intentionally* discharge through a location other than the permitted outfall. As drafted, the proposed condition can be construed to result in a loss of the WWTU exemption on a <u>permanent</u> basis. EPA did not intend this result. The WWTU exemption is conditional, and the failure to meet any of the three criteria results in a loss of the exemption. It does not automatically disqualify the wastewater treatment facility from future operation under the WWTU exemption. There are numerous circumstances that may result in the loss of the WWTU exemption under § 260.10 (e.g., a tank fails to meet the *tank* definition due to leakage or discharge into the environment or inadvertent shipment of wastewater to an off-site treatment facility). If a wastewater treatment facility fails to meet the criteria of § 260.10 it may not rely on the WWTU exemption and could be subject to potential enforcement. B. The permit condition sets a standard for the loss of the WWTU exemption that conflict with EPA and NMED rules. The Department explains that the WWTU exemption "would not be lost" if another discharge point were used by inadvertence, such as when a leak developed, but the intentional diversion of treated wastewater voids the exemption." (Fact Sheet, pp. 82-83.) Section 260.10 does not distinguish between *intentional* and *non-intentional diversions* of treated wastewater, and these terms are undefined. Nor does the WWTU exemption limit how a facility may divert wastewater so long as it meets the requirements of § 260.10. A facility can operate under the WWTU exemption so long as it uses tanks or tank systems to manage hazardous wastewater dedicated for use with an on-site wastewater treatment facility subject to an NPDES permit requirement. The Department states that LANL would not lose the WWTU exemption by an inadvertent leak from a tank. Does this mean an inadvertent leak into the environment or a leak to a secondary containment device with no releases		

No.	Loc.	Comment	NMED Response	Δ
		into soils and sediments? How is an intentional leak defined? The permit condition is unclear and inaccurately describes how the WWTU exemption may be lost. C. The Department also states that the WWTU exemption "would not be lost . . . so long as EPA . . . states unambiguously that the new configuration would be regulated by the EPA . . . and meets the definition of a [WWTU] under § 260.10" (Fact Sheet, at 82). This goes far beyond the scope of EPA rules at § 260.10. EPA has authority to issue NPDES permits, and will determine what conditions are necessary to meet CWA effluent limitations and NPDES permit requirements. The applicability of the WWTU exemption does not require the CWA agency (i.e., EPA) to determine whether or not a unit meets the criteria of § 260.10. D. The permit condition prohibits the RLWTF from accepting listed hazardous wastes. This is an attempt to prescribe an operational requirement at the RLWTF, unrelated to ensuring compliance with part 264 standards. Currently, the RLWTF does not accept listed hazardous wastes due to its internal waste acceptance procedures and the fact that the treatment systems at the RWLTF are not configured to treat listed hazardous wastes. The WWTU exemption allows treatment of listed hazardous wastes (§ 261.3) and does not prohibit a facility from treating listed hazardous waste. It is possible that LANL may determine in the future to treat listed wastes at the RLWTF but could only do so with new technological treatment equipment and in compliance with the WWTU exemption requirements. E. The permit condition applies to "all treated wastewater," which is broader than RCRA authority which applies by definition to *hazardous* wastewater (§ 260.10). The WWTU exemption applies to hazardous wastes treated in tanks. Non-hazardous wastewaters are not regulated by RCRA. Based on the foregoing, Section 4.6 should be deleted from the revised draft Permit. Suggested language change: Page 78, lines 12-21, delete Section 4.6. ~~The Permittees shall discharge all treated wastewater from the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) through the outfall permitted under Section 402 of the federal Clean Water Act, or as otherwise authorized by the terms of an applicable Clean Water Act permit that regulates the treatment and use of~~		

No.	Loc.	Comment	NMED Response	Δ
		~~wastewater. If the Permittees intentionally discharge through a location other than the permitted outfall, they will fail to comply with this requirement, and as a consequence the wastewater treatment unit exemption under 40 CFR § 264.1(g)(6) will no longer apply to the RLWTF. The Permittees shall not accept listed hazardous wastes as specified at 40 CFR Part 261 Subpart D at the RLWTF.~~		
407	4.6	This facility is regulated by the Clean Water Act. It holds an NPDES permit for its operation and discharges. As such it is exempt from the hazardous waste regulations and their permitting requirements as per subpart 261.4(a)(2). If the facility should fail to meet any of its requirements under its NPDES Permit then it would be in violation of that permit and not subject to loosing an exemption under the Hazardous Waste Regulations. There is no provision in the hazardous waste regulations providing for lose of such an exemption. Including it or referencing it in this permit is, therefore, outside the scope of the permitting regulations and therefore it should be deleted from the permit.	The Department disagrees - See the Department's response regarding the RLWTF in the document titled General Response to Comments.	No
408	Part 6	No open burning should be permitted. Only subpart O should apply. No subpart X treatment alternative technologies exist.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
409	Part 6	Part 6 and Attachments B and C appear to have contradictory limits on which wastes, waste constituents, or waste codes may be treated at TA-16. See Section 6.2, the TA-16 portion of Attachment B and Tables C-6 and C-12 in Attachment C.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
410	Part 6	We request that waste streams that have not been previously treated in the thermal process (open burning) shall not be allowed to be burned openly under this permit.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
411	6.1	There are several explosive constituents (RDX, HMX, TNT) that are not mentioned as a constituent to be burned in the Waste Analysis Plan (WAP) at TA-16. Please have LANL revise the WAP to include all explosive constituents associated with the explosive wastes to be burned at TA-16.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
412	6.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 16" to "Figure 17".	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
413	6.1.1	Administrative – Typographical error on section numbers Suggested language change: Change section numbers 6.1.1, 6.1.1.1, 6.1.1.2, 6.1.1.3, 6.1.2, 6.1.3, 6.1.3.1, 6.1.3.2, and 6.1.3.3 to 6.3.1, 6.3.1.1, 6.3.1.2, 6.3.1.3, 6.3.2, 6.3.3, 6.3.3.1, 6.3.3.2, and 6.3.3.3.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
414	6.3.1.1(1)	We request that an effort be made to keep as many of the large pine trees as possible within the 200 ft radius.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
415	6.3.1.1(1)	The requirement for <u>all</u> vegetation to be trimmed to 6 inches or less is excessive. The Permittees follow the requirements for vegetation control and combustible material control within the Department of Energy (DOE) Explosives Safety Manual (DOE M 440.1-1A). Vegetation control for fire protection (Section 5.1) states: "Vegetation around storage magazines and explosives operating facilities should be controlled to minimize potential damage to the magazine or facility from erosion or grass, brush, or forest fires. A firebreak at least 50-ft (15-m) wide and free from combustible material should be maintained around each aboveground magazine or explosives operating facility." For waste management areas, Section 20.5(d) of the manual states: "[d]uring destruction operations, the area within 200 ft (60 m) of the destruction point shall be kept clear of dry grass, leaves, and other extraneous combustible material. This clearance may be reduced to fire brand distance if aids to limit the range of fragments and debris are provided for the destruction points used within the disposal area."	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Combustible material is defined by the DOE Explosive Safety Manual as "[a]ny material that, when ignited, will sustain burning." Stakeholders expressed concern with erosion due to tree removal during a site visit on June 30, 2009. Vegetation at the open burning treatment units is controlled in a manner that minimizes the combustible material around each of the units. There are evergreen trees within the 200 ft radius that are necessary to aid in erosion control at the site. Suggested language change: Page 84, Lines 5-8, modify the text to read as follows: Grasses and shrubs ~~Vegetation~~ within a 200 ft radius of the Flash Pad and the Burn Tray shall be trimmed to less than or equal to six inches above the ground surface and the area will be kept free of other combustible material, before treatment. The Permittees shall document compliance with this provision in the Operating Record;		
416	6.3.1.1(2)	The Permittees request that the requirement in 6.3.1.1(2) be modified to be consistent with Section 6.3.3.2, which requires the Permittees to cover and inspect the treatment units within 10 hours of the last open burn treatment. As written, this section (6.3.1.1(2)) prohibits all access to the treatment units for 10 hours and is inconsistent with the requirement in Section 6.3.3.2. Suggested language change: Page 84, lines 9-11, modify sentence to read as follows: The barricade at TA-16-389 shall be closed for the duration of the treatment. ~~and for.~~ Safety barricades will be used during the ten-hour cool-down period after treatment to prevent the entry of unauthorized personnel into ~~the area~~ TA-16-388 or TA-16-399, except as provided in Permit Section 6.3.3.2.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
417	6.3.1.3(4)	Section 6.3.1.3(4) inappropriately prohibits treatment during high fire danger conditions. Current operations at the open burning treatment units allow for safe operation under	See the Department's response regarding open burning in the document titled General Response	Yes

No.	Loc.	Comment	NMED Response	Δ
		"High" Fire Danger Rating. The ratings system was developed by the United States Forest Service's Wild Fire Assessment System and modified by Facility personnel for specific terrain and weather conditions. Forecast for fire danger each day utilizes the Wild Fire Assessment System and the National Oceanic and Atmospheric Administration's Storm Prediction Center, which are incorporated at http://www.weather.lanl.gov/fire_outlook.asp. The Storm Prediction Center's Fire Outlook indicates areas where the combination of dry dead fuels, such as grass and timber, and meteorological conditions (wind, relative humidity, temperature, and dry thunderstorms) might contribute to potentially dangerous wild fire behavior. However, it does not forecast local meteorological conditions (*i.e.*, local variability of relative humidity or the effects of terrain on wind direction and speed). Local meteorological conditions are considered when the fire danger rating is posted each day at LANL. In addition, an assessment of slope of local terrain, types of fuels, variability of fuels, and live fuel moisture content at the site initially establishes, and regularly reaffirms, specific controls for operations during each fire danger rating. The *Restrictions on Operations* section (currently Section 6.1.1) of the revised draft Permit includes these operational controls. During "High" Fire Danger, open burning operations can be conducted with controls in addition to the conditions already included within the Permit for lower fire danger ratings. The suggested text highlights the extra precaution taken when open burning treatment occurs under "High" fire conditions. Through evaluation by fire protection personnel, it has been determined that treatment operations at the TA-16 open burning treatment units are conducted safely and without any additional risk to human health and the environment. Other general controls during a burn include scheduling with other waste treatment and experimental firing sites, so as not to overload any resources; receiving High Explosive Safety Operations personnel approval; notifying site access control as well as the Los Alamos Fire Department (LAFD); watching the burn remotely through a camera during and 30 minutes after completion; and measuring wind speed just prior to the burn to ensure it is within the fire danger matrix.	to Comments.	

No.	Loc.	Comment	NMED Response	Δ
		Additionally, water and fire extinguishers are available if they are needed and personnel are trained to use fire extinguishers, and LAFD Station #5 is located less than 5 minutes away from the open burning treatment units. The ability to treat waste during High Fire Danger is needed to ensure compliance with regulatory and safety requirements for the storage of high explosives waste and high explosive contaminated waste. Specific requirements which must be met include generator storage area time frames or laboratory safety storage volume limits. Suggested language change: Page 85, Lines 11-14, modify the section to read as follows: (4) Open burning treatments shall not be conducted during ~~High,~~ Very High, or Extreme Fire Danger classes as designated by the ~~National Oceanic and Atmospheric Administration's National Weather Service~~ United States Forest Service. Treatment during High Fire Danger must only occur at wind speeds less than 10 miles per hour.		
418	6.1.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 17" to "Figure 18".	See the Department's response regarding open burning in the document titled General Response to Comments	Yes
419	6.1.1(1)	Why is the maximum amount of waste to be treated by open burning set at 12,500 pounds of waste per year? This maximum amount is set forth in section 6.1.2 of the Revised Draft RCRA Permit. While we appreciate the numerous revisions NMED has made to strengthen this overall section of the permit, the Pueblo has not yet seen any documentation from NMED or LANL that actually justifies the need for this particular maximum volume. It is our understanding that LANL has been treating significantly less pounds per year of waste through this method of treatment than the maximum amount proposed in the Revised Draft RCRA Permit. Even taking into account some need for flexibility of waste treatment options at LANL, this number still seems high for a ceiling in the permit.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
420	6.1.2	Section 6.1.2, Page 81, Lines 30-31:	See the Department's response regarding open burning in the	Yes

No.	Loc.	Comment	NMED Response	Δ
		EPA recommends re-wording the asbestos condition to the following: "Only HE-contaminated equipment containing *de minimus* quantities/concentrations of asbestos may be treated".	document titled General Response to Comments.	
421	6.1.2 (3)	What test method will LANL use to determine the % volume of high explosives in liquids?	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
422	6.1.2	It appears the requirements are the same for both types of waste burns. Please clarify.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
423	6.3.3	Please include a condition in the permit that requires the Permittees to document routine maintenance in the operating record.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
424	6.2	Please deny all open burning of depleted uranium at LANL in the permit. The tiny contaminated (radioactive/chemical) particles can be carried for miles by the wind in the air eventually depositing on the land and water. When inhaled or ingested these particles can cause devastating health problems and birth defects.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
425	6.2	NMED states in the July 6, 2009, Fact Sheet, which provides the basis for requirements not specified in state regulations, that its prohibition on burning the hazardous component of mixed wastes "effectively prohibits the burning of radionuclides." NMED has authority to regulate only the hazardous portion of mixed waste, therefore its prohibition amounts to an impermissible regulation of the radioactive component of mixed waste. Suggested language change: Page 82, line 34, modify the sentence to read as follows: (1) ~~the hazardous component of mixed wastes, and~~ beryllium (*see* 40 CFR	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		§270.32(b)(2));		
426	6.2(2)(i)	To clarify this section, the Permittees propose to add language stating that the certification will be included in the Biennial Report. Suggested language change: Page 83, lines 2-4, add the following sentence: Certification will be included in the Biennial Report.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
427	6.2(9)	The Permittees request the removal of the waste prohibition in Section 6.2(9), which prohibits the treatment of "wastes capable of generating dioxins and furans." The following presents the Permittees' support for the removal of this Permit condition. *Air Model Background* To demonstrate that the OB units will not cause adverse effects on human health or the environment, air modeling was performed and reports were generated by both the Permittees and NMED. The Permittees' modeling showed that OB treatment operations at Technical Area (TA)-16 are protective of human health and the environment and pose no adverse effects due to migration of waste constituents in the air. The NMED model showed that open burning treatment of 20,000 pounds (lbs) of bulk high explosive (HE) waste "can be conducted and considered protective of human health and the environment." However, the NMED conclusion was that burning 20,000 lbs per year of HE-contaminated waste "can be considered protective of human health but not protective of ecological receptors." The model found that the estimated 10-year soil deposition value for dioxin/furan due to the burning of HE-contaminated wastes would fail the LANL Ecological Screening Level for a Montane Shrew. The NMED model report stated that the "exceedances were driven by the emission factors chosen for furans while the dioxin component did not contribute to the exceedance." The NMED model report also recommended that the treatment of HE-contaminated wastes at TA-16-388 required "performance of a more refined analysis of ecological risk, restrictions on the types of HE-contaminated wastes	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		treated, and/or implementation of controls or procedures to prevent exposure of small mammals." *Model screening exceedance only with HE-contaminated combustibles* The NMED model results determined that operations at the open burning treatment units pose <u>no adverse effects</u> for the treatment of bulk HE waste up to 20,000 lbs. Most of the waste treated through open burning at LANL (approximately 90%) is bulk HE from the machining of high explosives components used for testing, research and development projects within the DOE Complex. This waste consists of scraps and chips of explosives from machining mixed with water and the fiber filter socks used to strain the larger chunks of explosives from the water used for cooling. All waste treated at the TA-16-399 Burn Tray is bulk HE and most of the waste treated at the TA-16-388 Flash Pad is bulk HE and filters. The treatment of the HE-contaminated combustible waste makes up a small percentage of the waste treated at the open burning treatment units and in recent years has been less than 2% of the 20,000 lbs. modeled. Another major factor influencing the result for the open burning of HE-contaminated waste is the uncertainty associated with the emission factors used in the analysis. The emission factors for furans chosen by NMED represented a surrogate waste that did not accurately represent waste actually treated at the TA-16-388 Flash Pad. The emission factors were associated with the open burning of propellant-contaminated Manufacturer's Waste consisting of 65% aluminized ammonium perchlorate propellant, 20% plastic material (polyethylene gloves), 11% paper/wood/cloth and 4% diesel fuel. These emissions factors represent the highest values available for furans. The HE-contaminated combustible waste stream that is treated at the TA-16-388 Flash Pad, however, consists of pieces or powder HE, cloth, cardboard, kim-wipes, limited plastic bags, small amounts of solvent or oil on kim-wipes or filters, small glass pieces, and small metal pieces. This waste stream does not contain a high percentage of plastics, wood, or paper as these items would lead to the higher production of furans. Also, propellants such as ammonium perchlorate are not treated through open burning by the Permittees and are not considered high explosives. Based on these potential impacts, and to address recommendations from NMED modelers, the Permittees will implement the following.		

No.	Loc.	Comment	NMED Response	Δ
		Ecological Risk Analysis To address recommendations from NMED's modelers, the Permittees conducted limited soil sampling, which found a higher value of dioxin/furan congeners in one out of the six samples. The elevated furan reading is suspected to result from activities that are no longer performed at that location. It was determined that more data is necessary to assess the ecological risk at the site. On August 26, 2009, 31 additional soil samples were collected and sent for analysis for dioxin/furans and the eight Resource Conservation and Recovery Act metals. The analysis of these soil samples will be added to the previously collected samples and the data will be used to characterize the TA-16 Burn Ground in regards to the air depositional impact that could occur from the current open burning treatment operations. The risk assessment will characterize the risk to wildlife in the area associated with the open burning treatment units at the TA-16 Burn Ground and take into consideration past operational activities and acts of nature (forest fires) that have impacted the site. Anticipated results of the risk assessment include data presenting values close to concentrations measured within other areas of LANL property, while taking into consideration historic activities and occurrences at the site. The data quality objectives and a map of the soil sampling locations for the most recent sampling event are included in Appendix 3, hereto. *Restrictions on Waste Treated* The revised draft Permit includes restrictions on the amount of waste treated as well as the types of waste at the open burning treatment units. The amount of waste that can be treated at the open burning treatment units was decreased from the volume of waste that was modeled. The model volume of waste was 20,000 lbs. and the draft Permit condition requires that the Permittees treat no more than 12,500 lbs. per year. An additional list of prohibited wastes has been added to the revised draft Permit that includes many dioxin/furan producers. The list includes chlorinated solvents and ammonium perchlorate, polyvinyl chloride, and structural components of demolition and decommissioning wastes. The prohibition of these wastes covers much of the concern for dioxin/furan producers. In fact, the Permittees are prohibited from treating the waste stream upon which NMED's modeling was based. Additionally, these specific waste bans are much less complicated to comply with for the Permittees and increase		

No.	Loc.	Comment	NMED Response	Δ
		the enforceability for the NMED-HWB compliance inspectors. *Controls to Prevent Small Mammal Exposure* Periodic surveys of the TA-16 Burn Ground were recommended by NMED's model report to identify and relocate nesting areas. The fire break that is described in the comment to Section 6.1.1.1(1) of this document helps to discourage small animals from living in the area and the Permittees are committed to adding a periodic survey to look for signs of small burrowing mammals as an operational requirement that would be documented in the operating record for the permitted units. See Appendix 3 for supporting documents. Suggested language change: Page 83, delete lines 16-24: ~~(9) wastes capable of generating dioxins and furans.~~ ~~(i) The Permittees shall provide to the Department, prior to each treatment event, a certification that wastes being treated are not capable of generating dioxins and furans.~~ ~~(ii) To remove the prohibition, the Permittees must submit to the Department a Class 3 permit modification request that includes a demonstration that the treatment of waste capable of generating dioxins or furans will be conducted in a manner that will ensure protection of human health and the environment.~~		
428	6.4	EPA recommends that LANL submit an alternative assessment report much sooner than eight years, since they have been operating both units under interim status for over 25 years.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
429	6.4	We request that the Permittees submit an open burn alternative treatment assessment report to the Department no later than the 2nd anniversary of the effective date of this Permit and implement an open burn alternative treatment no later than the 4th	See the Department's response regarding open burning in the document titled General Response	Yes

No.	Loc.	Comment	NMED Response	Δ
		anniversary.	to Comments.	
430	6.5.1	EPA recommends a condition be placed in the permit stating that if the baseline soil sampling report for the open burning units indicates grossly contaminated soils, then operation of the units may be suspended or modified as required.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
431	6.5.1	EPA recommends that LANL begin the soil sampling at the open burning units within 30 days of the permit becoming effective. The original draft permit has been "available" to the public for over a year and LANL does not need additional time to perform the soil sampling at both units. Also, EPA could not locate the soil sampling plan which establishes the baseline conditions for each open burning unit. However, EPA did locate the soil sampling locations under Figure 19. From reviewing the Figure, it appears that only 13 soil samples are required for characterizing the baseline conditions at both units. EPA recommends that LANL perform the multi-increment sampling (MIS) approach for establishing the baseline conditions at both open burning units (see EPA's comments from Laurie King dated January II, 2008). The MIS approach can be found in the Appendix of EPA SW-846, method 8330(b). However, EPA would recommend that for the analysis of the metals, semi-volatile organics, perchlorates, and dioxins/furans that the soil samples not be ground, as is required for explosives. Also, EPA believes that there is very little chance of finding volatile organics in the 0-2 inch soil interval from open burning, unless there are spills of the waste from the trays. EPA recommends that if volatile organic soil samples (discrete) are required, that the samples be taken near the trays or the unloading areas.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
432	6.5.1	The EPA Guidance for ecological risk assessment is: *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (EP A15401R-97 1006).*	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
433	6.5.1	The list of analytes for soil monitoring at the open burning treatment units includes constituents that are not representative of treatment operations at the permitted units. The revised draft Permit includes a prohibition on treatment of perchlorate at the open burning treatment units. Therefore, the Permittees should not have to monitor for this	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		constituent "to monitor for hazardous constituents release to soils during open burning treatment events" as is stated in the first paragraph of the section. Additionally, the revised draft Permit currently includes a prohibition on the treatment of wastes capable of generating dioxins/furans. In Comment NN, above, the Permittees objected to the prohibition. Therefore, based on the current prohibition, the Permittees should not have to monitor for this constituent. However, if the prohibition in Section 6.2(9) is removed, the Permittees do not object to soil monitoring requirements for dioxin/furan congeners. Additionally, volatile organic compounds and semi-volatile organic compounds are not constituents likely to be released to soils from the open burning treatment units. The deposition of these constituents is unlikely and analysis for metals will give a better indication of adverse impacts to the soil from the open burning treatment operations as they have the highest potential to impact the soil from open burning treatment operations. The Environmental Protection Agency submitted comments to the first draft permit indicating that a multi increment sampling approach is appropriate for this site. The Permittees support this suggestion and request reconsideration of the multi increment sampling approach and sampling locations to allow for this method. Suggested language change: Page 87, lines 4-6, modify the sentence to read as follows: The Permittees shall analyze the soil samples collected during each monitoring event for total metals and explosive compounds.~~, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), perchlorate, and dioxins/furans.~~		
	6.5.2	EPA recommends a larger map be included for the sampling locations at TA-16 open burning units.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
434	6.5.2	What analytical methods will be used for the surface water samples taken? Also, VOC analysis for storm water samples were omitted (from the prioritization scheme) from the permit condition for surface water. Maybe that was intentional, due to the low	See the Department's response regarding open burning in the document titled General Response	Yes

No.	Loc.	Comment	NMED Response	Δ
		probability of finding volatile organics from open burning. In addition, line 9 should be revised to read as follows: "Department within 90 days of completion of each sampling event".	to Comments.	
435	6.5.2	EPA recommends listing exactly what a "measurable storm event" means in the draft Hazardous Waste Permit, otherwise this may cause confusion on the permittees side.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
436	6.5.2	The list of analytes for surface water monitoring at the open burning treatment units includes analytes that are not representative of treatment operations at the permitted units and constituents that in practice are not reliably detected in storm water. Storm water monitoring for perchlorate is not warranted because it is prohibited from treatment at the permitted units. Storm water monitoring for dioxins/furan is not warranted because the treatment of wastes capable of generating dioxins/furans is prohibited. However, if the prohibition in Section 6.2(9) is removed, the Permittees will monitor for dioxin/furan congeners. Storm water should not be monitored for volatile organic compounds and semi-volatile organic compounds because it is difficult to collect a representative sample. Analysis for metals will give a better indication of the impacts on storm water from the open burning treatment operations as they have the highest potential to impact the soil from open burning treatment operations. Suggested language change: Page 88, lines 3-4 and 7-8, modify the section to read as follows: The samples shall be analyzed for total metals~~,~~ and explosive compounds.~~, volatile organic compounds, semi-volatile organic compounds, perchlorate, and dioxins/furans.~~ If the precipitation event produces insufficient sample volume to perform all analyses, the Permittees will prioritize the list of analytes based on the sample volume collected as follows: 1) explosive compounds; and 2) total metals;~~ 3) semi-volatile organic compounds; and 4) perchlorate.~~	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
437	Part 9	This part is inconsistent regarding there being a clean closure performance standard for regulated units. The section on regulated units, Section 9.1.1, references the closure	The Department agrees – Renewal Permit Section 9.2,	Yes

No.	Loc.	Comment	NMED Response	Δ
		performance standards.	*Closure Performance Standards*, has been revised to reference all permitted units at Section at Section 9.1 which includes Section 9.1.1, *Regulated Units*. The Renewal Permit is changed as follows: The Permittees shall meet the following closure performance standards for permitted units identified in ~~Permit Sections 9.1.2 and 9.1.3~~ Permit Section 9.1.	
438	9.1	Are all of the disposal units at MDA's G, H, and L considered RCRA regulated units or are only certain disposal units considered RCRA units? This should be clarified in the permit and clearly depicted on a Figure.	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
439	9.1	Based on the Permittees' comment on the designation of regulated units, above, the Permittees propose that Section 9.1 be revised to accurately identify the regulated units and to clarify that the outdoor units are either co-located with SWMUs and AOCs or not co-located with SWMUs and AOCs. Suggested language change: Page 93, lines 3-10, modify the section to read as follows: This Permit Part addresses the three categories of permitted units at the Facility. They are identified as follows: (1) regulated units (*i.e.*, ~~material disposal areas G, H, L~~ Area G Pit 29 and Shaft 124; Area H Shaft 9; and Area L Shafts 1, 13-17, 19-34 and Impoundments B and D);	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No

No.	Loc.	Comment	NMED Response	Δ
		(2) indoor units (structures and related equipment); and (3) outdoor units (asphalt or concrete pads and related structures and equipment): a. co-located with ~~a regulated unit~~ solid waste management units (SWMUs) and areas of concern (AOCs); b. not co-located with ~~a regulated unit~~ SWMUs and AOCs; and associated with an open burn unit.		
440	9.1.1	It appears that Section 9.2 does not mention the "regulated units" as needing to meet the closure performance standards but does mention the indoor and outdoor units; therefore, the reference to the closure performance standard in Permit Section 9.2 can be deleted.	The Department agrees in part – Renewal Permit Section 9.2, *Closure Performance Standards*, has been revised to reference all permitted units at Section at Section 9.1 which includes Section 9.1.1, *Regulated Units*. The Renewal Permit is changed as follows: The Permittees shall meet the following closure performance standards for permitted units identified in ~~Permit Sections 9.1.2 and 9.1.3~~ Permit Section 9.1.	Yes
441	9.1.1	The Permittees support the requirements of this section but object to the designation of regulated units in the revised draft Permit. *See* Comment on designation of regulated units, above. No suggested text change.	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
442	9.1.3	Based on the Permittees comment on the designation of regulated units, above, the Permittees propose that Section 9.1.3 be revised to be consistent with 40 CFR §264.110(c) and to clarify that the outdoor units are either co-located with SWMUs and	See the Department's response regarding regulated units/alternative requirements in the document titled General	No

No.	Loc.	Comment	NMED Response	Δ
		AOCs or not co-located with SWMUs and AOCs. Suggested language change: Page 94, lines 1-6, modify the section to read as follows: (1) asphalt or concrete storage pads co-located with ~~a regulated unit~~ SWMUS and AOCs (*i.e.* outdoor storage unit) (*e.g.*, TA-54 Area L); (2) asphalt storage pads not co-located with ~~a regulated unit~~ SWMUS and AOCs (*i.e.* outdoor storage unit) (*e.g.*, TA-50-69 Outdoor Unit); and concrete pads associated with an open burn unit (*i.e.* outdoor treatment units) (*e.g.* TA-16-388).	Response to Comments.	
443	9.2	If Permittees are unable to achieve any of the Clean Closure standards, we request early and often public participation under the expanded RCRA standard for timely, meaningful public participation.	Public participation at closure of a permitted unit is contemplated at newmerous Sections in the Renewal Permit. Sections 9.2.2.1 and 9.2.2.3 require a permit modification that will include public participation if clean closure is not attainable for a permitted unit. These Sections also require e-mail notification if the clean closure standard is not attained. Section 9.4.8 requires a permit modification to closure plans for specific occurances in accordance with 40 CFR Part 270. For a discussion regarding public participation during closure of a regulated unit see the Department's response regarding regulated units/alternative requirements in the document titled General Response to	No

No.	Loc.	Comment	NMED Response	Δ
			Comments. Permit Section 1.12 (Community Relations Plan) requires the Permittees develop a plan to keep interested members of the public informed of Permit-related activities, including closure and post-closure care, and permit modifications.	
444	9.2.1	EPA does not see the difference between the standards of "Clean Closure" and the standard under line 27, "Inability to Achieve Clean Closure Performance Standards". They appear to be the same standards.	The distinction between the two standards is that for clean closure the Permittees must demonstrate three things: 1) removal of all hazardous waste residues and hazardous constituents (not in environmental media), 2) acceptable risks based on a residential exposure scenario (the most conservative), and 3) that there is no potential to contaminate groundwater.	No
445	9.2.2.2	Based on the Permittees comment on the designation of regulated units, above, the Permittees propose that Section 9.2.2.2 be revised to clarify that alternative closure requirements may be used for outdoor units co-located with SWMUs and AOCs. Suggested language change: Page 95, lines 19-23, modify the section to read as follows: Outdoor Units Co-located with ~~Regulated Units~~ SWMUs and AOCs The Permittees may petition the Department for alternative closure requirements in accordance with 40 CFR §264.110(c) if the closure performance standards at Permit Sections 9.2.1(1) and (2) are not attainable for an outdoor unit (including associated indoor structures) co-located with ~~a regulated unit~~ SWMUs and AOCs (*see* Permit	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No

No.	Loc.	Comment	NMED Response	Δ
		Section 9.1.3(1)).		
446	9.2.2.3	Based on the Permittees comment on the designation of regulated units, above, the Permittees propose that Section 9.2.2.3 be revised to be consistent with 40 CFR §264.110(c) and the accurate identification of regulated units. Suggested language change: Page 95, lines 30-31, modify the sentence to read as follows: for an outdoor unit (including associated indoor structures) *not* located with ~~a regulated unit~~ SWMUs or AOCs (*see* Permit Section 9.1.3(2))…	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
447	9.3	EPA was under the impression that the Permit would address the closure and post-closure of all RCRA regulated units and that the Compliance Order on Consent would address the SWMUs and AOCs. However, the permit indicates in this section that the consent order is where the closure and post-closure care requirements for the Material Disposal Areas will be addressed. However, in Section 9.5 the permit requires a closure certification report for all permitted units. Please clarify. This section appears to be in conflict with Section 9.5. If Closure and Post-Closure care of the MDAs are to be addressed under the Order on Consent, then NMED should assure the same requirements (Closure and Post-Closure) in the Order as would be required in the permit.	See the Department's responses regarding regulated units/alternative requirements and the relationship between the Permit and the Consent Order in the document titled General Response to Comments.	No
448	9.3	The Permittees agree with the requirements of Section 9.3 as long as the regulated units are identified as set forth in the Permittees' comment on the designation of regulated units, above, and in the proposed changes to Section 9.1.1 and Table J-1. No suggested text change.	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
449	9.4.6.2	This section requires the Permittees to notify NMED at least 60 days prior to conducting a structural assessment. However, Attachment G requires the Permittees to make notification of closure at least 45 days before the Permittees begin closure, and to make notice of the Permittees intent to conduct a structural assessment at least 20 days before final receipt of waste. The notification requirement in this section would require the Permittees to notify NMED of the intent to conduct a structural assessment before they notify NMED of the closure of a unit.	The Department concurs the requirement is confusing. The Renewal Permit is changed to reflect notification of the structural assessment shall be at the same time as notification of closure.	Yes

No.	Loc.	Comment	NMED Response	Δ
		The Permittees suggest that the permit requirement be changed so that the notification of the structural assessment could come at the same time as the notification for closure at 45 days prior to beginning closure activities. The structural assessment must be conducted prior to beginning decontamination activities but after all waste has been removed from the unit, therefore, it would be beneficial to plan this at the time of notification for closure. This section provides that the Permittees "shall begin closure of a permitted unit no later than 90 days after the date on which the unit receives the known final volume of hazardous waste," and cites 40 CFR §113(a) as authority for the requirement. 40 CFR does not address when a Permittee shall begin closure, rather it requires that a Permittee treat, remove from the unit or facility, or dispose on-site, all hazardous wastes in accordance with the approved closure plan within 90 days. Attachment G contains the details of closure activities, therefore Permittees suggest that 9.4.1 refer to Attachment G. Suggested language change: Page 99, lines 31-33, modify sentence to read as follows: The Permittees shall notify the Department of the closure and the structural assessment at the same time, that is, 45 days prior to initiating closure. ~~at least 60 days prior to conducting the assessment to provide the Department the opportunity to participate in the unit's physical condition review.~~ The Permittees shall remove all hazardous wastes from a permitted unit~~begin closure of a permitted unit~~ no later than 90 days after the date on which the unit receives the known final volume of hazardous waste or, if there is a reasonable possibility that the permitted unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes, in accordance with 40 CFR §264.113(a).	The Renewal Permit is changed as follows: ~~The structural assessment is an assessment of the unit's physical condition. The Permittees shall notify the Department at least 60 days prior to conducting the assessment to provide the Department the opportunity to participate in the unit's physical condition review.~~ The structural assessment is an assessment of a unit's physical condition and shall occur within ten days of the completed removal or treatment of all waste from the permitted unit (*see* 40 CFR 270.32(b)). The Permittees shall notify the Department at least 30 days prior to the scheduled assessment so the Department may have the opportunity to participate in the assessment. ~~The Permittees shall begin closure of a permitted unit no later than 90 days after the date on which the unit receives the known final volume of hazardous waste or, if there is a reasonable possibility that the permitted unit~~	

No.	Loc.	Comment	NMED Response	Δ
			~~will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes, in accordance with 40 CFR § 264.113(a).~~ The beginning of closure is marked by initiating removal of waste from a permitted unit for the purpose of closure. In accordance with 40 CFR 264.112(d)(2), incorporated herein by reference, the date when the Permittees begin closure shall be no later than 30 days after the date on which a permitted unit receives the known final volume of hazardous wastes, or if there is a reasonable possibility that the permitted unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes. In accordance with 40 CFR § 264.113(a), within 90 days after receiving the permitted unit's final volume of hazardous waste, the Permittees shall remove or treat, as applicable, in accordance with the approved closure plan, all hazardous waste	

No.	Loc.	Comment	NMED Response	Δ
			from a permitted unit.	
450	9.4.7.1	The phrase "hazardous constituents" is defined differently at Section 9.4.7.1 (page 100, line 20) compared to the definition at Permit Section 1.8 (page 17, line 13). Please revise.	The Department concurs. Section 9.4.7.1 is changed to reference the definition in Permit Section 1.8. The Renewal Permit is changed as follows: ~~The list shall include all hazardous constituents listed within Appendix VIII of 40 CFR Part 261 and within Appendix IX of 40 CFR Part 264.~~ The list shall include all hazardous constituents as defined in Permit Section 1.8.	Yes
451	9.4.7.1	This references 9.4.7.1.ii(c) which does not exist. Please revise.	The Department concurs. The revision has been made to the Renewal Permit.	Yes
452	9.4.7.1.ii.a	EPA is not sure what is meant by "One sample at all secondary containment areas". Under line 9 in the same section, there is a requirement for "1 sample for every 900 square feet under the pad". Is the sample to be taken underneath the curb or wall of the storage unit? Please clarify in the permit.	The Department disagrees – the closure plans in Renewal Permit Attachment G conform to the language in Part 9 and are approved by the Department.	No
453	9.4.7.1.ii.b	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the references to Attachment G figures within numbers 2 and 3 as follows: • Line 22 should change from “Figures G.2-1 and G.3-1” to “Figures G.2-2 and G.3-1”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		• Line 24 should change from "Figures G.2-1 and G.3-1" to "Figure G.2-1".		
454	9.5	The Permittees request the deletion of the reference to financial assurance requirements. *See* Permittees' comment on financial assurance requirements, above. Suggested language change: Page 105, lines 4-6, delete the following: ~~Documentation supporting the independent registered professional engineer's certification must be furnished to the Department before the Permittees are released from the financial assurance requirements for closure under 40 CFR §264.143.~~	See the Department's responses regarding financial assurance in the document titled General Response to Comments.	No
455	10.1.2	The Permittees agree with the requirements of Section 10.1.2 as long as the regulated units are identified as set forth in the Permittees' comment on the designation of regulated units, above, and in the proposed changes to Section 9.1.1 and Table J-1. No suggested text change.	See the Department's responses regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
456	Part 11	WSAR is inadequate and defective according to NAS and EPA Kerr Laboratories. Well monitoring at LANA is not in compliance with requirements or 40 CFR 264.90 thru 100. POC requirements are not met.	See the Department's responses regarding regulated units/alternative requirements and groundwater protection in the document titled General Response to Comments.	No
457	11.1	The Permittees agree with the statement made in the section concerning the corrective action requirements under the Consent Order. However, as discussed in the Permittees' comments on the designation of regulated units and the financial assurance requirements, above, the Permittees believe that certain requirements in the revised draft Permit do constitute a change to the Consent Order. No suggested text change.	Comment noted. See the Department's responses regarding regulated units/alternative requirements and financial assurance in the document titled General Response to Comments.	No

No.	Loc.	Comment	NMED Response	Δ
458	11.2	The Permittees object to this section to the extent it purports to state the exceptions identified in the Consent Order. This language is inconsistent with the language in the Consent Order, appears to substantively change the meaning of the language in the Consent Order, and therefore directly conflicts with the Consent Order. This section must incorporate the Consent Order language by reference or include it verbatim. Section III.W.1 of the Consent Order identifies the four items which will be addressed in the Permit rather than the Consent Order, and states that: The Department has determined that all corrective action for releases of hazardous waste or hazardous constituents at the Facility, required by sections 3004(u) and (v) of RCRA, 42 U.S.C. §§ 6924(u) and (v), and sections 74-4-4(A)(5)(h) and (i) and 74-4-4.2(B) of the HWA, shall be conducted solely under this Consent Order and not under the current or any future Hazardous Waste Facility Permit ("Permit"), with the exception of … four items which will be addressed in the Permit and not in this Consent Order: Suggested language change: Page 111, lines 14-23, substitute the following for the language in the revised draft Permit: (1) new releases of hazardous waste or hazardous constituents from operating units at the Facility; (2) the closure or post-closure care requirements of 20.4.1.500 NMAC (incorporating 40 CFR Part 264, Subpart G), as they apply to operating units at the Facility; (3) implementation of the controls, including long-term monitoring, for any SWMU on the Permit's Corrective Action Complete with Controls list [Table K-2 in the draft permit]; and (4) any releases of hazardous waste or hazardous constituents that occur after the date on which the Consent Order terminates.	The Permittees are inspecific in this comment as to precisely why the language at Permit Section 11.2 "appears to substantively change the meaning of the language in the Consent Order, and therefore directly conflicts with the Consent Order." The Department believes that the Permittees objection is to the substitution of the term "hazardous waste management units" for the term "operating units." With regard to that substitution, the Department incorporates the term *hazardous waste management unit* because it is defined in the regulations at 40 CFR § 260.10 and is used throughout the permit, unlike the term *operting unit*. In drafting the Consent Order the Department meant the term *operating unit* to have the definition at § 260.10 so considers the Renewal Permit language an improvement. See the Department's response regarding the relationship between the Permit and the Consent Order in the document titled General Response to Comments.	No

No.	Loc.	Comment	NMED Response	Δ
459	11.2.1	Section 11.2.1 identifies SWMUs and AOCs. The title should be changed for clarification and the reference to Table J-1 should be deleted. Suggested language change: Page 112, line 1, modify the title to read as follows: 11.2.1 Identification of SWMUs and AOCs ~~Requiring Corrective Action.~~ Delete lines 13-15: ~~Attachment J, Table J-1 (*Active Portion of the Facility*) includes lists of hazardous waste management units at the Facility and their status (*e.g.*, interim status, permitted operating, closed) of each unit.~~	The Department disagrees.	No
460	11.3.1	EPA recommends that the Interim Facility Wide Groundwater Monitoring Plan be attached to the permit unless there is a public comment period under the Consent Order where the public can comment on this plan.	The Interim Facility Wide Groundwater Monitoring Plan (IFGMP) is updated each year. If IFGMP were attached to the Permit, then each annual update of the IFGMP would require a Permit modification, something the Department wishes to avoid. The public will have an opportunity to comment on the appropriateness of groundwater monitoring for specific hazardous waste management units when a permit modification is done to close those units.	No
461	11.3.1	Page 112, line 18. The Permittees agree with the requirements of Section 11.3.1 as long as the regulated units are identified as set forth in the Permittees' comment on the designation of regulated units, above, and in the proposed changes to Section 9.1.1 and Table J-1. No suggested text change.	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
462	11.3.1	Ground water monitoring and installation of wells is another issue that is being driven by the Consent Order and in a separate agreement between NMED and LANL. If the alternative closure approach is used, then, other than mentioning that the monitoring	See the Department's responses regarding regulated units/alternative requirements, the	No

No.	Loc.	Comment	NMED Response	Δ
		system being developed and implemented under separate agreements at this point and will be rolled into the post closure care permit when the Consent Order expires is excessive and serves no point. I propose that this section should be deleted from the permit as well.	relationship between the Permit and the Consent Order, and groundwater protection in the document titled General Response to Comments.	
463	11.3.1.2	Page 114, line 24. The Permittees agree with the requirements of Section 11.3.1.2 as long as the regulated units are identified as set forth in the Permittees' comment on the designation of regulated units, above, and in the proposed changes to Section 9.1.1 and Table J-1. No suggested text change.	See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
464	11.4	Our position is that a human health target risk level of 10^{-6} should be used.	The Department disagrees - The risk level of 10^{-5} in the Renewal Permit is consistent with Department, New Mexico Water Quality Control Commission, and New Mexico's Environmental Improvement Board's policy. NM's groundwater quality standards are based on the same risk level. The Department feels that the Renewal Permit is not the appropriate mechanism to alter that risk level. Furthermore, the target risk level in the Renewal Permit falls within the U.S. EPA's range of acceptable levels. EPA discusses what that agency considers appropriate risk levels in a March 16, 1998 memorandum titled *Risk-Based Clean Closure*. In that memo EPA states "EPA	No

No.	Loc.	Comment	NMED Response	Δ
			generally considers protective media cleanup standards for human health to mean constituents concentrations that result in the total residual risk from any medium to an individual exposed over a lifetime falling within a range from 10^{-4} to 10^{-6}, with the cumulative carcinogenic risk not to exceed 10^{-4} and a preference for cleanup standards at the more protective end of the risk range."	
465	11.4.2.1	Soil cleanup levels are to be based on residential and industrial land use. This pre-judges the field situation. Contamination on steep canyon walls and other similar situations should not be evaluated for residential or industrial scenarios because the likelihood of the land use for these scenarios is remote to none. To set the cleanup goal at such a value does little to nothing to reduce long-term risk to the public and ensures considerable funds will be spent with no commensurate gain. In fact the total risk to the public may be higher because of the risks incurred in implementing mitigating measures. It is recommended on line 28 of page 117 that "residential and industrial land use" be deleted and substituted with "a credible land use scenario."	Currently, legislation has not been passed that provides the Department with authority to enforce land use controls. In the absence of such legislation, the Department uses the default cleanup scenario for residential land use for sites subject to RCRA regulation. With the exception of land that is slated for transfer, the Permittees are allowed to use less stringent cleanup levels at sites, which will result in controls being imposed on the sites under the Renewal Permit. If the land use subject to controls changes or the land is transferred to another owner, not subject to the Permit, then the Permittee must conduct further corrective action to achieve residential cleanup levels.	No
466	11.4.2.1	Our position is that a human health target risk level of 10^{-6} should be used.	See the Department's response at	No

No.	Loc.	Comment	NMED Response	Δ
			Permit Section 11.4 above.	
467	11.4.2.1	The revised draft Permit references soil-screening levels for residential and industrial land use, but does not include soil-screening levels for construction workers. NMED's *Technical Background Document for Development of Soil Screening Levels (Rev. 5.00)*, Section 2.3 Non-Residential Land Uses separates industrial and construction worker. Suggested language change: Page 117, line 28, modify the sentence to read as follows: residential, industrial and construction worker land use.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
468	11.4.2.1	The revised draft Permit states "The Department may determine that a dilution attenuation factor of 1, as calculated using Department approved methods, for contaminated soils is appropriate to achieve clean closure, at sites where migration of contaminants through the soil column to groundwater has occurred or when the Department determines that the potential exists for the migration of contaminants through the soil column to groundwater." The sentence is in conflict with NMED's *Technical Background Document for Development of Soil Screening Levels (Rev. 5.00)*, Section 4.4 Dilution Attenuation Factor. This Section states that "A DAF of 1 implies no reduction in contaminant concentration occurs." And "NMED believes that a DAF of 20 for a 0.5 acre source area is protective of groundwater in New Mexico. If the default DAF is not representative of conditions at a specific site, then it is appropriate to calculate a site-specific DAF based upon available site data." Use of a dilution attenuation factor soil screening level (DAF SSL) is not applicable or appropriate. Furthermore, if as stated above, migration of contaminants to groundwater has occurred, the DAF SSLs are no longer appropriate. The Department-approved methods for calculating DAF soil cleanup levels incorporate a number of conservative assumptions that are very favorable for migration of contamination from soil to groundwater, and are not representative of LANL. If the Permittees must use DAF SSLs, even a DAF of 20 is too low given the physical conditions at most LANL sites. Specifically, the methods described in the Department's background document assume an infinite source of contamination and a uniform contaminant distribution from the surface to the water table. These conditions are not appropriate for any site where the vertical extent of contamination is bounded in the	Permit Section 11.4.2.1 has been modified to reference a DAF of 1 or greater and to state that DAF "may apply" rather than to state that DAF "is applied" at sites where the migration of contaminants through the soil column to groundwater has occurred or has the potential to occur. The Renewal Permit has been changed as follow: If the potential for migration to groundwater is applicable for a site, the Department may determine that a dilution attenuation factor (DAF) of one or greater, as calculated using the Department-approved methods, for contaminated soils is appropriate to achieve clean closure. This approach may apply at sites where the migration	Yes

No.	Loc.	Comment	NMED Response	Δ
		vadose zone, which is the case at almost all sites investigated at LANL so far. The methods also assume a receptor well (point of exposure) at the down gradient edge of the source, which is inappropriate for most locations at LANL. Further the methods presented in the Technical Background document use an infiltration rate of 0.13 m/yr, which may be two orders of magnitude higher than the actual infiltration rate at most mesa top locations at LANL. The Permittees believe that if DAF SSLs must be included, they should be calculated using a DAF appropriate for the physical conditions at LANL sites. The assumptions and calculations used would be submitted to the Department for their approval. Suggested language change: Page 117, lines 28-33, replace the sentence with the following text: The Permittees shall evaluate the soil contamination and its potential to migrate to groundwater. DAF SSLs (calculated according to Department methods) that reflect subsurface conditions at the site may be used as part of this evaluation.	of contaminants through the soil column to groundwater has occurred or when the Department determines that the potential exists for migration of contaminants through the soil column to groundwater.	
469	11.4.2.1	Maximum concentration and soil saturation concentration values are not included in NMED Version 5 and the current EPA RSL Table. In addition, further in the sentence, EPA Region VI HHMSL should be replaced with EPA RSL. Suggested language change: Page 117, line 39 to page 118, line 1, modify the sentence to read as follows: …the soil cleanup level shall be established using the most recent version of the EPA RSL for residential and industrial soil compounds designated as "n" (non-carcinogen effects) ~~"max (maximum concentration) and "sat" soil saturation concentration),~~ or ten times the EPA ~~Region VI HHMSSL~~ RSL for compounds designated "c" (carcinogen effects).	Permit Section 11.4.2.1 has been modified to remove the reference to "max" and "sat" and to change the reference EPA Region VI HHMSSL to RSL. The Renewal Permit has been changed as follows: If a Department soil screening level has not been established for a substance for which toxicological information is published, the soil cleanup level shall be established using the most recent version of the EPA RSL for residential and industrial soil for compounds designated as "n" (non-carcinogen effects)	Yes

No.	Loc.	Comment	NMED Response	Δ
			~~"max (maximum concentration) and "sat" soil saturation concentration),~~or ten times the EPA RSL ~~Region VI HHMSSL~~ for compounds designated "c" (carcinogen effects).	
470	11.4.2.1	The revised draft Permit lists specific types of land use in parentheses, but does not include the "construction worker" scenario. NMED's *Technical Background Document for Development of Soil Screening Levels (Rev. 5.00)*, Section 2.3 Non-Residential Land Uses separates industrial and construction worker. Suggested language change: Page 118, line 9, modify the sentence to read as follows: …(*e.g.*, residential, recreational, industrial, construction).	Permit Section 11.4.2.1 has been modified to add construction worker to the list of cited examples related to future land use. The Renewal Permit has been changed as follows: If the current and reasonably foreseeable future land use is one for which the Department has not established soil screening levels, the Permittees may propose cleanup levels to the Department based on a risk assessment and a target excess cancer risk level of 10^{-5} for carcinogenic substances or an HI of 1.0, based on current and reasonably foreseeable future land use (*e.g.*, residential, recreational, industrial, construction worker).	Yes
471	11.5	LANL's *Screening Level Ecological Risk Assessment Methods* has been revised to *Screening Level Ecological Risk Assessment Methods Revision 2* (LA-UR-04-8246). Suggested language change: Page 118, Lines 24-30, reference the current version:	Permit Section 11.5 has been modified to replace references to specific document dates and LANL reference numbers with	Yes

No.	Loc.	Comment	NMED Response	Δ
		Screening Level Ecological Risk Assessment Methods Rev. 2 (LA-UR-04-8246).	the term "as updated." The Renewal Permit has been changed as follows: Screening for ecological risk shall be conducted using the LANL Ecological Screening Levels (ESLs), which are included in LANL's *Screening Level Ecological Risk Assessment Methods*, (~~LA-UR-99-1404 and~~ as updated and approved by the Department). In the absence of ESLs, the Permittees may use U.S. EPA's ECO-SSLs with the Department approval. If the LANL's ESL database does not contain a screening value for the receptor or contaminant, the Permittees shall derive a screening level using the methodology in the Department's *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment* (as updated ~~March 2008~~) or in LANL's *Screening Level Ecological Risk Assessment Methods* ~~(LA-UR-99-1404)~~ . Ecological risk at each site shall be evaluated in a manner consistent with the Department's *Guidance for Assessing*	

No.	Loc.	Comment	NMED Response	Δ
			Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment (as updated ~~March 2008~~) *and, if appropriate, Assessing Ecological Risks Posed by Radionuclides: Screening-Level Radioecological Risk Assessment* (as updated ~~April 2000~~).	
472	11.5	The cite to the radionuclide reference document is outside of the scope of the Permit, which does not regulate radionuclides. Suggested language change: Page 118, lines 33-34, delete the following reference: ~~*Assessing Ecological Risks Posed by Radionuclides: Screening-Level Radioecological Risk Assessment* (April 2000).~~	The cited risk guidance document (*Assessing Ecological Risks Posed by Radionuclides: Screening Level Radioecological Risk Assessment*) is a Department guidance document. The Permittees are required to assess cumulative risk, which includes all contaminants including radionuclides that are present at a site.	No
473	11.7.1	This section clearly states the requirement for long-term maintenance and monitoring for SWMUs undergoing corrective action under the Permit. It also clearly defines the process by which the monitoring and maintenance plan is developed, approved, and enforced. However, the section should be consistent with the Consent Order, and so must clearly distinguish the process applied to SWMUs and AOCs subject to corrective action under the Consent Order; for those units, the long term monitoring and maintenance requirements are established solely under the Consent Order. Suggested language change: Page 120, insert the following at line 10 after "measures": For SWMUS and AOCs subject to corrective action under the Consent Order, the long-term monitoring and maintenance plan shall include the controls identified in the Certificate of Completion issued by the Department pursuant to section VII.E.6.b of the Consent Order. Pursuant to Section III.W.3.b of the Consent Order, no additional controls will be imposed by this permit, but controls identified in the	Consent Order Section III.W.1 states that implementation of controls, including long-term monitoring, will be addressed under the Permit. The Certificate of Completion simply states that a site qualifies for Corrective Action Complete with or without controls. The Certificate of Completion does not constitute a Permit modification to change the status of a site, which requires a Class 3 Permit Modification. Controls, if required are implemented under the Permit once the status of such a site is	No

No.	Loc.	Comment	NMED Response	Δ
		Certificate of Completion are enforceable under this Permit. Upon approval, such plans shall be included in Attachment O (*Long-term Monitoring and Maintenance Plans*).	changed from Corrective Action Required (Table K-1) to Corrective Action Complete with Controls I (Table K-2).	
474	11.10.4	The organization of the paragraph is not sequential. The paragraph should be organized to reflect the order of processes the Permittees will perform so it is clear what the actual sequence of work is. Furthermore, combining the Site-Specific Human Health Risk Assessment and the Site-Specific Ecological Risk Assessment (Section 11.10.5) and the related work plans and reports that go with these assessments into one Risk Assessment Report including both human health and ecological assessments is current practice and is efficient. Suggested language change: Page 156, lines 12-20, rearrange the paragraph and combine Sections 11.10.4 and 11.10.5 Site Specific Ecological Risk Assessment Methods. Modify the section to read as follows: Should the Permittees be unable to meet the cleanup levels in Permit Section 11.4.2, they shall conduct a Site-Specific Risk Assessment, that addresses both human health and ecological risk assessments, as appropriate, in accordance with current and acceptable EPA, Regional EPA, and Department guidance and methodology (as updated). The Permittees shall submit to the Department for its review and approval a work plan that includes, at a minimum, the site-specific exposure assumptions and any additional sampling needed to support the risk assessment. The Permittees shall prepare a Risk Assessment Report, which addresses both human health and ecological risk assessments, as appropriate, in support of corrective action, and, if necessary, for closure in accordance with Permit Part 9.	Permit Section 11.10.4 has been modified to move the first sentence to the end of the paragraph. The Renewal Permit has been changed as follows: ~~The Permittees shall prepare a Human Health Risk Assessment Report in support of corrective action, and, if necessary, for closure in accordance with Permit Part 9~~. Should the Permittees be unable to meet the cleanup levels in Permit Section 11.4, they shall conduct a site-specific risk assessment in accordance with current and acceptable EPA, Regional EPA, and Department guidance and methodology (as updated). If the Department determines that a human health risk assessment work plan is necessary, the Permittees shall submit to the Department for its review and approval a workplan that includes, at a minimum, the site-specific exposure assumptions and any additional	Yes

No.	Loc.	Comment	NMED Response	Δ
			sampling needed to support the risk assessment. The Permittees shall prepare a Human Health Risk Assessment Report in support of corrective action, and, if necessary, for closure in accordance with Permit Part 9.	
475	11.10.4.1.ii	The last two sentences as drafted are unclear and do not define a Statement of Work. It is unclear what the comparison would entail and what the consequences would be. Also, there is no reference to the specific EPA methodology for handling non-detects and replicates in the risk assessment. The permit condition is ambiguous and unclear. The last two sentences of the Section should be deleted. If the sentences are not deleted, a reference to the EPA methodology for handling non-detects and replicates should be included. Suggested language change: Page 157, Lines 14-19, modify the section as follows: The risk assessment shall include an evaluation of analytical data and usability of the data in the assessment. Data validation shall be conducted in accordance with current EPA guidelines. ~~The evaluation of data shall also include a comparison of detection limits with appropriate and current risk-based screening levels. Current EPA methodology for handling non-detects and replicates in the risk assessment shall be applied.~~	The last sentence of Permit Section 11.10.4.1.ii has been deleted and the following text has been added to the preceding sentence, "….if MDLs are inconsistent and do not achieve the requirements of Permit Section 11.10.3 (Chemical Analysis)." The Renewal Permit has been changed as follows: The risk assessment shall include an evaluation of analytical data and the usability of the data in the assessment. Data validation shall be conducted in accordance with current EPA guidelines. The evaluation of data shall also include a comparison of detection limits with appropriate and current risk-based screening levels, if MDLs are inconsistent and do not achieve the requirements of Permit Section 11.10.3 (Chemical Analyses)	Yes

No.	Loc.	Comment	NMED Response	Δ
			~~Current EPA methodology for handling non-detects and replicates in the risk assessment shall be applied.~~.	
476	11.10.4.1.iii	COPCs are initially identified in Section 11.4 in conjunction with the comparison to soil screening levels. The COPCs are carried forward from Section 11.4.2 to Section 11.10.4 if the Permittees are unable to meet the cleanup levels in Permit Section 11.4.2. Therefore, this discussion of Constituents of Potential Concern should be inserted in 11.4 as 11.4.1. Suggested language change: Move Section 11.10.4.1.iii, page 157, lines 20-34 to page 158, to Section 11.4.1.	Permit Section 11.4 addresses cleanup levels. Permit Section 11.10 addresses risk assessment procedures; therefore, the text of Permit Section 11.10.4.1.iii is in the appropriate permit section.	No
477	11.10.4.1.iii	No. 4 of the inorganic chemical site attribution analysis indicates that maximum detected concentration is compared to upper tolerance limit (UTL), but the Permittees currently compare the maximum concentration, including detection limits. So if the maximum is a non-detect, the Permittees will still compare it to the UTL, because the Permittees believe this is more protective. Suggested language change: Page 158, lines 1 and 2, in addition to moving this Section to 11.4.1, modify the sentence as follows: (4) comparison of maximum ~~detected~~ site concentrations to a background reference value (*e.g.* upper tolerance limit, UTL)	The Department concurs. The word "detected" has been deleted from Item 4 in Permit Section 11.10.4.1.iii.	Yes
478	11.10.4.1.iii	An alternative should be included in the event that sample size is not sufficient to perform statistical analysis. Suggested language change: Page 158, lines 3-5, in addition to moving this Section to 11.4.1, add the following this sentence to the end of number (5): If the sampling size is not sufficient to perform statistical analysis, a comparison of the maximum site concentration to the maximum background concentration shall be	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		used;		
479	11.10.4.1.iii	The evaluation of essential nutrients does not necessarily include comparison to recommended daily allowances. This comparison is only done if the Permittees cannot eliminate the essential nutrient based on comparisons to the background. Currently the Permittees evaluate essential nutrients if they are not eliminated by UTL or statistics, using frequency detected above background and how much above background per EPA RAGS. Suggested language change: Page 158, line 10, in addition to moving this Section to 11.4.1, modify the sentence as follows: (8) evaluate essential nutrients ~~and compare to recommended daily allowances and/or upper intake limits.~~ by frequency detected above background and by how much above background per EPA RAGS. If the nutrients cannot be eliminated by this comparison the Permittees shall compare them to recommended daily allowances or upper intake limits.	The Department disagrees. The evaluation of essential nutrients referenced in Permit Section 11.10.4.1.iii is in reference to the tiered approach to assessment of inorganics concentrations relative to background concentrations, not as they relate to calculating risk.	No
480	11.10.4.1.iv	The ProUCL software that is used as an example of EPA and/or Department accepted guidance and methodologies does not always recommend using 95% estimate of the upper confidence limit (95% UCL). Sometimes a 97.5% or 99% UCL is recommended. The Permittees believe that the percentage of UCL should be consistent with what ProUCL recommends if the software is to be used to calculate EPCs. Suggested language change: Page 158, lines 17 and18, add the following sentence: The Permittees shall use the 95% UCL or greater dependant upon what the EPA ProUCL software recommends.	Permit Section 11.10.4.1.iv has been modified to reference an upper confidence limit (UCL) of 95% "or greater" instead of a 95% UCL. This section has also been modified to state that acute exposures must be evaluated "if conditions are identified" where there is the potential for acute exposures. The Renewal Permit has been changed as follows: The Permittees shall determine exposure point concentrations (EPCs) that are representative of the concentrations of chemicals in each given medium to which a receptor may be exposed.	Yes

No.	Loc.	Comment	NMED Response	Δ
			Current EPA methodology for handling non-detects and replicates in the risk assessment shall be applied. EPA recommends a 95% or greater estimate of the upper confidence limit (UCL ≥ 95%) on the arithmetic mean be used as an EPC for chronic exposures. If conditions are identified where ~~For~~ acute exposures must be evaluated, the maximum detected site concentration shall be used as the EPC.	
481	11.10.4.1.iv	There is no guidance from EPA or NMED on how to conduct an acute assessment. Furthermore, the soil screening levels are for chronic exposure not acute. This condition is ambiguous and should be deleted from the draft permit or the section should be revised to fully describe how to perform acute risk assessment. Suggested language change: Page 158, lines 18 and 19, delete the following: ~~For acute exposures, the maximum detected site concentration shall be used as the EPC.~~	See response to comment above.	No
482	11.10.4.1.iv	The Johnson and Ettinger model is used in determining residential indoor air concentrations not industrial. OSHA worker safety requirements are applicable for industrial environments. Suggested language change: Page 158, lines 24-30, modify the section as follows: EPA does not recommend estimating intakes for air inhalation pathway, but rather compares estimated volatile/particulate air concentrations adjusted for exposure frequencies, duration and time. For inhalation of volatiles/particulates from soil,	The Johnson and Ettinger Model is cited as an example of EPA and Department accepted approaches, not as a requirement.	No

No.	Loc.	Comment	NMED Response	Δ
		EPCs shall be determined using current EPA and/or Department methodology.~~, based upon volatilization factor or particulate emission factor. Indoor air concentrations shall be determined using EPA and Department accepted approaches, such as the EPA recommended Johnson and Ettinger model.~~ The Permittees shall evaluate the relevance of the vapor intrusion pathway. If there is a complete pathway, the Permittees shall assess this pathway using appropriate methodologies."		
483	11.10.4.1.vi	The context of the sentence "Cumulative effects for risk and hazard shall be determined" is unclear. In previous sections "cumulative" risk seems to mean "additive." Whereas, in this section, it appears that "cumulative" means from all sources or exposures (*i.e.* soil, air, water, and biota). Suggested language change: Page 159, line 4, Please provide a definition of the word "cumulative" as used in the context: "Cumulative effects for risk and hazard shall be determined."	The last sentence of Permit Section 11.10.4.1.vi, paragraph one has been modified to state "[c]umulative effects for risk and hazard for all media and pathways shall be determined"	Yes
484	11.10.5	Combining the Site-Specific Human Health Risk Assessment and the Site-Specific Ecological Risk Assessment (Section 11.10.5) and the related reports that go with these assessments into one Risk Assessment Report including both human health and ecological assessments is current practice and is efficient. Suggested language change: Page 159, Lines 14-22 See the comment on this subject in Section 11.10.4. Refer to Section 11.10.4 in the text of the draft permit.	Permit Section 11.10.5 has been modified to add the following sentence. "If the Department determines that an ecological risk assessment work plan is necessary, the Permittees shall submit to the Department for its review and approval a work plan that includes, at a minimum, the site-specific exposure assumptions and any additional sampling needed to support the risk assessment."	Yes
485	11.10.6.1	The Permittees object to the requirement to develop background data for surface water. The Permittees have developed background data sets for the Consent Order, which the Department accepted. These background data sets address soil, sediment, tuff, and groundwater, including springs. The current Department-approved background data set should meet the permit requirement to "determine an appropriate background data set" in section 11.10.6, line 24. In addition, the requirement to determine background data for surface water is ambiguous. The current background data set includes "springs," and	The first sentence of Section 11.10.6.1 has been changed to "…and determining whether metals are present in the subject media (*e.g.*, soil, groundwater, surface water, sediment) due to site activities." The Permit does not explicitly require developing background data	Yes

No.	Loc.	Comment	NMED Response	Δ
		the revised draft Permit omits any information on how a background data set for surface water could otherwise be determined. Suggested language change: Page 160, line 14, delete the words "surface water" from the first sentence of the Section: "...and determining whether metals are present in soil/groundwater/~~surface water~~ tuff/sediment due to site activities."	for surface water. The wording "surface water" in Section 11.10.6.1 is used as an example of a subject medium where metals might be present.	
486	11.10.6.1	Site attribution analysis is addressed by the revised draft Permit in Section 11.10.4.1iii. The Permittees have commented on that Section. Suggested language change: Page 160, Lines 18-24. Please see the comment on Section 11.10.4.1iii suggesting moving this text to Section 1.4.1.	The first sentence of Permit Section 11.10.6.1 has been modified to refer to "the subject media" and list soil, groundwater, surface water and sediment as examples. The Renewal Permit has been changed as follows: The 95% UTL for each metal shall be used as the background reference value for use in screening assessments and determining whether metals are present in the subject media (*e.g.*, soil, groundwater, surface water, sediment) due to site activities.	Yes
487	11.11.2.3	EPA recommends that mud rotary methods not be used at LANL due to the well documented problems identified over the past 5 years. Additives may be used in intervals above the target zone if telescoping casing constructions are used and the hole is adequately cleaned before drilling the final footage within the interval to be screened.	See the Department's response regarding groundwater protection in the document titled General Response to Comments.	No
488	Att. A	We request that Building 185, Technical Area 55, not be allowed to be permitted due to unresolved seismic inconsistencies. For instance, *Evaluation of potential seismic hazards from Holocene-age surface-rupturing faults at Building* 185, *Technical Area*	See the Department's response regarding seismic hazard in the document titled General Response to Comments.	No

No.	Loc.	Comment	NMED Response	Δ
		55, *Los Alamos National Laboratory (LA-DR 0904042)* states, *It is believed that the lineaments identified in aerial photographs near TA-55 reflect eroded fracture zones propagating upward from the subsurface trace ofthe Rendija Canyon fault.* (Pg.56), yet Gardner et at. (1999) tells us, *This study found that the Rendija Canyon fault, which is a single, simple down-to-the-west structure north of the Los Alamos townsite, splays to the southwest in a broad zone of deformation south of Los Alamos Canyon, through the Los Alamos County Landfill and TA3, and likely dies out just south of Two mile Canyon.* (Pg.53) If the Rendija Canyon fault dies out just south of Two-mile Canyon, which would be approx. 3000 ft to the west ofTA-55, how can it have also propagated fracture zones near TA-55?		
489	Att. A	The section numbers within Attachment A do not appear consistent. Each of the Technical Areas represented within the attachment should have its own major section. Suggested change realigns the sections for consistency. Suggested language change: Suggested changes are illustrated in a revised Table of Contents for Attachment A included with this document as Appendix 7.	The Department concurs. The proposed revised language has been added to the Renewal Permit.	Yes
490	A.1.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 13” to “Figure 12”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
491	A.1.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from ‘Figure 14” to “Figure 13”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
492	A.1.5	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 5" to "Figure 4".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
493	A.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the references to Attachment N within the section as follows: • Page 6, Line 38 should be changed from "Figure 15" to "Figure 16". • Page 7, Line 1 should be changed from 'Figure 16" to "Figure 17".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
494	A.2.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 19" to "Figure 20".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
495	A.2.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 20" to "Figure 21".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
496	A.2.3	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 6" to "Figure 5".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
497	A.3	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the first paragraph of the section from "Figure 21" to "Figure 22".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
498	A.3	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the first paragraph of the page from "Figure 5" to "Figure 6".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
499	A.3.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 22" to "Figure 23".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
500	A.3.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 22" to "Figure 23".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
501	A.4	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the references within the first paragraph of the section as follows: • Change "Figure 23" in Line 35 to "Figure 24". • Change "Figure 24" in Line 1 to "Figure 25".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
502	A.4	Administrative – Suggested text change corrects a typographical error. Suggested language change: Delete "A.6.1" at the end of the section.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
503	A.4.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Delete "and" between the words canopy and 216.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
504	A.4.1	Administrative – Suggested text change corrects a typographical error.	The Department concurs. The proposed language has been	Yes

No.	Loc.	Comment	NMED Response	Δ
		Suggested language change: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.	added to the Renewal Permit.	
505	A.4.1.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
506	A.4.1.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
507	A.4.1.3	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
508	A.4.1.4	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
509	A.4.1.5	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 25” to “Figure 26”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
510	A.4.1.6	Administrative – Suggested text change corrects a typographical error. Suggested language change:	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Change the reference to Attachment N within the section from "Figure 25" to "Figure 26".		
511	A.4.1.7	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 25" to "Figure 26".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
512	A.4.1.8	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 25" to "Figure 26".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
513	A.4.1.9	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 25" to "Figure 26".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
514	A.4.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 26" to "Figure 27".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
515	A.4.2.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 27" to 'Figure 28".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
516	A.4.2.1	Suggested deletion corrects an editorial error possibly created during the rearrangement of the section from the previous section. The concrete ring-wall that actually exists at the unit is described in the sentence before. There are no asphalt curbs within the unit. Suggested language change:	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Delete the sentence: "The interior floor perimeter of each dome is surrounded with a minimum 6-inch-wide asphalt curb."		
517	A.4.2.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the three references to Attachment N within the section from "Figure 28" to "Figure 29".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
518	A.4.2.3	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 29" to "Figure 30".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
519	A.4.2.4	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 30" to "Figure 31".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
520	A.4.2.4	Administrative – Suggested text change corrects a typographical error. Suggested language change: Add "and" between the words stock and empty within the first sentence of the page.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
521	A.4.3	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 31" to "Figure 32".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
522	A.4.3.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 31" to "Figure 32".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
523	A.4.3.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the two references to Attachment N within the section from "Figure 31" to "Figure 32".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
524	A.4.4	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 32" to "Figure 33".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
525	A.4.4.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 32" to "Figure 33".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
526	A.4.4.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 32" to "Figure 33".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
527	A.4.5	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 33" to "Figure 34".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
528	A.4.6	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 34" to "Figure 35".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
529	A.4.7	Administrative – Suggested text change corrects a typographical error.	The Department concurs. The proposed language has been	Yes

No.	Loc.	Comment	NMED Response	Δ
		Suggested language change: Change the reference to Attachment N within the section from “Figure 35” to “Figure 36”.	added to the Renewal Permit.	
530	A.5	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 36” to “Figure 37”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
531	A.5.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 36” to “Figure 37”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
532	A.5.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the two references to Attachment N within the section from “Figure 36” to “Figure 37”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
533	A.5.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure X” to “Figure 37”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
534	A.5.3	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figures 8, 9, and 10” to “Figures 7, 8, and 9”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
535	A.5.4	Suggested changes are editorial in nature and create greater consistency within the draft Permit. Changes bring Attachment A into alignment with descriptions in Attachment D. They add information as to the locations of fire alarm pull boxes, smoke detectors, and	The Department concurs – suggested changes do not alter the level of protectiveness of the	Yes

No.	Loc.	Comment	NMED Response	Δ
		evacuation buttons as well as additional information about communications while present at the TA-54, Area L and Area G permitted units. Suggested language change: Area L is equipped with an audible alarm system to alert personnel of a fire or the need to evacuate the area. ~~This~~ These alarms can be activated by pulling a fire alarm pull box or by pushing the evacuation alarm button. The~~se~~ fire alarm pull boxes are located in Dome 215 ~~alarms are located throughout Area L~~ and are connected to the Los Alamos ~~County~~ Fire Department (LA~~C~~FD) through the Facility's central alarm system at all times. Evacuation alarms are located adjacent to the fenceline crash gates and other locations in Area L (see Attachment D, Table D-1). In addition to the alarms there are numerous telephones located in and around the structures within Area L. These telephones ensure that personnel can contact on-site and Facility emergency personnel at all times. Many of these telephones also serve as emergency paging phones so that information can be announced throughout the area. Alphanumeric pagers are also distributed to workers at Area L. Employees can be notified of an emergency situation and appropriate response actions through the use of a text message sent on the emergency alpha-numeric pagers. The emergency paging system can be utilized to alert workers of an emergency situation as well as appropriate response actions. On page 26, lines 13-30, modify the text to read as follows: The alarms can be activated by pulling a fire alarm or by pushing the evacuation alarm button. Fire alarms~~,~~and evacuation alarms~~, and strobe lights~~ are in place at strategic locations to alert personnel of emergency conditions. The~~se~~ fire alarms are located throughout Area G and are connected to the LA~~C~~FD through the Facility's central alarm system at all times. Flame or smoke detection equipment is located within structures TA-54-226, TA-54-229, TA-54-230, TA-54-231, and TA-54-232. Security personnel and LAFD are notified upon activation of the flame or smoke detectors. ~~Personnel working in Area G also carry pagers, cellular telephones, or two-way radios. Emergency paging telephones are in place so that information can be announced throughout the area. This equipment ensures that personnel can contact on-site and Facility emergency personnel at all times. Windsocks are at strategic locations to indicate wind direction and strength. PPE and emergency equipment~~	nature of the emergency response procedures at the permitted units. The proposed language has been added to the Renewal Permit.	

No.	Loc.	Comment	NMED Response	Δ
		~~supplies are stored at various locations throughout Area G. In addition, essential information for emergency personnel is located at the main gate to Area G in the event of an emergency after normal working hours or if Area G personnel are unavailable. There are different types of monitoring equipment located at the Area G CSUs that are used to qualitatively and quantitatively evaluate airborne contaminants. Alarms and strobe lights warn personnel when airborne concentrations exceed preset limits.~~ Fire control equipment is located throughout Area G. This equipment includes ABC-rated or BC rated ~~, water and carbon dioxide~~ fire extinguishers, dry-chemical fire suppression systems, ~~fire blankets,~~ and several fire hydrants. Trained personnel can use the fire extinguishers ~~and fire blankets~~ to extinguish small, nonchemical fires. For larger fires, security personnel and the LA~~C~~FD are alerted. ~~Eyewash stations, showers, and other first aid and decontamination equipment are maintained at various locations within Area G.~~ Personnel working in Area G also carry alphanumeric pagers, cellular phones, or two-way radios. Emergency paging telephones are in place so that information can be announced throughout the area. This equipment ensures that personnel can contact on-site and Facility emergency personnel at all times. Windsocks are at strategic locations to indicate wind direction and strength. PPE and emergency equipment supplies are stored a various locations throughout Area G. There are different types of monitoring equipment located at the Area G CSUs that are used to qualitatively and quantitatively evaluate airborne contaminants. Alarms and strobe lights warn personnel when airborne concentrations exceed preset limits.		
536	A.6	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 37" to "Figure 38".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
537	A.6.1	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 38" to "Figure 40".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
538	A.6.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 39" to "Figure 42".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
539	A.6.3	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 40" to "Figure 41".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
540	A.6.4	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 41" to "Figure 43".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
541	A.6.5	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 42" to "Figure 44".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
542	A.6.6	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 44" to "Figure 45".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
543	A.6.7	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 45" to "Figure 46".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
544	A.6.8	Administrative – Suggested text change corrects a typographical error.	The Department concurs. The proposed language has been	Yes

No.	Loc.	Comment	NMED Response	Δ
		Suggested language change: Change the reference to Attachment N within the section from “Figure 46” to “Figure 47”.	added to the Renewal Permit.	
545	A.6.8.1	Administrative – Suggested deletion removes reference to a figure that is not included within the draft Permit. Suggested language change: Delete the sentence “Figure H-3 shows the dimensions of the evaporator glovebox tank component and its support structure.”	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
546	A.6.8.1	Administrative – Suggested deletion removes reference to a figure that is not included within the draft Permit. Suggested language change: Delete the sentence “Figures H-4 and H-5 provide a legend and a piping and instrumentation diagram for the evaporator glovebox tank and component.”	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
547	A.6.9	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 47” to “Figure 48”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
548	A.6.10	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from “Figure 11” to “Figure 10”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
549	A.6.8.1	These lines references figures (H-3, H-4, H-5) that do not exist. Please revise.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
550	A.5.2	Section A.5.2 references "Figure X" (page 24, line 27), which does not appear in the	The Department concurs. The reference has been changed in the	Yes

No.	Loc.	Comment	NMED Response	Δ
		Permit.	Renewal Permit.	
551	C.1.3.1	Administrative – Typographical Error Suggested language change: Change the reference to Section "C.3.2.3" to "C.3.2.4" in the final sentence of the section.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
552	C.2.2	The Permittees agree that there may be occasions when a comprehensive analysis for all constituents of a generated waste may be appropriate for waste characterization where there is no other information. However, the permit condition does not allow alternative options. The condition as written does not explain the terms "laboratory analysis" and "capable of measuring," making it difficult for the facility to understand how the condition will be enforced. The new permit condition precludes the use of process knowledge or other acceptable knowledge (see Section 3.1.1, Attachment C) to determine whether hazardous constituents are present or to be used to limit the constituents otherwise analyzed for. EPA's April 1994 guidance for waste analysis plans in permits supports the use of other waste information in addition to sampling and analysis for characterization (ECDIC-2002-011, OSWER 9938.4-03). Additionally, if a one-time analysis for all the potential hazardous constituents is conducted, subsequent analysis may be limited to only those identified in the initial sampling and analysis if no other waste generation process changes have occurred. The permit condition, as currently written, requires that all constituents must be analyzed at any time laboratory analysis is used as part of a hazardous waste characterization. Attachment C of the draft permit describes the use of laboratory analysis both as primary sampling and analysis (Section 3.1.2) where acceptable knowledge is insufficient for waste characterization and as additional characterization data, an allowable component of acceptable knowledge when appropriate (Section 3.1.1). Laboratory analysis supporting AK is often selective in terms of analytes measured. The proposed permit condition does not define which type of laboratory analysis is being considered. The use of the term "capable of measuring" in the condition is not sufficiently explained by the additional reference to SW-846 to resolve it's meaning for compliance purposes.	The Department agrees that the term "capable of measuring" may be ambigious so with the concurrence of the Permittees the following changes are made in the Renewal Permit to the following paragraph, When using laboratory analysis as part of a hazardous waste characterization pursuant to Attachment C (Waste Analysis Plan), Section C.3.1.2, the Permittees shall require the laboratory to report concentrations of all hazardous constituents listed at 40 CFR § 268.48, *Table UTS* that the analytical test method used is capable of measuring, as specified at the most recent version of the U.S. EPA's *Test Methods for Evaluating Solid Wastes* (*SW-846*). When performing this laboratory analysis the Permittees will not be required to perform sample preparation or determinative	Yes

No.	Loc.	Comment	NMED Response	Δ
		SW-846 contains numerous sources for determining whether the contained methods are appropriate for analytes of concern. Chapter Two of SW-846 specifies the determinative methods for analysis of specified analytes but individual methods can potentially be used for much wider ranges of analytes. For example, Method 8260B (gas chromatography/ mass spectrometry) of SW-846 is used to determine volatile organic compounds for waste characterization. The method contains a table listing those compounds that can be determined by the method using the contained procedures (Section 1.1) and this table is generally in agreement with Table 2-1 of Chapter Two. However, the method further states that it can be used to quantitate most volatile organic compounds that have boiling points below 200°C (Section 1.3). This would potentially add many analytes in Table UTS that are not specifically listed for the method in SW-846 Table 2-1 where the appropriateness of the analytical requirements (e.g., detection limits, reproducibility) are not known. Additionally, there are six potential sample preparation techniques for Method 8260B (Section 1.2), none of which are appropriate for all the potential analytes capable of being measured by the method. The proposed permit condition does not resolve the applicability of any of these factors in determining how compliance will be achieved. Suggested language change: Page 16, lines 30-32, delete the following: ~~The Permittees shall require the laboratory to report all constituents the laboratory method is capable of measuring as specified in the most recent version of the US EPA's Test Methods for Evaluating Solid Wastes (SW-846).~~	procedures other than those performed routinely for the target analytes.	
553	C.3.2.4	Suggested text change is consistent with operation of the unit and information presented in Attachment G.24. Suggested language change: Add "and corrosivity" to the sentence that reads "This waste stream typically exhibits the hazardous characteristics of toxic metals."	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
554	Table C-2	Suggested text changes resolve a discrepancy in the terminology for cresol and incorporate operational revisions previously submitted to NMED. In some cases, this is because the tables already include o-cresol, m-cresol, and p-cresol (the forms of cresol)	The Department concurs – the proposed changes make the Permit more accurate and no less protective. The changes resolve	Yes

No.	Loc.	Comment	NMED Response	Δ
		or the compound should not be included. Suggested language change: Revise the descriptions of Hazardous Constituents in the Waste Types as follows: Page 32, Spent Solvents, delete cresol from Potential Hazardous Waste Constituents and Potential Underlying Hazardous Constituents. Page 34, Contaminated Solid Wastes, delete cresol from Potential Hazardous Waste Constituents and Potential Underlying Hazardous Constituents. Page 36, Contaminated Non-Corrosive Aqueous and Non-Aqueous Solutions and Sludges, delete cresol from Potential Hazardous Waste Constituents and Potential Underlying Hazardous Constituents. Page 37, Unused/Off-Specification Commercial Chemical Products, delete cresol from Potential Hazardous Waste Constituents and Potential Underlying Hazardous Constituents. Page 37, Unused/Off-Specification Commercial Chemical Products, delete 1-dichlorobenzene from Potential Underlying Hazardous Constituents. Page 37, Unused/Off-Specification Commercial Chemical Products, add 1,2-dichloroethane to Potential Underlying Hazardous Constituents. Page 38, Gas Cylinder Waste, delete cresol from Potential Underlying Hazardous Constituents	terminology discrepancies and, in the case of Unused/Off-Specification Commercial Chemical Product and 1-Dichlorobenzene, limits the hazardous constituents that may be present in hazardous waste. The addition of 1,2-dichloroethane to the list of Potential Underlying Hazardous Constituents associated with Unused/Off-Specification Commercial Chemical Products simply reflects the fact that the table includes the associated waste code (D028) for the compound.	
555	Table C-6	Table C-6 should be revised in order to be consistent with the waste streams that may be treated at the Open Burn treatment units. Further discussion of the proposed changes to Table C-6 is found in Comment QQ in Part 2 of the Comments and revised Table C-6 is attached in Appendix 6. Suggested language change: Attachment C, page 59, replace Table C-6 in the revised draft Permit with Table C-6 in Appendix 6.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
556	Table C-6	The waste descriptions included in Table C-6 of the draft Permit do not coincide with the descriptions of waste treated by open burning in Section C.1.3.2. Suggested changes	See the Department's response regarding open burning in the	Yes

No.	Loc.	Comment	NMED Response	Δ
		bring the table into alignment with the descriptions in the waste analysis plan. Changes to the first row of the table coincide with the waste stream description for bulk solvent waste. The Permittees define this waste stream to only include HE and dimethyl sulfoxide, there would be no other Environmental Protection Agency Numbers other than D003 and D030. Changes to the second, fourth and fifth rows of the table add EPA Hazardous Waste Numbers from the table transmitted from the Permittees' permit application which have been omitted but are allowed for acceptance at the open burning treatment units as outlined in Attachment B of the draft Permit (*Part B Permit Application*). Additional changes in the description in the second row limit the acceptance of this waste stream. Deletion of the sixth row of the table is recommended because solvent in de minimus quantities is not itself a waste stream. Solvents may be accepted at the open burning treatment units as part of the other waste streams as recommended by the suggested changes. Suggested language change: Suggested changes are in Table C Appendix 6, revised -6.	document titled General Response to Comments.	
557	Table C-12	The waste descriptions included in Table C-12 of the draft Permit do not coincide with the descriptions of waste treated by open burning in Section C.1.3.2. Suggested changes bring the table into alignment with the descriptions in the waste analysis plan. Changes to the first row of the table coincide with the waste stream description for bulk solvent waste. The Permittees define this waste stream to only include HE and dimethyl sulfoxide, there would be no EPA Hazardous Waste Numbers other than D003 and D030. Recommend deleting "solvents" from the waste stream name to match the description in Section C.1.3.2. Delete the row "HE Commercial Chemical Products" as this is not a waste stream that will be accepted at the open burning treatment units. Change "Wet HE" to "HE Process Waste from Water Filtration" to match the	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>description in Section C.1.3.2.

Delete the row “HE-Contaminated Liquid Acids, Bases, and/or Inorganic Salt Solutions” as this is not a waste stream that will be accepted at the open burning treatment units.

Suggested language change:

Suggested changes in Appendix 6, revised are Table C-12.</td><td></td><td></td></tr>
<tr><td>558</td><td>Table C-13</td><td>Administrative –Table C-13 is all one row.

Suggested language change:

Include Table C-13 formatted as follows:

<table>
<tr><th colspan="4">Table C-13
Summary of Characterization Methods for
High Explosives (HE) Waste and HE-Contaminated Waste</th></tr>
<tr><th>Parameters</th><th>Method Numbers</th><th>Test Method</th><th>Rationale</th></tr>
<tr><td>HE in the Waste</td><td>SW-846
(Appropriate analytical method from the Method 8300 series)[a]</td><td>High Performance Liquid Chromatography or Acceptable Knowledge[b]

DX-2 Spot Test, DeTech, or other screening methods

Acceptable Knowledge[b]</td><td>Determine HE concentrations directly in homogeneous materials or by process information.

Determine if HE is present in the waste stream.

If all surfaces of heterogeneous waste cannot be directly tested or visually examined (e.g., debris or equipment) and the waste object was potentially contaminated with HE during its use.</td></tr>
</table>
[a] U.S. Environmental Protection Agency, 1986 and all approved updates, “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” *SW-846*.
[b] Acceptable knowledge is broadly defined as process knowledge, additional characterization data, and/or facility records of analysis, U.S. Environmental Protection Agency, 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual," *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.</td><td>See the Department’s response regarding open burning in the document titled General Response to Comments.</td><td>Yes</td></tr>
<tr><td>559</td><td>Table C-19</td><td>Suggested change requests the addition of EPA Hazardous Waste Numbers to the table to add clarity. These numbers are allowed for acceptance at the stabilization unit as outlined in Attachment B of the draft Permit (Part B Permit Application).

Suggested language change:

Add the Hazardous Waste Numbers D005, D010, and D011 and corresponding constituents and regulatory limits to the table.</td><td>The Department concurs – the proposed change makes the Permit more accurate and no less protective. Table C-19 is altered to reflect wastes stabilized to date and allowable waste codes as specified in Attachment B (Part A Permit Application).</td><td>Yes</td></tr>
<tr><td>560</td><td>Att. D</td><td>Suggested text changes have been included in a revised Attachment D, attached hereto in Appendix 7. All of the requested changes have been presented with editing marks to highlight changes made to the Attachment. Changes that have been made are</td><td>The Department concurs – the proposed change makes the Permit more accurate and no less</td><td>Yes</td></tr>
</table>

No.	Loc.	Comment	NMED Response	Δ
		administrative or editorial in nature and do not change procedures as presented within the Contingency Plan. Many changes update organizational names, change system references, or remove the names of specific entities to better reference the function of personnel that are mentioned within the plan. Other changes add clarity and edit the text within the attachment to better state the emergency response process. The Permittees will submit a permit modification request that reflects these changes to the Permittees' current LANL Hazardous Waste Facility Permit. The drafting of this permit modification is underway. Suggested language change: See Appendix 8 for suggested text changes.	protective.	
561	D.1.6.2	Administrative – Suggested text change corrects a typographical error. Suggested language change: Change the reference to Attachment N within the section from "Figure 48" to "Figure 49".	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
562	Att. E, Sections E.2.1, E.2.2, E.3.1, E.3.2, E.4.1, E.4.2, E.5.1, and E.5.2	Administrative – During the last permit modification change to the Inspection Record Form, the general information was expanded from Items 1-6 to Items 1-7. Suggested language change: Change "(Items 1-6)" to "(Items 1-7)" on list item 1 for each of these sections.	The Department concurs – the proposed change makes the Permit more accurate and no less protective.	Yes
563	E.5.1	Suggested change corrects a typographical error. Suggested language change: Add ")" to the end of the section title.	The Department concurs. The proposed symbol has been added to the Renewal Permit.	Yes
564	E.3.1	Suggested change is an editorial change that creates consistency between two sections of the Inspection Plan. The Permittees request that Section E.3.1 be made consistent with Section E.2.1 of the TA-55 portion of the Inspection Plan.	The Department disagrees – the inspection frequency for hazardous waste storage tanks	Yes

No.	Loc.	Comment	NMED Response	Δ
		Suggested language change: Change the sentence to “An operating day includes when mixed waste is added to or emptied from a tank.”	will be made consistent between Sections E.3.1 and E.2.1 of the TA-55 portion of the Inspection Plan, but Section E.2.1 is altered instead of Section E.3.1. Hazardous waste storage tanks are require at 40 CFR § 246.195 to be inspected each “operational day.” The Department interprets this to mean each day that waste is present in the storage tank. The Department can find no basis to limit inspections to when waste is added to or emptied from a tank. EPA’s September 2005 Introduction to Tanks (EPA530-K-05-018) clarifies that "each operating day" has been defined as "every day the tank is in operation (i.e., storing or treating hazardous waste) and not necessarily just on days the facility is open for business," implying that the term “operating” applies to the facility and not the tank.	
565	Att. E, TA-55 Section	Suggested change corrects a typographical error. Suggested language change: Within the second sentence of the Introduction, change “general inspection Section” to “General Inspection Section”.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
566	F.2.1	The suggested change is consistent with the changes suggested to Tables F.1 and F.2. In support of the scope of the Personnel Training Plan as stated in Section F.2, the Permittees understand that the requirements within Section F.2.1 pertain to "permitted unit hazardous/mixed waste workers, managers and supervisors of permitted unit hazardous/mixed waste workers, emergency responders, and uncontrolled area potential release site workers." The requirements within this section to train appropriate waste characterization personnel and personnel that operate radiography equipment or conduct visual examinations (VE) of waste contents do not belong within this section. Personnel receive on-the-job training for these activities, therefore, this discussion should be moved to Section F.2.3 *On-the-Job Training*. This type of training should not be considered a Facility-wide course. Not all personnel at all of the permitted units conduct these activities. Suggested language change: Page 5, move the following text to Section F.2.3 On-the-Job Training: The Permittees shall ensure that training concerning the use of waste characterization documentation is included in a Facility waste documentation course. This training shall be provided to appropriate personnel, and provide detailed instructions on how to complete forms for characterizing wastes. Only properly trained personnel may operate radiography equipment or conduct visual examinations (VE) of waste contents. Radiography and VE procedure operators shall receive formal and on-the-job training in project requirements, system operations and standards, safe operating practices, application techniques, specific waste-generating practices, packaging configurations, parameter estimation, and identification of prohibited items. The Permittees shall train and test operators before they are qualified for radiography operation and VE, and shall requalify operators at least every two years.	The Department concurs (in part) - The proposed change regarding the radiography and visual examination training makes the Permit more accurate and no less protective. Moving the that paragraph from Section F.2.1 (*Facility-Wide Courses*) to Section F.2.3 (*On-the-Job Training*) is appropriate because of the limited number of personnel requiring the training. Retaining the paragraph in its entirety preserves the protectiveness of the Permit. Table F-2 is altered to reflect the radiography and VE training. The proposed change regarding the waste characterization training paragraph has not been made. This general requirement belongs in Section F.2.1 (*Facility-Wide Courses*) and can be fulfilled by attending the course listed in Table F-1 (*Facility-Wide Training Program Outline*) and titled *Waste Generation Overview Live*. The paragraph is altered to reference that course.	Yes
567	Table F-1	The requirement that a waste characterization course is "required for appropriate Facility personnel performing permitted unit waste characterization or generating or reviewing waste characterization documentation regardless of whether personnel work at a permitted unit" expands the scope of the Attachment F Personnel Training Plan.	The Department concurs (in part) – As written the Permit does inappropriately regulate personnel outside the permitted units.	Yes

No.	Loc.	Comment	NMED Response	Δ
		However, based on the Personnel Training Plan Introduction, the Permittees understand this requirement to be applicable to personnel who review and approve waste characterization documentation for the permitted units rather than all of the generators that send waste to each of the permitted units. The introduction of the plan on page 3 states, "[t]he primary objective of the training program is to prepare personnel to operate and maintain safely those areas managing hazardous and/or mixed waste. This training program applies to all employees of the Permittees and any subcontractors who work regularly at LANL permitted units and manage hazardous and/or mixed waste." The Permittees suggest the deletion of the final row (and the associated footnote) of Table F.1 and additions to Table F.2 for the following reasons: - Most generators of the waste managed at the permitted units do not enter or manage waste within the permitted units; therefore, this requirement cannot apply to them. - Most waste management handlers do not prepare or approve waste characterization documentation; therefore, they are not required to take this course. Inclusion in Table F-2 of the personnel who review and approve waste characterization documentation, conduct radiography, or conduct visual examination is appropriate because they receive on-the-job training. Suggested language change: Page 10, Table F-1: Please delete the row that lists the course titled Waste Characterization and footnote "g" to the table. Page 11, Table F-2: Add the following bullets under both "Permitted unit-specific training will include, as applicable, the following topics:" and "OJT will include the following topics, as applicable:" • Review and approve waste characterization documentation • Operation of radiography equipment • Visual examination (VE) of waste contents	Altering the Permit as proposed does not limit the Department's authority to ensure personnel outside the permitted units are properly trained because The Department can use it's authority at 40 CFR Part 262 (*Standards Applicable to Generators of Hazardous Waste*) § 262.34(a)(4) which requires compliance with § 265.16. These regulations require hazardous waste generators to complete and document training to perform their duties in a way that ensures the Facility's compliance with the requirements of Part 265, including § 265.13, *General Waste Analysis*. The Department has altered Table F-1 as proposed for the reasons provided above. Furthermore, the course titled Waste Characterization is redundant with the course titled *Waste Generation Overview Live.* The Department has altered Table F-2 as proposed.	

No.	Loc.	Comment	NMED Response	Δ
568	Att. G	There were no closure plans included for MDAs H, L, and G.	The comment is correct. See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
569	Att. G	Why do the closure plans included in Attachment G of the Revised Draft RCRA Permit allow for the option of disposing of low-level radioactive solid waste in the future at TA54, Area G? This option appears in a number of tables scattered throughout Attachment G of the Revised Draft RCRA Permit. See, for example, Revised Draft RCRA Permit at Table G.I-5, Table *GA-6,* Table G.6-2, and Table G.7-2. This is not an issue we recall seeing in the original draft permit circulated by NMED. In any event, many of the closure plans included in the Revised Draft RCRA Permit actually deal with units in Area G so it does not make sense to us to allow for any additional future waste disposal (low-level or otherwise) in Area G while NMED is trying, at the same time, to ensure clean closure of units in Area G. We therefore urge NMED to reconsider allowing for this option in the final permit to be issued.	The Department concurs - The Permittees are self-authorized to dispose of low-level radioactive non-mixed waste in any authorized on-site disposal area but the Department considers it imperative that that disposal area not be undergoing closure under RCRA. The Permittees can't properly close a hazardous waste management unit if it is being used at the same time. Closure under RCRA involves the cessation of acceptance of waste, generally hazardous waste, and then commencement of closure activities. Area G is undergoing closure under the site investigation and remedy selection processes in the Consent Order. As a practical matter, if the Permittees are allowed to leave all the waste in place and just monitor it, the addition of addition of wastes would change the physical characteristics and	Yes

No.	Loc.	Comment	NMED Response	Δ
			potentially migration of contaminants. If the Permittees are allowed to keep the wastes in place and have a protective cover that would inhibit infiltration of water and inhibit migration of contaminants in the subsurface, continued waste disposal would inhibit that. If the Permittees are required to excavate all wastes they couldn't possibly tell the Department what their plan for excavation would be if they don't know what the final volume of waste will be. This would be true of any final remedy. Low-level radioactive solid waste generated from closure activities at above-ground hazardous waste management units should be prohibited from being disposed of in Area G. The Department acknowledges, however, that this is only part of the problem, because this only addresses low-level radioactive waste that's created or is attendant to closure of one or more of the 24 permitted units at the facility. The Permittees generate low-level radioactive waste in association with numerous other activities and at numerous other locations.	

No.	Loc.	Comment	NMED Response	Δ
			The Department wants the Permittees to also stop disposing of this waste but this is not a subject appropriately addressed in the Renewal Permit. The Renewal Permit contains the following altered language addressing places where the Permittees would be authorized to dispose of low-level radioactive, non-mixed waste from hazardous waste management units undergoing closure. ~~TA-54 Area G or off-site radioactive waste disposal facility~~. Either an authorized onsite radioactive waste disposal area that is not undergoing closure under RCRA or its state analog or an authorized offsite radioactive waste disposal facility.	
570	Att. G	For each of the closure plans associated with TA-54 Areas G and L there is a requirement to conduct soil sampling. When corrective action is carried out at those locations a full site characterization will be completed and a remedy proposed/approved by NMED. Requiring LANL to sample and analyze soils that are scheduled to undergo corrective action within the next 3 to 5 years after a careful characterization (currently taking place) via a plan approved by NMED provides no benefit and is a waste of money that could be better spent on other important issues. These requirements should be deleted from each of the closure plans in the permit for units at TA-54 Areas G and L.	The Department disagrees – Waiting 3 to 5 years to perform soil sampling in association with above-ground hazardous waste management units being closed and the underlying pad being removed would diminish the possibility of identifing contaminant releases. The Renewal Permit reqires soil	No

No.	Loc.	Comment	NMED Response	Δ
			sampling below sumps, catch basins, secondary containment areas, conveyance systems, spill locations, loading and unloading areas. Waiting a long time to perform this sampling not only increases the chance of sampling in the wrong location but also would result in the loss of volatile organic contaminants. Finally, soil sampling is only required to a relatively shallow depth. If the Permittees encounter contamination at a location that is above an area being investigated through the Consent Order, *e.g.*, units above Areas G and L, the Permittees may petition the Department to incorporate the remainder of the release investigation with the Consent Order investigation.	
571	Att. G	The Revised Draft Permit includes 26 closure plans in Attachment G. The plans were not part of the negotiations as many of the draft plans became available only near the time that the Stipulation was signed. Thus, no party agreed to the draft closure plans. SRIC and NRDC emphasize the importance of adequate closure plans to fulfill the requirements of the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act. As the courts long ago ruled: While invariably described as a "cradle-to-grave" system, it [RCRA] in fact reaches (as we shall see) well beyond the grave. *American Iron & Steel Institute* v. *EPA.* 886 F.2d 390, 393 (D.C.Cir. 1989). Closure should ensure that the "grave or beyond the grave" conditions prevent future	The Department concurs (in part) Regarding Comment A, the Department agrees that it is contrary to adequate closure requirements to also allow for additional waste disposal in Area G, principally because the Permittees can't properly close a hazardous waste management unit if continued disposal is occuring	Yes

No.	Loc.	Comment	NMED Response	Δ
		public health and environmental impacts from the hazardous and mixed wastes that have been treated and stored at LANL. The closure plans should provide for that result. SRIC and NRDC agree that the 26 units must be "clean closed." However, the draft closure plans are deficient in three major ways. A. Each of the closure plans has a table regarding Potential Waste Materials, Waste Types, and Disposal Options that allows low-level radioactive solid waste to be disposed at "TA-54 Area G or off-site radioactive waste disposa1." SRIC and NRDC strongly object to allowing future waste disposal at TA-54, Area G. A long-standing concern of the public and the neighboring tribes are the multiple environmental and public health hazards posed by Area G. SRIC and NRDC support cleanup of Area G and do not support allowing additional waste disposal in Area G. Nine of the closure plans are for "clean closure" of units in TA-54 Area G, so it is contrary to adequate closure requirements to also allow for additional waste disposal in Area G. Each of the closure plans should be revised so that no waste disposal is allowed in Area G. B. Each of the closure plans have a provision that: The Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March 1, *200S* Compliance Order on Consent (Order) *(see* Permit Section 9.3) beneath the permitted unit. The option of removing small areas of asphalt at sampling locations where contamination is suspected *(i.e.,* spill or staining sites) to allow sampling without disturbing the surrounding area prior to the general removal of the pad will be assessed at the time of the assessment. SRIC and NRDC object to that provision because it could prevent necessary remediation of some sites where contamination has spread below the structure or pad and into the soil or tuff. Such a provision also could prevent meeting the Clean Closure Performance Standard of Section 9.2.1: To achieve clean closure, the Permittees must: 1. Remove all waste residues and hazardous constituents; and	at the same time. The Renewal Permit has been altered to disallow disposal of low-level radioactive waste at Area G and instead allow disposal of the waste at "an authorized onsite radioactive waste disposal area that is not undergoing closure under RCRA or its state analog or an authorized offsite radioactive waste disposal facility." See addition Department response on the subject above. Regarding Comment B – The Department limits the disturbance of soils above the regulated units to ensure a comprehensive and coordinated cleanup of the both the above-ground hazardous waste management units and the MDAs. Should the above-ground units be found to have shallow soil contamination, that contamination will be fully delineated. The Department will determine whether that delineation will occur independent or concurrently with investigations performed under the Consent Order. The Clean	

No.	Loc.	Comment	NMED Response	Δ
		2. Ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Permit Sections 11.4 and 11.5. For soils the cleanup levels shall be established based on residential use. The Permittees must also demonstrate that there is no potential to contaminate groundwater. The provision that could limit remediation below the surface should be deleted from each closure plan. C. Each closure plan contains a performance standard to control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances. SRIC and NRDC object to the 10^{-5} and instead support a 10^{-6} standard, as previously described in #2 above.	Closure Performance Standard of Section 9.2.1 applies to the closure of the entirety of the MDA including soils contaminated by the above ground units. Regarding Comment C, it is the Department's policy to remediate sites to a level not to exceed a total excess cancer risk of 10^{-5} for carcinogenic substances. The cleanup levels in the Proposed Permit are based on federal and State regulatory standards and they follow Department and EPA guidance. They are the same as the cleanup levels that the Department has applied at other facilities and the Consent Order. They are also the same clean up levels established by the New Mexico Water Quality Control Commission (WQCC) regulations at 20.6.2.WW NMAC, 20.6.2.3103 NMAC, 20.7.10 NMAC. The Department has relied on the following guidance to establish the cleanup levels discussed in the Renewal Permit: the federal Safe Drinking Water Act, Maximum	

No.	Loc.	Comment	NMED Response	Δ
			Contaminant Levels (MCLs); EPA *Risk Assessment Guidance for Superfund*; and NMED's *Technical Background Document for Development of Soil Screening Levels.* Finally, this issue was not addressed at the hearing on the Renewal Permit nor in the post-hearing briefs by any party.	
572	Att. G, Sections 4.2	This section requires the Permittees to notify NMED at least 60 days prior to conducting a structural assessment. However, Attachment G requires the Permittees to make notification of closure at least 45 days before the Permittees begin closure, and to make notice of the Permittees intent to conduct a structural assessment at least 20 days before final receipt of waste. The notification requirement in this section would require the Permittees to notify NMED of the intent to conduct a structural assessment before they notify NMED of the closure of a unit. The Permittees suggest that the permit requirement be changed so that the notification of the structural assessment could come at the same time as the notification for closure at 45 days prior to beginning closure activities. The structural assessment must be conducted prior to beginning decontamination activities but after all waste has been removed from the unit, therefore, it would be beneficial to plan this at the time of notification for closure. This section provides that the Permittees "shall begin closure of a permitted unit no later than 90 days after the date on which the unit receives the known final volume of hazardous waste," and cites 40 CFR §113(a) as authority for the requirement. 40 CFR does not address when a permittee shall begin closure, rather it requires that a permittee treat, remove from the unit or facility, or dispose on-site, all hazardous wastes in accordance with the approved closure plan within 90 days. Attachment G contains the details of closure activities, therefore Permittees suggest that 9.4.1 refer to Attachment G.	The Department concurs - the structural assessment notification should be simultaneous with the 45 day notification of closure. Section 4.2 in the closure plans, as well as each closure plans' schedule table has been changed. See response associated with Permit Section 9.4.6.2.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Suggested language change: Page 99, lines 31-33, modify sentence to read as follows: The Permittees shall notify the Department of the closure and the structural assessment at the same time, that is, 45 days prior to initiating closure. ~~at least 60 days prior to conducting the assessment to provide the Department the opportunity to participate in the unit's physical condition review.~~ Suggested text change: The Permittees shall remove all hazardous wastes from a permitted unit ~~begin closure of a permitted unit~~ no later than 90 days after the date on which the unit receives the known final volume of hazardous waste or, if there is a reasonable possibility that the permitted unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes, in accordance with 40 CFR §264.113(a).		
573	Att. G, Sections 4.2	Section 4.2 of the closure plans states that the records review and structural assessment must occur within ten days of final receipt of waste. This timeframe is very short as these units have generally operated for a long period of time. The Permittees propose that the majority of the records review could be initiated prior to this schedule milestone and could be amended to include any relatively late additions within this period. The suggested text change incorporates this concept. Suggested language change: Revise the text in the fourth paragraph of Section 4.2 as follows: Within ten days after the final receipt of hazardous waste, the Permittees will finalize the records review, conduct the structural assessment ~~conduct the review and assessment~~ and submit an amended closure plan, if necessary, to the Department for review and approval as a permit modification in accordance with Permit Section 9.4.8.	The Department concurs - the records review and the structural assessment should be "finalized" within 10 days of completing waste removal or within 100 days of final receipt of waste, whichever happens first. Section 4.2 in each closure plan has been changed to reflect this. See response associated with Permit Section 9.4.6.2.	Yes
574	Att. G, Sections 4.2	The closure plans require that "Within five days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste." The time period is unreasonably short and does not comport with 40 CFR §264.113(a), which allows 90 days to treat, remove from the unit or facility, or dispose of on-site, all hazardous	The Department concurs. Section 4.2 in each closure plan reflects this change. See response associated with Permit Section	Yes

No.	Loc.	Comment	NMED Response	Δ
		wastes. Suggested language change: Within ninety~~five~~ days after the final receipt of hazardous waste, the permitted unit will be emptied of all stored waste.	9.4.6.2.	
575	All closure plans at Section 2.0	The Attachments referenced at the end of the last sentence of the section includes Attachment B (Part A Application) which is a listing of hazardous waste codes each Technical Area is authorized for. Not all these codes will necessarily be managed in an individual unit. The tables listing the actual waste constituents and codes managed based on records review were included with the closure plans submitted by the Permittees in April 2009. Adding the word potential is consistent with the language in sections 5.2.1.a. of the plans that requires the determination of the specific hazardous constituents at the records review. Additionally, tables listing constituents have been deleted from certain plans (e.g., Hazardous Waste Constituents of Concern at the TA-54, Area G Pad 1 Outdoor Container Storage Unit). Request for inclusion of these tables into the closure plans is also requested by the Permittees. Adjustments to the requested language changes must be made to accommodate the treatment units in Attachments G.2, G.3, and G.24. Suggested language change: Section 2.0: Change the sentence at the end of this section from: "Permit Part 3 (Storage in Containers), Permit Attachment A (Technical Area Unit Descriptions), Permit Attachment B (Part A Application), and Permit Attachment C (Waste Analysis Plan) include information about waste management procedures and potential hazardous waste constituents stored at the permitted unit."	The Department disagrees – Permit Section 9.4.6.1 requires the Permittees to update the list of hazardous waste constituents in the Sampling and Analysis Plan "to accurately reflect at the time of closure the hazardous wastes managed at the unit."	No
576	Att. G, Sections 4.1(b)	Establishing residential soil cleanup levels is not appropriate for outdoor units at LANL. The units are included within the area that will be affected by the corrective action closure of SWMUs at each of the sites. As such, the appropriate soil cleanup criteria regarding the use of residential or industrial exposure factors have not been determined pending approval of the remediation options being proposed. There is no discussion presented in the revised draft Permit or the Fact Sheet for using a more conservative	The Department disagrees – Sections 4.1(b) all address alternatives should the Permittees not be able to attain residential soil cleanup levels, *i,e*, clean closure. The Sections reference	No

No.	Loc.	Comment	NMED Response	Δ
		exposure factor for the unit if an industrial receptor is chosen for the basis of the corrective action risk assessment. Residual soil contamination levels at the unit may be appropriate for future industrial land use, the overall cleanup levels determined for each unit, and the final soil surface associated with the unit may not be exposed depending upon the final remediation option selected. Suggested language change: Revise Section 4.1(b) to allow for potential of industrial land use after closure of each unit.	Renewal Permit Section 11.4 that states in part "the Permittees may propose cleanup levels … based on current and reasonably foreseeable future land use, *e.g.*, residential, recreational, industrial." This is consistent with the closure performance standards in Renewal Permit Section 9.2.	
577	Att. G, Tables G.X-2	Table 2 (Potential Waste Materials, Waste Types, and Disposal Options) of each of the closure plans lists Area G as a potential disposal option. Because the final corrective measure remedy as a result of the Consent Order for Area G has not been decided, new wastes should not be added to this landfill.	The Department concurs - the Department agrees that it is contrary to adequate closure requirements to also allow for additional waste disposal in Area G, principally because the Permittees can't properly close a hazardous waste management unit if continued disposal is occuring at the same time. The Renewal Permit has been altered to disallow disposal of low-level radioactive waste at Area G and instead allow disposal of the waste at "an authorized onsite radioactive waste disposal area that is not undergoing closure under RCRA or its state analog or an authorized offsite radioactive waste disposal facility." See addition Department response on	Yes

No.	Loc.	Comment	NMED Response	Δ
			the subject above.	
578	Att. G	The Closure Plans for several of the TA-54 units state "*The asphalt pad, and all the materials associated with the pad (e.g., concrete ring wall, sump, minimum of six inches of the base course and soil underlying the pad), will be removed after the assessment. If, after the removal of the pad (and underlying soil and base course material), the remaining surface shows evidence that the removal to that point has not gathered all appropriate soils and materials associated with the pad (e.g., additional concrete or base course materials), additional soil and materials will be removed. The Permittees shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit (covered under the March* 1, *2005 Compliance Order on Consent (Order)* (see *Permit Section* 9.3)) *beneath the permitted unit."* Closure here is focused on removing soils and materials associated with the pad, and seems to not necessarily be focused on removing contaminated soils. Please explain the phrase *"shall take precautions to not remove or disturb the soil or tuff that overlies the regulated unit."* We request that contaminated soil be removed to within 6" of the top of the regulated unit or to a minimum of 6" below the materials associated with the pad, which ever one is deeper.	The Department disagrees - If after removal of all material assoiated with the above-ground hazardous waste management unit located above a regulated unit, e.g., the asphalt pad and base course material, there is contamination that has migrated into the material used to cover the regulated unit, the Department wishes that all corrective actions be performed in association with that regulated unit. The Department assumes that there will be a clear distinction between the materials associated with the above-ground and the below-ground units.	No
579	G.1, Section 6.1	The number of areas to be sampled within the closure plan doubled from the closure plan submitted to NMED in April 2009 without explanation. The extra samples do not seem to be driven by the requirements in Part 9.4.7.1.i, because the sample areas presented within the closure plan submitted by the Permittees met the requirements of one sample every 900 square feet. Suggested language change: Page 6, Section 6.1, Second paragraph: Please justify the requirement for extra samples or change the third, fourth, and fifth sentences of the paragraph as from : "A total of 10 ~~17~~ wipe samples will be collected from Room 9010; four ~~eight~~ from the floor, two ~~four~~ from each of the longer walls, and one ~~five~~ from the shorter walls. A total of three ~~five~~ wipe samples will be collected from Room 9020; one ~~two~~ from	The Department disagrees. The Permittees proposed in certain closure plans to decontaminate via washing and wiping down with sponges rather than decontaminate via steam-cleaning or pressure washing, as the permit requires. The Department believes that decontamination via pressure washing and steam cleaning is more reliable in the removal of hazardous constituents than washing by hand. Therefore, the additional sampling locations	No

No.	Loc.	Comment	NMED Response	Δ
		the floor, one ~~two~~ from the wall, and one from the floor drain. A total of two ~~four~~ wipe samples will be collected from Room 9030; one ~~two~~ from the floor and ~~one~~ ~~two~~ from the wall."	were added to the closure plans.	
580	TA-16 Closure Plans	The closure soil sampling plan does not specifically indicate the types of samples to be taken; discrete or the multi-increment sampling (MIS) approach. EPA recommends that the MIS approach be used. However, if the MIS approach is not used, then many discrete samples (more than 4) are needed to adequately characterize the site for closure.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
581	G.1, Section 4.2	The reference to verification sampling within the fifth paragraph is incomplete. Closure of this unit will require verification chip sampling and may require verification wipe sampling. Suggested language change: Page 8, Section 4.2, Fifth paragraph: Soil sampling, ~~and~~ decontamination verification wipe sampling, and chip sampling will be conducted to demonstrate that soils, surfaces, and related equipment at the permitted unit meet the performance standards in Permit Section 9.2."	The Department agrees. The language in the closure plan has been changed as proposed.	Yes
582	G.2, Section 6.1	Administrative – typographical error Suggested language change: Page 9, Section 6.1: Change "form" to "from" in the first sentence of the section.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
583	G.2 Section 6.1	The requirement to collect a soil sample beneath the asphalt directly in front of the unit requires justification. Because the unit is an open burning treatment unit, pathways for exposure include runoff, air dispersion, and particulate deposition from air. There is no subsurface aspect to the treatment unit that would cause concern for migration beneath an asphalt pad in front of the unit. Additionally, soil samples will be collected from the areas around the unit to determine the concentration of any hazardous constituents that may have migrated from the unit and a soil monitoring program has been written into Part 6 of this draft Permit so the	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes

No.	Loc.	Comment	NMED Response	Δ
		concentrations of these constituents can be monitored as they change over time. The Permittees recommend that a wipe sample be collected from the surface of the asphalt and analyzed for high explosives compounds to determine whether contamination from the operations at the permitted unit has occurred. Suggested language change: Page 10, Section 6.1, (b): Please change the requirement to: one wipe ~~soil~~ sample will be collected from ~~beneath~~ the asphalt pad where waste to be treated is unloaded off the vehicle;		
584	G.2, Section 6.1, Figure G.2-2	The storm water discharge point is a rocked area where no soil is available for collection. The Permittees suggest moving the location to just above the rocked area, where storm water has flowed. Suggested language change: Page 10, Section 6.1(c): Please change the requirement from: "one soil sample above ~~at~~ the storm water discharge point; and	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
585	G.2, Section 6.1	The requirement to collect a surface water sample is confusing and needs clarification. There is no surface water within the area surrounding the open burning treatment units. However; collection of a storm water run-off sample could occur during closure activities if there is precipitation during that timeframe. Otherwise, prior to closure, water monitoring requirements within Part 6, Section 6.5.2 apply. Suggested language change: Page 10, Section 6.1 (d): Suggest deleting the requirement or clarifying that a storm water sample will be collected at the storm water monitoring station if precipitation that causes run-off occurs during the time of closure activities.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
586	G.2, Section 6.4	The table that listed the potential constituents of concern for the unit was removed from the version of the closure plan submitted to the NMED in April 2009.	See the Department's response regarding open burning in the document titled General Response	Yes

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>Suggested language change:
Page 13, Section 6.4:
Please include the following table with the following modifications in a revised closure plan.
<table>
<tr><td colspan="3">Table G.2-6

Hazardous Waste Constituents of Concern at the TA-16-388 Flash Pad[a]</td></tr>
<tr><th>Category</th><th>EPA Hazardous Waste Numbers</th><th>Specific Constituents</th></tr>
<tr><td>High Explosives (HE) and associated compounds</td><td>D003</td><td>HMX, RDX, TNT, PETN, Tetryl, and Other Nitrobenzenes and Nitrotoluenes</td></tr>
<tr><td>Toxic Metals</td><td>D004, D005, D006, D007, D008, D009, D010, D011</td><td>Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver</td></tr>
<tr><td rowspan="2">Organic Compounds</td><td>D030, D036, F004</td><td>2,4-Dinitrotoluene, Nitrobenzene</td></tr>
<tr><td>F002, F003, F004, F005</td><td>Acetone, Ethanol, Benzene, MEK, Methylene Chloride, Toluene, MIBK, Xylene, Ethyl Acetate, Methanol</td></tr>
<tr><td>Other Constituents of Concern</td><td></td><td>Dioxins/Furans, Perchlorate</td></tr>
<tr><td colspan="3">[a] Based on the unit operating record.
EPA = U.S. Environmental Protection Agency
HMX = cyclotetramethylenetetranitramine
RDX = cyclonite
TNT = trinitrotoluene
PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl]-1,3-propanediol dinitrate
MEK= methyl ethyl ketone
MIBK = 4-methyl-2-pentanone</td></tr>
</table></td><td>to Comments.</td><td></td></tr>
<tr><td>587</td><td>G.2, Table G.2-3</td><td>If, as the resolution to the previous comment to Section 6.4, Table G.2-6 is included in the closure plan a method for the analysis of dioxin and furan congeners must be added to Table G.2-3 for completeness.
Suggested language change:
Pages 19-20, Table G.2-3:
Add the following:</td><td>See the Department's response regarding open burning in the document titled General Response to Comments.</td><td>Yes</td></tr>
</table>

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Analyte</th><th>EPA SW-846 Analytical Method [a]</th><th>Test Methods/ Instrumentation</th><th>Target Detection Limit [b]</th><th>Rationale</th></tr>
<tr><td colspan="5">Other Analysis</td></tr>
<tr><td>Dioxins/Furans</td><td>8290</td><td>GC/MS</td><td>1.0 to 200 ug/L</td><td>Determine the dioxin/furan concentration in the samples.</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>588</td><td>G.3, Section 6.1, Figure G.3-6</td><td>The requirement to collect a soil sample at the storm water discharge point is confusing. The Permittees suggest moving the location to just outside the fenced area around the unit where storm water has flowed.

Suggested language change:

Page 4, third paragraph:

The first sentence should be changed from:

“Five soil samples and one surface water sample will be collected in accordance with Permit Section 9.4.7.1.ii.b (see Figures G.3-1 and G.3-2, respectively); four samples from soils surrounding the permitted unit and one sample outside the unit boundary where ~~at the~~ stormwater has flowed. ~~discharge point.~~</td><td>See the Department’s response regarding open burning in the document titled General Response to Comments.</td><td>Yes</td></tr>
<tr><td>589</td><td>G.3, Section 6.1</td><td>There is no surface water within the area surrounding the open burning treatment units, however; collection of a storm water run-off sample could occur during closure activities if there is precipitation during that timeframe. Otherwise, prior to closure, water monitoring requirements within Part 6, Section 6.5.2 apply.

Suggested language change:

Page 4, Section 6.1 (d):

Suggest deleting the requirement in the final sentence of the section or clarifying that a storm water sample will be collected at the storm water monitoring station if precipitation that causes run-off occurs during the time of closure activities.</td><td>See the Department’s response regarding open burning in the document titled General Response to Comments.</td><td>Yes</td></tr>
<tr><td>590</td><td>G.3, Section 6.4</td><td>The table that listed the potential constituents of concern for the unit was removed from the version submitted to the NMED in April 2009.

Suggested language change:</td><td>See the Department’s response regarding open burning in the document titled General Response to Comments.</td><td>Yes</td></tr>
</table>

No.	Loc.	Comment	NMED Response	Δ
		Page 13, Section 6.4: Please include the table as follows in a revised closure plan.		
591	G.6, Section 6.1(f), Figure G.6-2	The requirement for ten samples along the drainage swale is not consistent with the requirement at Part 9.4.7.ii.a and is not technically necessary. The Part 9 requirement is limited to samples taken within a permitted unit, which does not apply as the drainage swale is outside the limits of Pad 1. A sample taken where any potential run-off occurs would be applicable to the third condition and the Permittees have also proposed the rock check dam location as a point to determine the extent of any potential contamination. The amended closure plan does not provide a rationale for the need for other samples located progressively along the swale and it is not clear why this would be necessary if the beginning and end points for this potential contamination pathway are sampled. This sampling scheme was not proposed in the Permittees' submitted closure plan draft. Suggested language change: Section 6.1(f), Page 6: The requirement for ten samples along the swale south of Pad 10 should be deleted and Figure G.6-2 should be revised.	The Department disagrees (in part). In order to be protective of human health and the environment, soil sampling is vital in order to ensure that the closure performance standards at PS 9.2 and 40 CFR 264.111 are met. The requirements at 40 CFR 264.112(b)(1) and (5) reflect the importance of this issue. While sampling the actual discharge point of stormwater run-off is necessary (*see* permit requirement 9.4.7.1.ii.a (3)), the Bureau believes it is not sufficient sampling coverage to ensure that Pads 1 & 3, and the areas affected by their stormwater run-off, is adequately evaluated for potential releases transported by stormwater, specifically if the soil sample collected at the stormwater discharge point detects hazardous constituents. The first issue raised in this comment is that the Part 9 requirements apply only to the area within the permitted unit; the Department does not agree. For example, the stormwater	Yes

No.	Loc.	Comment	NMED Response	Δ
			discharge location (*see* permit requirement 9.4.7.1.ii.a (3)) for Pads 1, 3, & 10 is not within the confines of the permitted unit yet there is agreement that this rock check dam location must be sampled to ensure no hazardous constituents have mobilized via stormwater run-off. The Department believes that if stormwater has been in contact with the permitted unit, in this case the asphalt pad, and is allowed to flow off the unit to discharge, the Permittees are then responsible for ensuring that the closure requirements are fulfilled, particularly along that path of stormwater run-off. Again, the requirements at 40 CFR 264.112(b)(1) and (5) support this argument. In regards to the second issue raised in this comment, the Department believes that this requirement *is* technically necessary mainly if the results of the soil samples collected at the beginning and end points of this potential contamination pathway (stormwater run-off) detect hazardous constituents.	

No.	Loc.	Comment	NMED Response	Δ
			In this case, the Department proposes revised language in Attachments G.6 and G.7 which require the Permittees to sample these locations along the swale in the event that at closure, the results of the soil samples collected at the beginning (the stormwater run-off point at the SE corner of the pad) and end points (the discharge point at the rock check dam) detect hazardous constituents.	
592	Figure G.6-1	The location of the sump in Building 412 should be shown in the southeast corner rather than the southwest corner of the building. Suggested language change: Page 23: Revise Figure G.6-1 to illustrate the sump in Building 412 correctly.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
593	Figure G.6-1	Clarification is needed to emphasize that the "Storm water sampling location" labeled on Figure G.6-1 is actually a soil sample that will be collected at a point of storm water flow. Suggested language change: Page 23: Revise Figure G.6-1 to clarify the soil sample at the southeastern corner of Pad 1.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
594	Figure G.6-2	The location of the rock check dam on Figure G.6-2 is not correct. The location should be moved further south to just below the contour line. Also, the structure arrangement on Pad 10 does not match the arrangement in Figure G.11-1. Suggested language change:	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Page 24: Revise Figure G.6-2 to accurately illustrate the rock check dam south of Pad 10 and the correct arrangement of structures on Pad 10.		
595	Att. G, Section 6.1(d)	The requirement for nine samples along the drainage swale is not consistent with the requirement at Part 9.4.7.ii.a and is not technically necessary. The Part 9 requirement is limited to samples taken within a permitted unit, which does not apply as the drainage swale is outside the limits of Pad 3. A sample taken where any potential run-off occurs would be applicable to the third condition and the Permittees have also proposed the rock check dam location as a point to determine the extent of any potential contamination. The amended closure plan does not provide a rationale for the need for other samples located progressively along the swale and it is not clear why this would be necessary if the beginning and end points for this potential contamination pathway are sampled. This sampling scheme was not proposed in the Permittees submitted closure plan draft, April 2009. Suggested language change: Section 6.1(d), Page 6: Delete the requirement for the extra nine samples along the swale to Pad 10. Revise Figure G.7 to remove these sample locations.	The Department disagrees (in part). See response to comment associated with Section 6.1(f)	Yes
596	Figure G.7-1	The structure arrangement on Pad 10 as shown in Figure G.7-1 does not match the arrangement in Figure G.11-1. Suggested language change: Page 22: Revise Figure G.7-1 to accurately illustrate the arrangement of structures on Pad 10.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
597	Figure G.7-2	The location of the rock check dam on Figure G.7-2 is not correct. The location should be moved further south to just below the contour line. Also, the structure arrangement on Pad 10 does not match the arrangement in Figure G.11-1. Suggested language change:	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Page 23: Revise Figure G.7-2 to accurately illustrate the rock check dam south of Pad 10 and the correct arrangement of structures on Pad 10.		
598	Figure G.8-1	The loading zone sample locations for Sheds 144, 145, 146, 177, 1027, and 1028 should be on the eastern side of the structures. Suggested language change: Page 23: Revise Figure G.8-1 to accurately illustrate the unloading areas for the sheds on Pad 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
599	G.9, Section 2.0, Section 6.1(a) and Figure G.9-1	The requirement to sample in front of the storage sheds should not apply to the five sheds located on Pad 6 because they do not manage mixed waste. The requirement is only appropriate for the transportainer structure 491. Suggested language change: Section 2.0, Page 1: Remove the reference to the "five storage sheds" in the third paragraph of Section 2.0. Section 6.1(a), Page 6: Delete the requirement to sample in front of the five storage sheds. Page 22: Revise Figure G.9-1 to remove these soil sample locations.	The Department concurs. The proposed language and revised figure have been added to the Renewal Permit.	Yes
600	G.10, Section 2.0, Section 6.1(a) and Figure G.10-1	The requirement to sample the loading zones for structures 484 and 574 is not appropriate because these storage sheds have not been used to manage waste containers. Suggested language change: Section 2.0, Page 1: Remove the reference to the "one transportainer, and two storage sheds" at the end of	The Department concurs. The proposed language and revised figure have been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		the second paragraph of Section 2.0. Section 6.1(a), Page 6: Delete the requirement to sample in front of the transportainer and each of the storage sheds. Page 28: Revise Figure G.10-1 to remove these soil sample locations.		
601	G.11, Figure G.11-1	The location of the rock check dam on Figure G.11-1 is not correct. The location should be moved south and west to just below the contour line. Suggested language change: Page 22: Revise Figure G.11-1 to accurately illustrate the rock check dam south of Pad 10.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
602	G.14, Section 1.0	The major portion of the unit is a dome over a concrete pad and the sampling requirements are those for an outdoor unit; therefore, the Permittees recommend revision of the description. Suggested language change: Section 1.0, Page 1: The closure plan for this unit should be redefined as an outdoor unit including changes in the title and introduction.	The Department disagrees. Permittees describe and define it as an indoor unit in their application.	No
603	G.14, Section 6.1(b)(iv) and Figure G-14.1	There are two large vehicle doors at Dome 33. These are at the western and the south-east ends (see Figure G-26 in the TA-54 Part B permit application, Rev. 3, June 2003). The sample locations should be adjusted to represent this. Additionally, there is only one door on the western end and therefore, only one sample should be collected there. Suggested language change: Section 6.1(b)(iv), Page 6: Sample locations 4 and 5 should be combined into one location. Revise Figure G-14.1 combine these sample locations to accurately represent the	The Department concurs. The proposed language and revised figure have been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		locations of the roll-up doors.		
604	G.16, Section 6.1(b)	The rational for two samples from each of the longer walls is not justified. The total area of the High Bay Unit is 3200 square feet. The requirement in Permit part 9 is one sample per 900 square feet and the result is one sample per wall. Suggested language change: Section 6.1(b), Page 5: Please change the requirement as follows: "b. four ~~six~~ from the walls (one ~~two~~ from each wall)~~ of the longer walls and one from each of the shorter walls)~~ (see Figure G.16-1);	The Department disagrees.	No
605	G.17, Section 6.1(c) and Figure G.17-1	Sampling from the swale does not fulfill requirements for Permit Part 9. The drain goes to the outfall where there was originally a sample location. NMED removed this location and inserted the two swale sample locations. Suggest removing these sample locations and adding back the one original location at the outfall. Also, data pulled from RACER on the outfall does not show contaminants of concern above ppb levels. Suggested language change: Section 6.1(c), Page 10: Remove the requirement to sample within the swale and reinsert the soil sample location at the storm water discharge point that was included with the closure plan submitted by the Permittees in April 2009. Revise Figure G.17-1 to reflect these changes.	The Department disagrees.	No
606	G.18, Section 1.0 and title of document	Suggest change corrects an editorial error. B40 is an area within the basement, not a room. Suggested language change: Page 1: Remove the word "Room" from the first sentence of the closure plan.	The Department disagrees. The Permittees referred to all the units in the basement of TA-55 as "rooms" in their application.	No
607	G.19, Section	Suggest change corrects an editorial error. K13 is an area within the basement, not a room.	The Department disagrees. The Permittees referred to all the units	No

No.	Loc.	Comment	NMED Response	Δ
	1.0 and title of document	Suggested language change: Page 6: Remove the word "Room" from the first sentence of the closure plan.	in the basement of TA-55 as "rooms" in their application.	
608	G.19, Section 6.1	The number of areas to be sampled on the floor and wall of the unit within the closure plan doubled from the closure plan submitted to NMED in April 2009 without explanation. The extra samples do not seem to be driven by the requirements in Part 9.4.7.1.i, because the sample areas presented within the closure plan submitted by the Permittees met the requirements of one sample every 900 square feet or at least on sample from the floor and wall. Suggested language change: Page 10, Section 6.1, Second paragraph: Please change the last sentence as follows: A total of three ~~five~~ wipe samples will be collected: one ~~two~~ from the floor; one ~~two~~ from the wall; and one from the pillar.	The Department disagrees.	No
609	G.20, Section 1.0 and title of document	Suggest change corrects an editorial error. B05 is an area within the basement, not a room. Suggested language change: Page 1: Remove the word "Room" from the first sentence of the closure plan.	The Department disagrees. The Permittees referred to all the units in the basement of TA-55 as "rooms" in their application.	No
610	G.20, Section 2.0	Construction of TA-55 was completed in 1979. Suggested language change: Section 2.0, Page 1 Change text to reflect that TA-55, Building PF4 was constructed in 1979.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
611	G.21, Section	Suggest change corrects an editorial error. B45 is an area within the basement, not a	The Department disagrees. The Permittees referred to all the units	No

No.	Loc.	Comment	NMED Response	Δ
	1.0 and title of document	room. Suggested language change: Page 6: Remove the word "Room" from the first sentence of the closure plan.	in the basement of TA-55 as "rooms" in their application.	
612	G.21, Section 6.1	The number of areas to be sampled on the wall of the unit within the closure plan doubled from the closure plan submitted to NMED in April 2009 without explanation. The extra sample does not seem to be driven by the requirements in Part 9.4.7.1.i, because the sample areas presented within the closure plan submitted by the Permittees met the requirements of one sample every 900 square feet or at least one sample from the floor and wall. Suggested language change: Page 10, Section 6.1, Second paragraph: Change the second to the last sentence to read as follows: A total of three ~~four~~ wipe samples will be collected: two from the floor; and one ~~two~~ from the wall.	The Department disagrees.	No
613	G.22, Section 6.1	The number of areas to be sampled on the walls of the unit within the closure plan doubled from the closure plan submitted to NMED in April 2009 without explanation. The extra samples do not seem to be driven by the requirements in Part 9.4.7.1.i, because the sample areas presented within the closure plan submitted by the Permittees met the requirements of one sample every 900 square feet or at least one sample from the floor and wall. Suggested language change: Page 5, Section 6.1, Second paragraph: Change the second sentence to read as follows: In compliance with Permit Section 9.4.7.1.i, this closure plan will ensure the collection of at least 14~~18~~ wipe samples; eight wipe samples from the floor, one from each of the shorter walls, and two ~~four~~ from each of the longer walls.	The Department disagrees.	No

No.	Loc.	Comment	NMED Response	Δ
614	G.23, Section 1.0	Suggested change corrects a typographical error. Suggested language change: Page 1: Remove "the basement of" from the first sentence of the closure plan.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes.
615	G.23, Section 5.3.1	The requirement within the closure plan to remove "(t)he storage tanks, piping and the glovebox and all materials associated with the permitted unit in Room 401 (tanks, ancillary equipment, glovebox, etc.)" prior to the structural assessment is confusing. The structural assessment conducted on a permitted unit after it has been emptied of waste and prior to beginning closure activities. Removal of the tanks and ancillary equipment is a closure activity for this unit because the tank storage system is the permitted unit. Suggested language change: Page 4, Section 5.3.1: Please revise the last sentence to read as follows: The storage tanks, piping, and the glovebox, and all materials associated with the permitted unit in Room 401 (tanks, ancillary equipment, glovebox, etc.) will be removed in accordance with this section. ~~before the assessment.~~	The Department disagrees – A structural assessment is intended to identify areas where contaminants might have left the permitted unit. Renewal Permit Section 9.4.6.2 defines structural assessment in part as an examination of "evidence of a release (*e.g.*, stains) or damage (*e.g.*, cracks, gaps, chips) to the flooring or building materials …" The examination of floors requires removal of at a minimum the tanks, ancillary equipment, and glovebox.	No
616	G.23, Section 5.3.2	The requirements within this section need to be clarified to state that decontamination will be conducted on the secondary containment of the permitted unit. No storage of hazardous waste occurs within Room 401 itself. It is used as secondary containment for the storage tank system permitted unit and the cementation permitted unit located within the room. Suggested language change: Page 4, Section 5.3.2: Please revise the first sentence of the second paragraph of the section to read as follows: Decontamination of the permitted unit's secondary containment and equipment related to the permitted unit will be conducted by first removing loose material (e.g.,	The Department disagrees – The entirety of Room 401 requires decontamination. This room is no different than other permitted units whose rooms are used to store hazardous waste. Furthermore, the Permittees have never defined the secondary containment of the room to only extent two feet above the floor.	No

No.	Loc.	Comment	NMED Response	Δ
		dust, dirt) through sweeping followed by washing using a wipe-down method with a solution consisting of a surfactant detergent (e.g., Alconox®) and water mixed in accordance with the manufacturer's recommendations." Page 5, Section 5.3.2: Please revise the fourth paragraph of the section to read as follows: The entirety of the unit's secondary containment floors will be decontaminated directly below the unit. To ensure that decontamination of the walls is conducted to a sufficient height, all walls in the permitted unit will be decontaminated to a height of 2~~11~~ ft. Ceilings of the permitted unit, walls above 2~~11~~ ft, and the areas outside of the permitted unit will be presumed to be free of contamination unless there is some physical indication of contamination (*e.g.*, staining), the records review reveals that large amounts of liquid volatile or semi-volatile organic waste was stored in the permitted unit, or a spill or release occurred within the permitted unit that could have affected the ceiling or the walls above 2~~11~~ ft."		
617	G.23, Section 6.1	A total number of samples has not been provided within this closure plan. Suggested language change: Page 5, Section 6.1: Revise the last sentence of the paragraph to read as follows: If the entire floor of the secondary containment room is decontaminated, a total of 5~~X~~ wipe samples will be collected: one from the floor and one from each wall.	The Department concurs. The proposed language has been added to the Renewal Permit.	Yes
618	G.24, Section 5.3.1	The requirement within the closure plan to remove "(t)he pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox and all other materials in Room 401 associated with the permitted unit" prior to the structural assessment is confusing. The structural assessment is conducted on a permitted unit after it has been emptied of waste and prior to beginning closure activities. Removal of the mixers and ancillary equipment is a closure activity for this unit because the cementation unit is the permitted unit.	The Department disagrees – See the Department's response associated with G.23, Section 5.3.1.	No

No.	Loc.	Comment	NMED Response	Δ
		Suggested language change: Page 4, Section 5.3.1: Revise the last sentence of the section to read as follows: The pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox and all other materials in Room 401 associated with the permitted unit will be removed in accordance with this section. ~~before the structural assessment.~~		
619	Att. I	The attachment incorrectly references Section 2.5 as including a requirement to submit particular figures.	The Department concurs – The reference to the submittal of figures for TA-54 Area G, H, and L identifying fences, entry gates, and entry stations has been removed from the Permit. See Figures 7 and 8.	Yes
620	Att. I	The attachment incorrectly omits the Section 6.5.2 requirement to submit annual storm water sampling report.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
621	Att. J	We request that Building 185, Technical Area 55, not be allowed to be permitted due to unresolved seismic inconsistencies. Please include all of the references listed in the Permittees' seismic report (LA-DR 0904042) in the administrative record.	The Department is uncertain what "unresolved seismic inconsistencies" are being referred to in this comment and therefore cannot respond. See the Department's response regarding seismic hazards in the document titled General Response to Comments. Regarding the references associated with LA-UR 09-04042, the Bureau's LANL	No

No.	Loc.	Comment	NMED Response	Δ
			administrative record associated with the Renewal Permit included 14 of the 22 referenced documents at the time of the permit hearing. The Bureau has since received the remaining documents and has added them to the LANL AR. Because they arrived at the Bureau after the close of the permt hearing they will not be considered a portion of the record associated with the formulation of the Permit.	
622	Table J-1	Based on the Permittees comment on the designation of regulated units, above, the Permittees propose that Table J-1 be revised to provide the accurate identification of regulated units. Suggested language change: Page 3, revise the row identified as TA-54 "G" as follows: ~~Material Disposal Area~~ Pit 29 and Shaft 124. Page 5, revise the row identified as TA-54 "H" as follows: ~~Material Disposal Area H~~ Shaft 9 Page 5, revised the row identified as TA-54 "L" as follows: ~~Material Disposal Area L~~ Shafts 1, 13-17, 19-34 and Impoundments B and D	The Department disagrees. - See the Department's response regarding regulated units/alternative requirements in the document titled General Response to Comments.	No
623	Table K-1	The title to Table K-1 is "SWMUs and AOCs Requiring Corrective Action". The list seemed awfully long until the following statement was found on page 203: *"Corrective measures options shall include the range of available options including, but not limited to, a no action alternative, institutional controls ... ... "* Suggesting that a no action alternative is a corrective action is a way to inflate the number of "corrective actions" required and to give a misleading indication that things	Comment noted. The lists provided in Attachment K are a way of tracking all solid waste management units (SWMUs) and areas of concern (AOCs) at LANL. Cleanup of these sites are not covered under the Permit, but	No

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>are much worse at LANL than they really are. NMED should use standard RCRA terminology for this RCRA permit and title Table K-1 "RCRA Facility Investigation Units."</td><td>under the March 1, 2005 Order on Consent (Order). Therefore, the titles of the tables in Attachment K will remain unchanged.</td><td></td></tr>
<tr><td>624</td><td>Table K-1</td><td>Sites subject to the corrective action requirements of Module VIII of the current LANL RCRA Permit are listed in Tables A and C of Module VIII (Table B contains a high priority subset of the sites listed in Table A). These sites are identified as SWMUs. Corrective action units that are not listed in Module VIII are identified as AOCs.

Table K-1 contains sites that are identified as AOCs but which are listed in Table A or Table C of Module VIII and should be identified on Table K-1 as SWMUs. These sites are identified within the suggested change column along with the corresponding Table in Module VIII.

Suggested language change:

Table K-1 should be revised to identify these sites as SWMUs.
<table>
<tr><td>SWMU 03-052(f)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(a)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(c)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(d)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(e)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(g)</td><td>Listed in Table A</td></tr>
<tr><td>SWMU 16-005(h)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(j)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(k)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(l)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(m)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 16-005(n)</td><td>Listed in Table A</td></tr>
</table></td><td>The Department concurs. Table K-1 has been revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>SWMU 16-024(e)</td><td>Listed in Table C</td></tr>
<tr><td>SWMU 39-002(a)</td><td>Listed in Table A</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4
</td><td></td><td></td></tr>
<tr><td>625</td><td>Table K-1</td><td>Sites subject to the corrective action requirements of Module VIII are listed in Tables A and C of Module VIII (Table B contains a high priority subset of the sites listed in Table A). These sites are identified as SWMUs. Corrective action units that are not listed in Module VIII are identified as AOCs.

Table K-1 contains sites that are identified as SWMUs but which are not listed in Table A or Table C of Module VIII and should be identified on Table K-1 as AOCs. These sites are identified within the suggested change column.

Suggested language change:

Table K-1 should be revised to identify these sites as AOCs.
<table>
<tr><td>AOC 00-030(n)</td></tr>
<tr><td>AOC 00-030(o)</td></tr>
<tr><td>AOC 00-030(p)</td></tr>
<tr><td>AOC C-21-001</td></tr>
<tr><td>AOC 35-018(a)</td></tr>
<tr><td>AOC 43-001(a2)</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.</td><td>The Department concurs. Table K-1 has been revised as suggested by the commenter.</td><td>Yes</td></tr>
<tr><td>626</td><td>Tables K-1 and K-3</td><td>Sites that are not listed in Tables A and C of Module VIII do not require a Class III permit modification to remove them from these tables once NMED has determined that no further corrective actions are required. Sites not listed in Module VIII and which</td><td>The Department concurs. Tables K-1 and K-3 have been revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

No.	Loc.	Comment	NMED Response	Δ
		have already been issued certificates of completion without controls should be listed in Table K-2. Table K-1 contains sites that are not listed in Table A or Table C of Module VIII and which have been issued certificates of completion without controls by NMED under the Consent Order. These sites should not be listed in Table K-1, but should be listed in Table K-3, *Corrective Action Complete Without Controls*. These sites are identified within the suggested change column, along with the date that the certificates of completion were issued by NMED. Suggested language change: Table K-1 should be revised by removing these sites and, as necessary, Table K-3 should be revised to include or delete these sites, as indicated below. AOC 00-030(k) — Certificate of completion, corrective action complete without controls issued 12/6/06 (not listed in Table K-3 but should be) AOC 00-033(b) — Certificate of completion, corrective action complete without controls issued 2/23/06 (should be listed in Table K-3) AOC 00-034(a) — Certificate of completion, corrective action complete without controls issued 12/6/06 (not listed in Table K-3 but should be) AOC C-19-001 — Certificate of completion, corrective action complete without controls issued 6/27/06 (already listed in Table K-3).		

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.</td><td></td><td></td></tr>
<tr><td>627</td><td>Tables K-1 and K-3</td><td>Table K-1 includes some AOCs that were previously negotiated by NMED and LANL to have approved decisions of “no further action (NFA).” In the March 2005 Order on Consent, NMED specifically recognized that AOCs identified in a January 21, 2005 letter from EPA to NMED that received a prior NFA decision from EPA had no further corrective action requirements (See Section III.A of the Consent Order). These AOCs should be removed from Table K-1.

Table K-1 contains sites that are not listed in Table A or Table C of Module VIII and which were previously determined to require no further action by EPA. These sites should not be listed in Table K-1, but should be listed in Table K-3, Corrective Action Complete Without Controls. These sites, which are all included in the January 21, 2005 EPA letter, are identified within the suggested change column.

Suggested language change:

Table K-1 should be revised by removing these sites and Table K-3 should be revised by adding AOC 52-002(g).
<table>
<tr><td>AOC C-20-001</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC C-20-002</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC C-20-003</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC 43-001(b1)</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC C-</td><td>On EPA 1/21/05 letter (already listed in Table</td></tr>
</table></td><td>The Department concurs. Tables K-1 and K-3 have been revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>51-001</td><td>K-3)</td></tr>
<tr><td>AOC C-51-002</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
<tr><td>AOC 52-002(g)</td><td>On EPA 1/21/05 letter (should be listed in Table K-3)</td></tr>
<tr><td>AOC 63-002</td><td>On EPA 1/21/05 letter (already listed in Table K-3)</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
</td><td></td><td></td></tr>
<tr><td>628</td><td>Table K-1</td><td>
Once NMED has determined that no further corrective action is necessary, a Class 3 permit modification should not be required to remove sites from Tables A and C of Module VIII. Sites not listed in Module VIII and for which NMED made a determination of NFA prior to the effective date of the Consent Order should be listed in Table K-3.

Table K-1 contains sites that are not listed in Table A or Table C of Module VIII and which were determined to require no further action by NMED prior to the effective date of the Consent Order. These sites should not be listed in Table K-1, but should be listed in Table K-3, Corrective Action Complete Without Controls. These sites are identified within the suggested change column.

Suggested language change:

Table K-1 should be revised by removing these sites and Table K-3 revised by adding these sites.
<table>
<tr><td>AOC 00-030(i)</td><td>Site was proposed for NFA in the VCA Completion Report for Consolidated Unit 00-003-99</td></tr>
</table>
</td><td>The Department concurs. Tables K-1 and K-3 have been revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

No.	Loc.	Comment			NMED Response	Δ
				and AOC 00-030(i). NMED approved the VCA Completion Report and concurred with NFA on January 30, 2002. Add to Table K-3 with corrective action completed date of 1/30/2002.		
			AOC 21-030	NFA approved 6/21/04 as part of approval of Voluntary Corrective Action Report for SWMU 21-024(f) and AOCs C-21-015 and 21-030 (already listed in Table K-3)		
			AOCs C-06-006, C-06-007, C-06-008, C-06-009, C-06-010, C-06-011, C-06-012, C-06-013, C-06-014, C-06-015, C-06-016, C-06-017, C-06-018, C-06-020, and C-06-021	These AOCs were proposed for NFA in the RFI Report for TA-6. NMED approved the RFI Report and concurred with NFA on March 14, 2000. Add to Table K-3 with corrective action completed date of 3/14/2000.		
			AOCs 73-007, C-73-005(a), C-73-005(b),	NFA approved 3/28/01 as part of approval of RFI Report for Consolidated Unit 73-005-99.		

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>C-73-005(c), C-73-005(d), C-73-005(e), and C-73-005(f),</td><td>Add to Table K-3 with corrective action completed date of 3/28/01.</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
</td><td></td><td></td></tr>
<tr><td>629</td><td>Tables K-1 and K-3</td><td>
SWMUs that have been removed from Table C of Module VIII through a Class III permit modification prior to the effective date of the Consent Order are approved for NFA and require no controls and should be listed in Table K-3.

Table K-1 contains sites that are listed in Table C.1 of Module VIII. These sites have been removed from Table C by NMED through a Class III permit modification. These sites should not be listed in Table K-1, but should be listed in Table K-3, Corrective Action Complete Without Controls. These sites are identified in the suggested change column.

Suggested language change:

Table K-1 should be revised by removing these sites.
<table>
<tr><td>SWMU 03-032</td><td>Listed in Module VIII Table C.1, Class III permit modification effective 05-02-01 (already listed in Table K-3)</td></tr>
<tr><td>SWMU 03-045(i)</td><td>Listed in Module VIII Table C.1, Class III permit modification effective 05-02-01 (already listed in Table K-3)</td></tr>
</table>
</td><td>The Department concurs. Tables K-1 and K-3 have been revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.</td><td></td><td></td></tr>
<tr><td>630</td><td>Table K-1</td><td>SWMUs that have not been removed from Tables A or C of Module VIII of the current LANL permit through a Class III permit modification should be included in Table K-1.

Table K-1 does not contain several sites that have not previously been approved for NFA or received a certificate of completion. These sites are identified in the suggested change column.

Suggested language change:

Table K-1 should be revised by adding these sites.
<table>
<tr><td>SWMU 03-029</td><td>Listed in Module VIII Table C (should be listed in Table K-1)</td></tr>
<tr><td>SWMU 16-032(c)</td><td>Listed in Module VIII Table C (should be listed in Table K-1)</td></tr>
<tr><td>SWMU 36-006</td><td>Listed in Module VIII Table A (should be listed in Table K-1)</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.</td><td>The Department concurs. Table K-1 has been revised as suggested by the commenter.</td><td>Yes</td></tr>
<tr><td>631</td><td>Table K-1</td><td>Several sites that were originally contained in the 1988 SWMU Report and listed in the original 1990 Module VIII were renumbered in the 1994 modification of Module VIII. The new numbers are the numbers used in the current version of Module VIII. The old numbers are no longer contained in Module VIII and should not be used in the Permit.

Table K-1 contains sites that have been renumbered and are duplicates of other sites already listed in Table K-1. These sites are identified below, along with the numbers of</td><td>The Department concurs. Tables K-1 and K-3 have been revised as suggested by the commenter. Also, language will be added to each Table, where appropriate, to identify whether or not a SWMU/AOC number is</td><td>Yes</td></tr>
</table>

No.	Loc.	Comment	NMED Response	Δ
		the duplicate sites. Suggested language change: Table K-1 should be revised by removing these sites.	duplicative or has been renumbered.	

SWMU 00-002	1990 SWMU Report (Vol. 1, pg. 11) shows that this site was being renumbered from 00-002 to 61-006. SWMU 61-006 is included in Table K-1.
SWMU 15-009(l)	The 1988 SWMU Report identified SWMU 15-009(k) as a septic tank having structure number 15-293. The 1990 SWMU Report (Vol. 1, pg. 36) noted that septic system 15-293 had never been constructed and proposed deleting SWMU 15-009(k). The 1990 SWMU Report (Vol. 1, pg. 27) also proposed adding two new septic system SWMUs in TA-15. These were designated as SWMU 15-009(k), which was associated with structure 15-67, and SWMU 15-009(l), which was associated with structure 15-00. Septic tank 15-67, however, was renumbered to structure 36-61 and was already designated as SWMU 36-006(b). Because the newly added SWMU 15-009(k) was a duplicate of SWMU 36-006(b), it was deleted and SWMU 15-009(l) (associated with 15-00) was renumbered as SWMU 15-009(k), which is listed in Table K-1.
SWMU 15-012(c)	1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered from 15-012(c) to 15-014(m). SWMU 15-014(m) is included in Table K-3 and Module VIII Table A.1.
SWMU 15-012(d)	1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered from 15-012(d) to 15-014(k). SWMU 15-014(k) is included in Table K-1 and Module VIII Table A.
SWMU 15-012(e)	1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered from 15-012(e) to 15-014(l). SWMU 15-014(l) is included in Table K-1 and Module VIII Table A.

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>SWMU 15-012(f)</td><td>1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered from 15-012(f) to 15-014(i). SWMU 15-014(i) is included in Table K-1 and Module VIII Table A.</td></tr>
<tr><td>SWMU 15-012(g)</td><td>1990 SWMU Report (Vol. 1, pg. 15) shows that this site was being renumbered from 15-012(g) to 15-014(j). SWMU 15-014(j) is included in Table K-1 and Module VIII Table A.</td></tr>
<tr><td>AOC 36-009</td><td>1993 RFI Work Plan for Operable Unit 1093, which includes former TA-27, indicates that the bazooka impact area identified as SWMU 27-003 is the same as the mortar impact area identified as SWMU 36-009. 1994 RFI Work Plan for Operable Unit 1130, which includes TA-36, indicates that SWMU 36-009 is being addressed in OU 1093 as SWMU 27-003. EPA’s 1994 modification to Module VIII drops SWMU 36-009 because it is the same site as SWMU 27-003. SWMU 27-003 is listed in Table K-1.</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
</td><td></td><td></td></tr>
<tr><td>632</td><td>Table K-1</td><td>
Several SWMUs in Table K-1 were never identified by EPA as corrective action units or were deleted as corrective action units by EPA in the 1994 modification to Module VIII. SWMUs 21-016(d) and 21-016(e) were listed in May 1990 Module VIII but were not included in 1994 modification of Module VIII.

Table K-1 contains SWMUs that were proposed for deletion in the 1990 SWMU Report and which were subsequently removed from Module VIII by EPA in the 1994 modification to Module VIII. These sites are identified in the suggested change column.

Suggested language change:

Table K-1 should be revised by removing these sites.
<table>
<tr><td>SWMU 21-016(d)</td><td>SWMU 21-016(d) is identified in 1988 SWMU Report as a sump associated with MDA T (SWMU 21-016[a]). The 1990 SWMU Report (Vol. 1, pg. 36) proposes deleting this SWMU since it has</td></tr>
</table>
</td><td>The Department concurs. Table K-1 has been revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td>been incorporated into SWMU 21-016(a) and the TA-21 section of the report (Vol. 2) does not list this site. The NMED-approved Investigation Work Plan for MDA T indicates that the sump comprising former SWMU 21-016(d) is part of SWMU 21-016(a). SWMU 21-016(a) is listed in Table K-1.</td></tr>
<tr><td>SWMU 21-016(e)</td><td>SWMU 21-016(e) is identified in 1988 SWMU Report as a sump associated with MDA T (SWMU 21-016[a]). The 1990 SWMU Report (Vol. 1, pg. 36) proposes deleting this SWMU since it has been incorporated into SWMU 21-016(a) and the TA-21 section of the report (Vol. 2) does not list this site. The NMED-approved Investigation Work Plan for MDA T indicates that the sump comprising former SWMU 21-016(e) is part of SWMU 21-016(a). SWMU 21-016(a) is listed in Table K-1.</td></tr>
</table>

A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
</td><td></td><td></td></tr>
<tr><td>633</td><td>Table K-1</td><td>Several sites listed in Table K-1 were identified in the 1990 SWMU Report but were subsequently renumbered or incorporated into other SWMUs. Although identified in the 1990 SWMU Report, these sites were not listed in Module VIII by EPA. The actual or potential releases associated with these sites have been incorporated into other sites that are listed in Table K-1. Therefore, including these sites in Table K-1 would be duplicative and is not necessary.

The revised SWMU descriptions and designations have been included in work plans or other documents approved by EPA or NMED. The original designations contained in the 1990 SWMU Report were not included by EPA in the 1994 modification to Module VIII and are not in the current version of Module VIII. These sites are identified in the suggested change column.

Suggested language change:

Table K-1 should be revised by removing these sites.
<table>
<tr><td>SWMU</td><td>SWMU 35-010(misc) has been renumbered to AOC 35-010(e).</td></tr>
</table>
</td><td>The Department concurs. Table K-1 has been revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

No.	Loc.	Comment		NMED Response	Δ
		35-010(misc)	The 1990 SWMU Report identifies five SWMUs, 35-010(a-d) and 35-010(misc), as being associated with the TA-35 sanitary lagoon and sand filter. SWMU 35-010(misc) is identified as being associated with Structure TA-35-215, which is the sand filter. In the 1992 RFI Work Plan for OU 1129, which includes TA-35, these five sites are identified as SWMUs 35-010(a-e). SWMU 35-101(e) is identified as the discharge headwall, which is part of structure TA-35-215, and is the same site as SWMU 35-010(misc). The 1994 modification to Module VIII contained SWMUs 35-010(a-d). The discharge from the sand filter (formerly SWMU 35-010[misc]) is currently identified as AOC 35-010(e) and is listed in Table K-1.			
		SWMU 49-001(misc)	SWMU 49-001(misc) has been incorporated into SWMUs 49-001(a-g). The 1990 SWMU Report identifies SWMUs 49-001(a-g) and 49-001(misc) as comprising MDA AB. No descriptive information is provided concerning SWMU 49-001(misc). The 1992 RFI Work Plan for OU 1144, which includes TA-49, notes that SWMU 49-001(misc) is a nonspecific category mentioned in the 1990 SWMU Report that is addressed under SWMUs 49-001(a-g). SWMUs 49-001(a-g) are currently listed in Module VIII and are listed in Table K-1.			
		SWMU 50-011(misc)	SWMU 50-011(misc) has been incorporated into SWMU 50-011(a). The 1990 SWMU Report identifies SWMUs 50-011(a-b) and 50-011(misc) as comprising septic systems at TA-50. No descriptive information is provided concerning SWMU 50-011(misc), but a referenced historical document indicates that it is the leach field for a decommissioned septic system. SWMU 50-011(a) is described as a septic tank, manhole, and distribution box. The 1992 RFI Work Plan for OU 1147, which includes TA-50, describes SWMU 50-011(a) as including the septic tank, manhole, distribution box, and leach field. Therefore, the leach field (50-011[misc]) has been incorporated into the septic system (50-011[a]). SWMU 50-011(a) is currently listed in Module VIII			

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td>and Table K-1.</td></tr>
<tr><td>SWMU 54-007(misc)</td><td>SWMU 54-007(misc) is identified in the 1990 SWMU Report as one of the SWMUs associated with septic systems in TA-54, along with SWMUs 54-007(a-e). SWMUs 54-007(a-e) were described as the septic systems associated with five septic tanks at TA-54. No descriptive information or structure number was provided for SWMU 54-007(misc). SWMUs 54-007(a-d) were listed by EPA in Module VIII. The investigations and voluntary corrective actions conducted at these sites have considered releases from all components of these septic systems (i.e., tanks, drain lines, outfalls). Therefore, whatever component of the five septic systems was represented by SWMU 54-007(misc) has been incorporated into SWMUs 54-007(a-d) and AOC 54-007(e). SWMUs 54-007(a) and (d) are listed in Table K-1 and SWMUs 54-007(b) and (c) and AOC 54-0047(e) have been approved for NFA and are listed in Table K-3.</td></tr>
</table>

A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.</td><td></td><td></td></tr>
<tr><td>634</td><td>Table K-1</td><td>SWMU 16-009(b) was incorporated into SWMU 16-019, which is listed in Table K-1. SWMU 16-009(b) was deleted from Module VIII when EPA modified Module VIII in 1994.

Suggested language change:

Table K-1 lists SWMU 16-009(b), but this site was incorporated into SWMU 16-019 and deleted as a separate site. Table A of the May 1990 version of Module VIII lists SWMUs 16-009(a) and 16-009(b). The 1990 SWMU Report proposes deleting SWMU 16-009(b) because it is a burn area that was part of Material Disposal Area R and addressed in SWMU 16-019. When EPA modified Module VIII in 1994, SWMU 16-009(b) was deleted from Table A. Table K-1 should be revised by removing SWMU 16-009(b).

A summary of the requested changes to Tables K-1, K-2, and K-3 is included with</td><td>The Department concurs. Table K-1 has been revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>this document as Appendix 4.</td><td></td><td></td></tr>
<tr><td>635</td><td>Table K-1</td><td>Table K-1 lists two SWMUs that are permitted units actively managing hazardous wastes and that are listed in Table J-1. Units should not be listed in both Table J-1 and Table K-1. These sites are identified in the suggested change column.

Suggested language change:

Table K-1 should be revised by removing these sites.
<table>
<tr><td>SWMU 16-010(c)</td><td>SWMU 16-010(c) is a flash pad used for open burning of waste explosives and is designated as structure 16-388. This unit is also listed in Table J-1 of the draft Permit.</td></tr>
<tr><td>SWMU 16-010(d)</td><td>SWMU 16-010(d) is a burn tray used for open burning of waste explosives and is designated as structure 16-389. This unit is also listed in Table J-1 of the draft Permit.</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.</td><td>The Department concurs. Table K-1 has been revised as suggested by the commenter.</td><td>Yes</td></tr>
<tr><td>636</td><td>Table K-1</td><td>Table K-1 lists AOCs and SWMUs that are closed units not in post-closure care and that are listed in Table J-3. Units should not be list in both Table J-3 and Table K-1. These sites are identified in the suggested change column. Please delete these from Table K-1

Suggested language change:

Table K-1 should be revised by removing these sites.
<table>
<tr><td>SWMU 16-008(b)</td><td>SWMU 16-008(b) is a former surface impoundment. This unit was closed under RCRA and is listed in Table J-3 as TA-16 Surface Impoundment.</td></tr>
<tr><td>SWMU 16-010(b)</td><td>SWMU 16-010(b) is a former flash pad used for open burning of waste explosives that is designated as structure 16-387. This unit was closed under RCRA and is listed in Table J-3 as TA-16-387.</td></tr>
<tr><td>SWMU</td><td>SWMU 16-010(e) is a filter vessel formerly used for open</td></tr>
</table></td><td>The Department concurs. Table K-1 has been revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>16-010(e)</td><td>burning of waste explosives that is designated as structure 16-401. This unit was closed under RCRA and is listed in Table J-3 as TA-16-401.</td></tr>
<tr><td>SWMU 16-010(f)</td><td>SWMU 16-010(f) is a filter vessel formerly used for open burning of waste explosives that is designated as structure 16-406. This unit was closed under RCRA and is listed in Table J-3 as TA-16-406.</td></tr>
<tr><td>SWMU 16-010(j)</td><td>SWMU 16-010(j) is a former filter bed. This unit was closed under RCRA and is listed in Table J-3 as TA-16-394.</td></tr>
<tr><td>SWMU 16-018</td><td>SWMU 16-018 is a former waste pile (MDA P). This unit was closed under RCRA and is listed in Table J-3 TA-16, Material Disposal Area P.</td></tr>
<tr><td>SWMU 40-003(a)</td><td>SWMU 40-003(a) is a former explosive scrap burn pile. This unit was closed under RCRA and is listed in Table J-3 as TA-40, Scrap Detonation Unit.</td></tr>
<tr><td>AOC 54-009</td><td>AOC 54-009 consists of former waste treatment tanks. This unit was closed under RCRA and is listed in Table J-3 as TA-54-L, Bldg. 35, Storage/Treatment Tanks (4).</td></tr>
</table>
A summary of the requested changes to TablesKP-1, K-2, and K-3 is included with this document as Appendix 4.
</td><td></td><td></td></tr>
<tr><td>637</td><td>Table K-3</td><td>Some of the AOCs listed in Table K-3 do not have an entry for corrective action completed date. These AOCs were approved for NFA by NMED prior to the effective date of the Consent Order. The document approval date should be used as the corrective action completed date for AOCs.

These sites are identified in the suggested change column, along with documents where NFA was approved.

Suggested language change:</td><td>The Department concurs (in part). Table K-3 has been revised as suggested by the commenter except for the corrective action complete date for AOC 00-030(i) and the AOCs at TA-73. Those AOCs had corrective action complete when the Department</td><td>Yes</td></tr>
</table>

No.	Loc.	Comment	NMED Response	Δ
		Table K-3 should be revised by incorporating the changes indicated below. AOC 00-030(i): Site was proposed for NFA in the VCA Completion Report for Consolidated Unit 00-003-99 and AOC 00-030(i). NMED approved the VCA Completion Report and concurred with NFA on January 30, 2002. Add corrective action completed date of 1/30/2002. AOCs C-06-003, C-06-006, C-06-007, C-06-008, C-06-009, C-06-010, C-06-011, C-06-012, C-06-013, C-06-014, C-06-015, C-06-016, C-06-017, C-06-018, C-06-020, and C-06-021: These AOCs were proposed for NFA in the RFI Report for TA-6. NMED approved the RFI Report and concurred with NFA on March 14, 2000. Add corrective action completed date of 3/14/2000. AOCs 73-007, C-73-005(a), C-73-005(b), C-73-005(c), C-73-005(d), C-73-005(e), and C-73-005(f), These AOCs were proposed for NFA in the RFI Report for Consolidated Unit 73-005-99. NMED approved the RFI Report and concurred with NFA on March 28, 2001. Add corrective action completed date of 3/28/2001	approved the permit modification for the associated consolidated units on 09/05/03.	

No.	Loc.	Comment	NMED Response	Δ
		A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.		
638	Table K-3	SWMUs 35-006 and 35-011(a) were removed from Table A of Module VIII prior to the effective date of the Consent Order and should be identified as having corrective action complete without controls. Suggested language change: SWMUs 35-006 and 35-011(a) were removed from Table A of Module VIII by a Class III permit modification approved May 2, 2001. Table K-3 should be revised by adding SWMUs 35-006 and 35-011(a) with corrective action completed dates of 5/2/2001. A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.	The Department concurs. Table K-3 is revised as suggested by the commenter.	Yes
639	Table K-1	Table K-1 contains sites that are also listed in Table J-1. Table J-1 contains permitted units. New releases from permitted units are subject to corrective action under the Permit rather than under the Consent Order. Under the conditions of the draft Permit, these permitted units are subject to clean closure, which would address historical releases from these units. Because new and historical releases from these units will be addressed under the Permit, these units should not also be identified as corrective action units under the Consent Order. This would lead to potentially conflicting requirements, and is unnecessarily confusing. These sites are identified in the suggested change column, along with the corresponding Table J-1 permitted unit. Suggested language change: Table K-1 should be revised by removing these units. SWMU 54-001(a) (Structure 215) — Listed in Table J-1 as part of TA-54 Area L Outdoor Pad. AOC 54-001(b) — Listed in Table J-1 as part of TA-54 Area L	The Department concurs. Table K-1 is revised as suggested by the commenter.	Yes

<table>
<tr><th>No.</th><th>Loc.</th><th>Comment</th><th>NMED Response</th><th>Δ</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>(Structure 31)</td><td>Outdoor Pad.</td></tr>
<tr><td>AOC 54-001(d) (Structure 39)</td><td>Listed in Table J-1 as part of TA-54 Area L Outdoor Pad.</td></tr>
<tr><td>AOC 54-001(e) (Structure 32)</td><td>Listed in Table J-1 as part of TA-54 Area L Outdoor Pad.</td></tr>
<tr><td>AOC 54-002 (Structure 216)</td><td>Listed in Table J-1 as part of TA-54 Area L Outdoor Pad.</td></tr>
<tr><td>AOC 54-015(a) (Shed 8)</td><td>Listed in Table J-1 as TA-54 Area G Storage Shed 8.</td></tr>
<tr><td>AOC 54-015(c) (Pad 1)</td><td>Listed in Table J-1 as part of TA-54 Area G Pad 1.</td></tr>
<tr><td>AOC 54-015(d) (Pad 2)</td><td>Now part of Pad 10, listed in Table J-1 as TA-54 Area G Pad 10.</td></tr>
<tr><td>AOC 54-015(e) (Pad 3)</td><td>Listed in Table J-1 as part of TA-54 Area G Pad 3.</td></tr>
<tr><td>AOC 54-015(f) (Pad 4)</td><td>Now part of Pad 10, listed in Table J-1 as TA-54 Area G Pad 10.</td></tr>
<tr><td>AOC 54-015(j) (Dome 49)</td><td>Listed in Table J-1 as part of TA-54 Area G Pad 5.</td></tr>
</table>
A summary of the requested changes to Tables K-1, K-2, and K-3 is included with this document as Appendix 4.
</td><td></td><td></td></tr>
<tr><td>640</td><td>Tables K-1, K-2, and K-3</td><td>Many of the unit type descriptions contained in Tables K-1, K-2, and K-3 appear to be outdated. LANL has revised and updated these descriptions to reflect current site status and to provide better consistency of descriptions of similar sites.
Suggested language change:
Updated unit type descriptions for those units that do not match current LANL</td><td>The Department concurs. Tables K-1 and K-3 are revised as suggested by the commenter.</td><td>Yes</td></tr>
</table>

No.	Loc.	Comment	NMED Response	Δ
		descriptions are included with this document as Appendix 4.		
641	Att. M	The total cost for closure should be $26,452, 303.00. This is number EPA got when totaling the closure costs for each hazardous waste unit in Attachment M. (Please note that the cents column was not added when totaling the costs). Please revise accordingly. Also, please note that the closure costs for the MDAs were not included.	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
642	Att. M	Based on the general comment on Financial Assurance above, the Permittees object to the inclusion of cost estimates for financial assurance and request that this section be deleted. Suggested language change: Delete Attachment M	See the Department's response regarding financial assurance in the document titled General Response to Comments.	Yes
643	Att. N	Some of the figures are not in numerical order.	The Department disagrees – Hard copies of the Permit may have been compiled incorrectly.	No
644	Att. N	During the negotiations, the Permittees indicated that a number of the figures in Attachment N needed to be updated and replaced with new figures to be provided by the Permittees. Some of the changes are needed to be consistent with the closure plans and some are clarifications or updates to the figures. The updated figures identified below are included in Appendix 5, attached to these comments.	The Department concurs. The figures have been included in the Renewal Permit.	Yes
645	Att. N, Figure 5	Update of Figure 5 clarifies access control via barricades placed on roadways versus access gates. Suggested language change: Updated figure is included with this document as part of Appendix 5.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
646	Att. N, Figure 6	Update of Figure 6 removes the added area at the TA-50-69 Outdoor Pad, because the request to permit this area was withdrawn by the Permittees. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
647	Att. N, Figure 7	Update of Figure 7 cleans up overlapping text and clarifies labeling on structures.	The Department concurs. The revised figure has been added to	Yes

No.	Loc.	Comment	NMED Response	Δ
		Suggested language change: Updated figure is included with this document as part of Appendix 5.	the Renewal Permit.	
648	Att. N, Figure 8	Update of Figure 8 creates consistency with other figures that contain the TA-54 Area L Outdoor Pad within the Permit. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
650	Att. N, Figure 9	Update of Figure 9 includes a correction of the boundary for the TA-54-38 West Indoor permitted unit. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
651	Att. N Figure 10	Updated Figure 10 removes the added area at the TA-55 Outdoor Pad, because the request to permit this area was withdrawn by the Permittees. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
652	Att. N, Figure 11	Updated Figure 11 depicts current Facility boundary. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
653	Att. N, Figure 13	Updated Figure 13 removes sample areas that are only required for the figures within the closure plans. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
654	Att. N, Figure 14	Updated Figure 14 removes sample areas that are only required for the figures within the closure plans. Suggested language change:	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Updated figure is included with this document as part of Appendix 5.		
655	Att. N, Figure 15	Updated Figure 15 removes sample areas that are only required for the figures within the closure plans. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
656	Att. N, Figure 16	Updated Figure 16 depicts current Facility boundary. Suggested language change: Updated figure is included with this document as part of Appendix 5.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
657	Att. N, Figure 17	Updated Figure 17 removes outlines of units and structures that no longer exist at the site. Suggested language change: Updated figure is included with this document as part of Appendix 5.	See the Department's response regarding open burning in the document titled General Response to Comments.	Yes
658	Att. N, Figure 22	Updated Figure 22 depicts current Facility boundary. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
659	Att. N, Figure 23	Updated Figure 23 removes the added area at the TA-50-69 Outdoor Pad, because the request to permit this area was withdrawn by the Permittees. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
660	Att. N, Figure 24	Updated Figure 24 depicts current Facility boundary Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
661	Att. N,	Updated Figure 26 cleans up overlapping text and clarifies labeling on structures.	The Department disagrees. The	No

No.	Loc.	Comment	NMED Response	Δ
	Figure 26	Suggested language change: Updated figure is included with this document as part of Appendix 5.	new figure does not reflect all structures, *i.e.*, the permacon. The figure from the 7/6/09 draft permit is included in the Renewal Permit.	
662	Att. N, Figure 28	Updated Figure 28 clarifies the boundary of the unit and removes illustration of the storage configuration which is dynamic. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
663	Att. N, Figure 29	Updated Figure 29 clarifies the boundary of the unit and removes illustration of the storage configuration which is dynamic. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
664	Att. N, Figure 30	Updated Figure 30 clarifies the boundary of the unit and removes illustration of the storage configuration which is dynamic. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
665	Att. N, Figure 31	Updated Figure 31 clarifies the boundary of the unit and clarifies the current configuration of characterization trailers. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
666	Att. N, Figure 32	Updated Figure 32 clarifies the boundary of the unit and removes illustration of the storage configuration which is dynamic. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
667	Att. N,	Updated Figure 33 clarifies the boundary of the unit and removes illustration of the	The Department concurs. The revised figure has been added to	Yes

No.	Loc.	Comment	NMED Response	Δ
	Figure 33	storage configuration which is dynamic. Suggested language change: Updated figure is included with this document as part of Appendix 5.	the Renewal Permit.	
668	Att. N, Figure 34	Updated Figure 34 removes the illustration of the storage configuration which is dynamic. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
669	Att. N, Figure 35	Updated Figure 35 removes the illustration of the storage configuration which is dynamic. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
670	Att. N, Figure 36	Updated Figure 36 clarifies features around the unit and removes illustration of the storage configuration which is dynamic. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
671	Att. N, Figure 37	Updated Figure 37 includes the entire areas requested for the TA-54-38 West Indoor and TA-54-38 Outdoor Pad permitted units. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
672	Att. N, Figure 38	Updated Figure 38 depicts the current Facility boundary. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
673	Att. N, Figure 39	Updated Figure 39 includes TA-55-185 as a permitted unit. Suggested language change:	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes

No.	Loc.	Comment	NMED Response	Δ
		Updated figure is included with this document as part of Appendix 5.		
674	Att. N, Figure 47	Updated Figure 47 corrects the reagent transfer device venting path. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
675	Att. N, Figure 48	Updated Figure 48 makes corrections to the paths for the vacuum trap venting and the compressed air. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
676	Att. N, Figure 49	Updated Figure 49 depicts the current Facility boundary. Suggested language change: Updated figure is included with this document as part of Appendix 5.	The Department concurs. The revised figure has been added to the Renewal Permit.	Yes
677	Att. O	When is this section to be completed and what hazardous waste units are to be included? Does the postclosure plan cover the same requirements as this attachment?	The Department will add long-term monitoring and maintenance plans to the Attachment as they are approved by the Department. No hazardous waste management units will have such plans. Instead they will have post-closure care plans as warranted. Long-term monitoring and maintenance plans apply only to SWMUs or AOCs requiring such plans. The plans will include requirements to implement any controls, including long-term monitoring, maintenance of an engineered cover or maintenance of a fence to restrict access for SWMUs or AOCs where	No

No.	Loc.	Comment	NMED Response	Δ
			corrective action is complete. These controls are similar to those for permitted units addressed under post-closure care.	